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SUB-THEME 1

INNOVATION, TECHNOLOGY AND THE FUTURE OF WORK

DIGITAL ENTREPRENEURSHIP THROUGH UNIVERSITY-BASED INNOVATION HUBS IN AFRICA. A SCOPING REVIEW OF CHALLENGES AND POLICY IMPLICATIONS

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Abstract

Purpose. This scoping review maps challenges and policy implications associated with university-based innovation hubs, incubators and closely related entrepreneurship-support structures that advance digital or technology-enabled entrepreneurship in Africa.

Methods. A parent scoping review was undertaken utilizing the Arksey and O'Malley, JBI and PRISMA-ScR approaches. The searches involved both electronic and grey literature for the period 2015 to 2025. From the sources that were identified, 28 sources were considered to be within the institutional scope and analyzed to be either direct or contextual evidence.

Findings. Twenty-eight documents were used to construct the university-based evidence map. Ten documents (35.7%) provided direct evidence while 18 documents (64.3%) provided contextual evidence. Common areas of challenge were skills, curricula and human resources (21/28); fragmentation and lack of linkage in the ecosystem (19/28); finance and sustainability of the hub (18/28); and infrastructure and geographical access (16/28). Best converging policies were curricula and institutional changes (27/28), partnership and ecosystem governance (23/28), sustainable financing (22/28) and incubation and venture development quality (21/28).

Implications. University hubs are strategically positioned near students, research, laboratories and intellectual property, but their contribution to digital venture creation is constrained when entrepreneurship remains peripheral to curricula, commercialisation systems, academic incentives and market partnerships. Policy should therefore treat the university hub as part of the institution's research, teaching and enterprise architecture rather than as a stand-alone project.

Originality: Through this literature review, I contribute to existing scholarship by identifying university-based innovation clusters in the digital entrepreneurship environment of Africa, understanding recurring problems and policy concerns, and revealing how curriculum, commercialisation, research incentives, finance, and partnerships collectively affect ventures.

Keywords: Digital entrepreneurship; University innovation hubs; Higher education; Entrepreneurial universities; Commercialisation; Entrepreneurial ecosystems

1.0 Introduction

Digital entrepreneurship is increasingly important for job creation, innovation, and economic diversification in Africa. In this review, it refers to ventures whose operations or market access depend substantially on digital platforms, mobile applications, financial technologies, cloud services and related digital technologies. While fast-growing connectivity has opened up opportunities, intermittent power supply, high-cost data, poor broadband, lack of seed finance, low levels of digital and management skills, fragmented regulation, and access inequality are still some of the factors defining participation and scaling of ventures (African Union Commission & Organisation for Economic Co-operation and Development, 2024; GSMA, 2024; International Telecommunication Union, 2023, 2024; World Bank, 2023).

University innovation hubs are unique institutions in this respect in that they combine the presence of students, graduates, researchers, and professors through mentoring programs, experimentation, prototyping, entrepreneurship and business training, and networking. The strength of these institutions lies in their proximity to knowledge, laboratories, disciplinary strengths, and intellectual property. But experience in Africa shows that this is not enough to start digital businesses. University support can remain detached from markets, practical entrepreneurship, industry demand and investment, while slow procedures and weak technology-transfer systems can obstruct commercialisation (Amadi-Echendu et al., 2016; De Jager et al., 2017; Muazu & Bello, 2025).

The problem therefore extends beyond the presence or absence of a campus innovation centre. Common challenges highlighted in the studies within the provided evidence map include theory-practice gaps, lack of mentors and specialist staff, poor university-industry-government linkages, funding and infrastructure constraints, poor awareness of existing resources, and lack of venture follow-up after incubation (Agbodjah et al., 2023; Kamuriwo et al., 2025; Malele et al., 2019; Mulaudzi, 2020; Zahoro & Banele, 2024). The literature is also geographically uneven and often uses terms such as innovation hub, incubator, entrepreneurship centre and accelerator inconsistently. These weaknesses make it difficult to determine what university-based structures actually contribute and which policy changes are most strongly supported across African settings.

Synthesis that relates exclusively to universities is warranted due to the fact that the institutional setting impacts capabilities and limitations. Universities have the potential to incorporate entrepreneurship into education and research, to generate ideas before venturing, to offer laboratories and specific knowledge, and to facilitate commercialization of research. However, various incentives for academics, curricular arrangements, purchasing policies, technology transfer capacity, and external relationships may be limiting when it comes to dealing with entrepreneurial needs (Attuquayefio et al., 2024). It would be misleading to consider university-based centers equal to other incubators.

Entrepreneurial ecosystem theory guides interpretation by emphasising the interaction of talent, knowledge, finance, networks, infrastructure, institutions, culture and markets rather than a single programme input (Stam & van de Ven, 2021). This scoping review maps and synthesises evidence on the challenges and policy implications of university-based innovation hubs and related incubation structures in advancing digital or technology-enabled entrepreneurship in Africa. The guiding question is: What challenges are reported in university-based innovation and incubation structures supporting digital entrepreneurship in Africa, and what policy implications emerge from the evidence published between 2015 and 2025?

2.0 Method

2.1 Review Design and Methodological

Approach

A scoping review approach is chosen for the current manuscript due to conceptual diversity, methodological heterogeneity and dissemination among both peer-reviewed and grey literature of the African research on support for digital entrepreneurship. The parent review was conducted according to the methodology of Arksey and O'Malley (2005), Levac et al. (2010) and JBI scoping review guideline updates (Peters et al., 2020) with reporting based on PRISMA-ScR (Tricco et al., 2018) and documentation following PRISMA-S guidelines (Rethlefsen et al., 2021). An institutional stratification of the parent evidence map is provided within this manuscript, and not a new search.

2.2 Institutional Focus and Research Question

Twenty-eight (28) sources have been reviewed as they are tackling the issues related to the university innovation/incubation institutions and/or have been used as the contextual literature for university entrepreneurship, digital entrepreneurship, commercialization or governance in university ecosystem. Research question for review is: What challenges and policy implications are linked with university innovation hubs and respective incubation institutions supporting digital/technology-based entrepreneurship in Africa?

Table 1

Eligibility Criteria and PCC Framework

PCC dimension	Operational inclusion for this manuscript
Population	Students, graduates, researchers, academic staff, university-linked founders, hub/incubator managers, mentors and external partners connected to higher education.
Concept	University-based innovation hubs, incubators, entrepreneurship centres, technology-transfer or related structures supporting digital/technology entrepreneurship; contextual university ecosystem evidence where directly relevant.
Context	African higher-education and university entrepreneurship ecosystems, including cross-country evidence with separately identifiable African findings.
Time	Sources dated 1 January 2015 to 31 December 2025; seminal methodological and theoretical works used only for framing.
Evidence	Peer-reviewed empirical studies; mixed-method, qualitative, and quantitative studies; programme/institutional reports; theses; dissertations; and policy-relevant documents with sufficient substantive information.

2.4 Information Sources and Search Strategy

The parent search covered Scopus, Web of Science Core Collection, ERIC, EBSCOhost, JSTOR, supplementary Google Scholar searching, organisational and university repositories, and backward/forward citation searching. The broad search combined support-structure terms such as innovation hub, technology hub, digital innovation centre, incubator, accelerator, entrepreneurship centre and makerspace with digital or technology entrepreneurship terms and Africa or individual African country names. The inclusion period was 2015–2025. The broad parent search was deliberately not limited to one ownership model, which allowed the final evidence map to be stratified by institutional setting for the two manuscripts.

2.5 Record Management, Selection and Institutional Stratification

In the parent review, the export of records was done for de-duplication purposes, screened at the title/abstract stage before going on to full-text assessment using the PCC criteria. In the supplied evidence map, the total number of traceable sources was 28. In preparing this manuscript, the extraction matrix was reviewed again at source level where the source was included only if it had a purpose, population, program setting or ecosystem that fit within the institutional scope outlined above. The sources were then categorised into evidence roles where the direct evidence was about the hub, incubator or similar support structure and the contextual evidence was about the relevant finance, skill, infrastructure, regulatory, commercialisation, or ecosystem context.

Table 2:

Search strategy

Items	Search Strategy
Database	Sage Journals, JSTOR, Scopus, EBSCO Host, and Web of Science
Language filter	2015 and beyond
Spatial filter	Africa
Keywords	Digital entrepreneurship [MeSH] OR "Digital entrepreneurship" OR "digital enterprise" OR "digital enterprises" OR "digital business" OR "digital businesses" OR "digital venture" OR "digital ventures" OR "online entrepreneurship" OR "online business" OR "e-entrepreneurship" OR "technology entrepreneurship" OR "tech entrepreneurship" OR "digital start-up" OR "digital startup" OR "digital start-ups" OR "digital startups" University-based innovation hubs [MeSH] OR "University-based innovation hubs" OR "university innovation hubs" OR "university-based innovation centres" OR "university-based innovation centers" OR "university innovation centres" OR "university innovation centers" OR "academic innovation hubs" OR "higher education innovation hubs" OR "university entrepreneurship hubs" OR "university incubators" OR "academic incubators" OR "university business incubators" OR "university-based incubators" OR "innovation hubs in universities" OR "innovation centres in universities" OR "innovation centers in universities" Challenges [MeSH] OR "Challenges" OR "barriers" OR "obstacles" OR "constraints" OR "difficulties" OR "problems" OR "limitations" OR "impediments" OR "bottlenecks" OR "hurdles" OR "barriers to implementation" OR "implementation challenges" Policy implications [MeSH] OR "Policy implications" OR "policy recommendations" OR "policy considerations" OR "policy consequences" OR "policy relevance" OR "policy directions" OR "policy measures" OR "policy interventions" OR "policy responses" OR "policy actions" OR "implications for policy" OR "implications for policymakers" Africa [MeSH] OR "Africa" OR "African continent" OR "African countries" OR "African nations" OR "Sub-Saharan Africa" OR "sub-Saharan African" OR "SSA" OR "African region" OR "African regions" OR "African context" OR "African economies" OR "African states"
Inclusion criteria	Papers included were: a. Conducted in Africa. b. Conducted on challenges and policy implications of digital entrepreneurship through university-based hubs in Africa c. Peer-reviewed articles, literature reviews, and grey literature (theses and dissertations. d. Reported in the English language e. Conducted in 2015 or later
Exclusion criteria	Papers excluded were: a. Conducted across the globe b. Full-text articles or conference papers that were not available c. Studies designed as editorials, letters to editors, commentaries, expert opinions, case reports, and case series. f. Studies that did not provide reports on challenges and policy implications of digital entrepreneurship through university-based hubs in Africa. d. Studies conducted in a language other than English. e. Studies completed or published online from 2015

Results

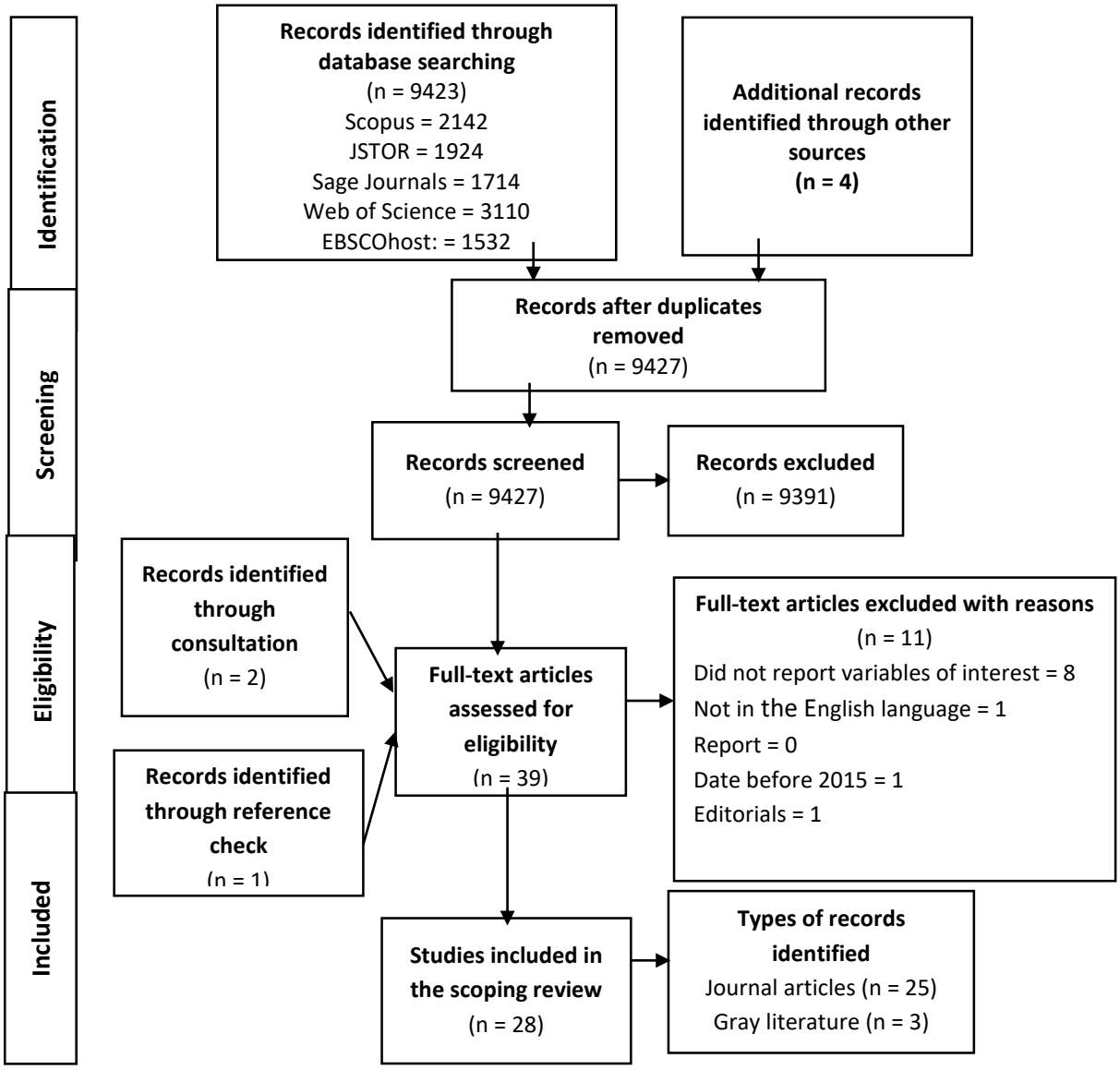


Figure 1
PRISMA Flow Chart
Source: Author's construct

2.6 Data Charting and Analysis

The provided extraction matrix captured details of author/year, country/region, objective, methodology, population, sample size (where applicable), challenges and policy implications. The institutional category has been synthesised using descriptive mapping and structured qualitative content analysis. A single source could be used in more than one challenge or policy area. Counts of themes in each category are thus non-exhaustive measures of the frequency of occurrence of the policy area in the selected sources. They are not measures of prevalence of participants or effect sizes or measures of policy effectiveness.

2.7 Treatment of Evidence Strength

A risk-of-bias scoring system was not applied for screening out studies since it is not the purpose of the review to provide an estimate of a pooled effect. The type of evidence is interpreted according to whether it is primary, programme, or documentary as opposed to secondary, desk review, or conceptual. The review avoided making claims on causal or comparative effects unless supported by the design. Contradictions and context-specificity will be kept as evidence of heterogeneity.

3.0 Results

3.1 Characteristics of the Included Evidence

In the institutional evidence map, there were 28 sources altogether. Out of the total number of 28 sources, 10 (35.7%) offered hub/incubator evidence directly while 18 (64.3%) provided context ecosystem evidence. 21 (75.0%) were sources that originated from either primary, programme or documentary evidence while 7 (25.0%) were either review-based or conceptual in nature. Study design labels in most frequency order include Quantitative (7/28), Mixed Methods (5/28), Qualitative (5/28), Narrative literature review (3/28) and Descriptive documentary review (1/28). Geographic distribution is very unbalanced including countries like South Africa (13 sources), Kenya (7 sources), Nigeria (7 sources), Tanzania (4 sources) and Egypt (4 sources).

Table 3

Characteristics of included studies

Dimension	Category	n	% of 28
Evidence role	Direct hub/incubator evidence	10	35.7%
Evidence role	Contextual ecosystem evidence	18	64.3%
Evidence basis	Primary/programme/documentary	21	75.0%
Evidence basis	Secondary/review/conceptual	7	25.0%
Study design	Quantitative	7	25.0%
Study design	Mixed Methods	5	17.9%
Study design	Qualitative	5	17.9%
Study design	Narrative literature review	3	10.7%

3.2 Challenge Domains

Challenge indicators indicate the degree of support in the institutional component. The themes cross-pollinate since one document may cite more than one challenge.

Table 4

Challenges domain

Challenge category	Sources, n (%)	Primary manifestation
Concerns with skill/knowledge/curriculum and human capital	21 (75.0%)	Disconnect between theory and practice; inadequate digital skills; insufficient management and business skills; inadequate specialised mentoring and experienced people.
Ecosystem fragmentation and disconnections	19 (67.9%)	Inadequate coordination between universities, industry, and government; disconnected hub; no connection to investors or market.
Financial considerations and sustainability of the hub	18 (64.3%)	Seed and working-capital shortages; unstable programme finance; donor or grant dependence; operating-cost pressures.
Infrastructure and geographical access	16 (57.1%)	Electricity, broadband and device constraints; inadequate laboratories and equipment; urban concentration and rural exclusion.
Policy, regulation and institutional constraints	14 (50.0%)	Fragmented implementation; bureaucracy and regulatory uncertainty; intellectual-property, legal and cybersecurity gaps.
Inclusion and entrepreneurial culture	14 (50.0%)	Gender and rural-access gaps; exclusion of underserved groups; low risk orientation and cultural preference for secure employment.
Evidence and evaluation gaps	11 (39.3%)	Small or site-specific studies; weak longitudinal and comparative evidence; limited outcome data and impact measures.
Hub design and venture progression	8 (28.6%)	Poorly tailored services; weak selection and follow-up; commercialisation, product–market fit and scaling difficulties.

3.3 University-Specific Challenge Synthesis

Among skills, curricula, and human capital was the domain that occurred most frequently, in 21 out of 28 sources. There is consistent evidence that there is a gap between entrepreneurship in the classroom and the actual skills necessary to exploit opportunities, test the market, manage e-businesses, and maintain businesses. According to Muazu and Bello (2025), there was little use in having isolated workshops on entrepreneurship where incubation was not part of other activities and learning, which is consistent with the experience of higher education institutions in South Africa and Tanzania (Amadi-Echendu et al., 2016; Fulgence, 2015; Iipinge & Shimpanda, 2022).

Ecosystem fragmentation and weak linkages appeared in 19/28 sources. University hubs often sit close to research and talent but remain weakly connected to firms, investors, customers and government implementation systems. De Jager et al. (2017) showed that university incubation and commercialisation require sustained institutional and stakeholder support, while Kamuriwo et al. (2025) and Agbodjah et al. (2023) emphasised fragmented partnerships, weak ecosystem coordination and the need for locally adapted university entrepreneurship systems. The problem is therefore not simply a lack of entrepreneurship activity, but weak movement between academic knowledge, venture development, and external markets.

Financing and sustainability of hubs were covered in 18/28 papers and infrastructure/geographical access in 16/28. Seed and operational funding are always lacking in cases of students' and researchers' ventures,

whereas university programs rely on scarce funding. Digital infrastructure, laboratories, equipment and connectivity vary greatly, especially outside big urban universities. In Zahoro and Banele (2024), capital, market, management and follow-up problems were observed among digital incubatees at the University of Dar es Salaam ICT Innovation Hub. Chitamba et al. (2025) similarly identified capacity, funding and knowledge gaps within a South African university incubator.

Policy, regulation, and institutional restrictions have been mentioned in 14/28 of the reviewed literature. In turn, hub design and development stages have been mentioned in 8/28 of the reviewed literature. The institutional approach, motivational aspects, procurement process, intellectual property policy, and technology transfer capability determine the framework of institutional support within universities. According to Malele et al. (2019), low awareness of entrepreneurship and innovation policies and platforms exists at South African Universities of Technology. Mohamed et al. (2024) have also highlighted funding, bureaucracy, intellectual property, and managerial issues at Egyptian incubators.

3.4 Policy Implication Domains

Table 4

Domains of Policy Implications for Implementation

Policy domain	Sources, n (%)	Policy implication
Curriculum and institutional transformation	27 (96.4%)	Incorporate experiential and digital entrepreneurship; develop mentor and staff capabilities; implement institution-wide entrepreneurship initiatives.
Partnerships and Governance of Ecosystems	23 (82.1%)	Establish cross-sector partnerships; build connections with alumni, businesspeople, financiers and donors; build hub-to-hub collaboration.
Sustainability and Investment Finance	22 (78.6%)	Diversify the funding sources for the program; raise more seed, venture and alternative financing; improve investment readiness.
Venture Development Incubation Quality and Progress	21 (75.0%)	Adopt venture selection and mentorship process; improve market reach and follow up; develop commercialization and intellectual property services.
Infrastructure and Digital Inclusion	18 (64.3%)	Develop physical infrastructure like power, broadband, laboratories and shared spaces; improve access from rural and regional locations as well as virtually.
National and Regional Coordination	18 (64.3%)	Create national implementation frameworks and stronger regional coordination platforms.
Inclusion and local responsiveness	17 (60.7%)	Support underserved founders; use locally adapted models; expand sector-specific, rural and socially responsive programmes.
Monitoring, evidence and learning	17 (60.7%)	Use outcome-based KPIs; strengthen longitudinal evaluation; build data systems beyond activity counts.
Policy and regulatory reform	10 (35.7%)	Clarify startup/incubation policy; streamline licensing and taxation; strengthen IP, legal, data and cybersecurity protection.

The most significant policy convergence was in relation to curriculum and institutional reforms (27/28), partners and ecosystem management (23/28), sustainable finance and investment (22/28), and incubation quality and ventures development (21/28). The fact that these spheres repeat shows that university policies

have to be formed taking into account not only curriculum changes but also institutional strategies, commercialization, and partnerships, and not just incubation activities.

3.5 Regional Patterns and Evidence Gaps

Studies on Southern Africa, specifically South Africa, present a cluster of studies focusing on universities, institutional strategies, knowledge about platforms, entrepreneurship, and commercialization. West African studies, notably those from Nigeria and Ghana, focus more on theoretical courses, financial challenges, digital entrepreneurship, and poor university-industry linkages. East African evidence focuses on digital transformation, university ecosystems, and how challenging it is to convert hub membership into viable enterprises. There is only a limited number of studies in North Africa in this cluster, and these studies are from Egypt.

A considerable number of university-related studies are contextual and not direct evidence of hubs, while empirical studies are one institution at a time or cross-sectional in nature. Very few studies have attempted to track the ventures beyond the completion of the programme, or to compare university-based hub initiatives that exist within the same city or country.

4.0 Discussion

4.1 University Innovation Hubs as Institutional Ecosystem Nodes

The university-focused synthesis shows that the central question is not whether universities should support entrepreneurship, but how they embed innovation support within the wider institution. Entrepreneurial ecosystem theory is useful because a university hub operates at the intersection of knowledge, talent, finance, networks, infrastructure and institutions. Even though a hub is capable of creating new ideas, competitions and engaging students, if the curriculum is purely theoretical in nature, the laboratory facilities are inaccessible, the technology transfer capabilities are poor or there are no customers/investors outside, the output will not be successful business ventures. This is the reason why the evidence moves away from looking at the physical hub and into the surrounding institution

s.

This becomes particularly important when it is noted that the nature of skills as well as that of curricular difficulties is taken into consideration. Entrepreneurship programs at universities are created by means of an educational perspective while venture development involves continual exposure to the market and customers, technology development, financial and managerial aspects. This is the reason why research always points towards the utilization of experiential learning curriculum, mentoring, internships, competitions and interdisciplinary projects.

4.2 Commercialisation, Incentives and External Connectivity

The findings also highlight a commercialization gap. There is a need to make use of universities' research, labs, and intellectual properties for entrepreneurial success. However, all these require the ability to manage aspects such as ownership, licensing, spin-off companies, seed money, industry relations, and commercialization. As stated by de Jager et al. (2017) and Mohamed et al. (2024), commercialization requires resources and effective management, along with some external players. The policy needs to address issues about the roles of innovation centers, incubators, and technology transfer offices; intellectual property rights and income sharing mechanisms; and entrepreneurship and industry cooperation incentives.

External connectivity is equally important. The high recurrence of ecosystem-fragmentation challenges indicates that university hubs cannot be evaluated as closed campus programmes. Formal referral pathways to industry mentors, independent accelerators, investors, procurement opportunities and customer networks are needed when ventures move beyond early technical development. Conversely, universities can provide laboratories, specialist expertise and research partnerships to external programmes. The university hub is most useful when it functions as a gateway rather than an institutional endpoint.

4.3 Policy Architecture for University-Based Digital Entrepreneurship

The policy framework should include the following five components. First, entrepreneurship must be woven into various academic disciplines through venture learning, both practically and digitally. Second, sustained funding is required to sustain hubs, laboratories and early proof of concept activities. Third, institutions need clear commercialisation and intellectual property systems, with staff able to support spin-offs and licensing. Fourth, universities should formalise partnerships with firms, investors, government agencies, alumni and external incubators. Lastly, the monitoring process has to shift its focus from attendance and contests to ventures' progress, survival, funding, earnings, innovations generated, and employment and inclusion. This set of policies seems to be the right path for policy, although it does not prove their effectiveness.

4.4 Contribution of the Study

This review contributes a focused institutional synthesis of university-based digital entrepreneurship support in Africa. It separates the challenges of higher-education innovation structures from those of independent incubators and shows that university-specific barriers arise from curriculum design, institutional strategy, academic incentives, commercialisation capacity and external connectivity. It also quantifies the recurrence of challenge and policy domains within a transparent university-focused subset of the supplied evidence map while retaining the distinction between direct and contextual evidence.

5.0 Implications of the Study

5.1 Implications for Practice

University leaders and hub managers should define the purpose and stage of support provided by each programme. Ideation, prototyping, incubation, commercialisation and acceleration require different capabilities and outcome measures. Practical entrepreneurship should be linked to real customer problems, industry mentors, laboratories, business registration, intellectual property advice, and market testing. Programmes should establish referral arrangements so that ventures can move to specialised external accelerators or investors when they outgrow campus support.

5.2 Implications for Policy

For higher education and innovation policy, institutional support needs to be provided for multiple years on entrepreneurship in universities, policies on intellectual property rights and revenue sharing, standards for curricula, staff incentives for commercialization, seed funding and partnerships between universities and industry and government. Funding for public ventures should encourage achievement and not just participation and numbers of participants involved in the venture. On national level, access to external funds and procurement and other resources should become easier for universities.

5.3 Implications for Research

Subsequent research needs to differentiate between university-owned hubs, university-affiliated hubs and partnership-based hubs. There is a need for longitudinal research that traces the ventures over time and tracks survival rates, revenues, jobs, investments and intellectual property transfers. Comparisons between universities in the same country would assist in disentangling institutional and national ecosystem differences. More research is needed from North and Central Africa, from Francophone countries, from rural universities and from founder communities that have been neglected.

6.0 Conclusion

The innovation incubators located within universities could enhance the digital entrepreneurship development in Africa through a combination of entrepreneurial education and research, laboratories, technical skills and start-up ventures. However, as revealed by the literature review, these institutions would only be able to contribute to the process provided there exists an enabling institutional environment outside universities. In this regard, theoretical-practice gap, lack of commercialization mechanisms, insufficient financing, poor infrastructure, partnerships and vague incentives may hinder the conversion of the knowledge generated by university institutions and entrepreneurial ideas into sustainable businesses.

This literatur

e review does not demonstrate that university hubs produce better venture results. The empirical work is too disparate and too frequently cross-sectional or single case for that claim to be made. There is, nonetheless, a clear trend: a university hub has a greater chance of making a difference if it is placed within the context of learning, research, commercialization, and ecosystem interaction.

7.0 Limitations

The narrower literature on universities is unevenly distributed geographically and is skewed towards the findings derived from a few African nations, in particular South Africa, Nigeria and Kenya. Quite a few of the selected sources are contextual studies of higher education rather than direct analysis of the university innovation hub. Most empirical studies are one-off and/or cross-sectional. Conceptual ambiguity is an additional limitation. University innovation hubs, incubators, entrepreneurship centres, technology-transfer units and accelerators are not consistently defined, and some institutions combine several functions. The analytical boundary used here therefore depends on the organisational focus reported in the supplied extraction matrix.

Ethics Statement

This study synthesised published and publicly accessible literature and did not involve primary data collection from human participants or animals. Therefore, research ethics approval was not required for the review itself.

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Table 5

Data extraction

This table reproduces, in condensed form, the source-level information used for the institutional synthesis. It is derived from the extraction matrix supplied with the parent manuscript. The entries summarise reported findings and recommendations from heterogeneous evidence and should not be interpreted as an effectiveness ranking.

S/N	Source and country	Design/sample	Reported challenges	Policy implications
1	(Rukarwa, Mensah & Egeru, 2018), Uganda, Zimbabwe, Kenya, Malawi, Rwanda, Benin, DRC, Madagascar and Ghana	Descriptive documentary review; 22 proposals.	The institutions were weakly linked to the requirements of the businesses, while curriculum and research were poorly oriented towards agribusinesses. The proposals did not include clear hub designs, financial and cohort models, and weak gender integration, safeguards and innovation.	Clarification of hub design, training, finance and cohort model guidance. Technical assistance and monitoring should be provided, and emphasis on gender and environmental safeguards, better alignment of curriculums and the private sector, and innovative models allowed.
2	(Muazu & Bello, 2025), Nigeria	Quantitative; 53 students.	Seminar approach alone was insufficiently effective. Financing, facilities, mentors, program management and different startup requirements influenced results, while the university -only framework narrowed the applicability of the findings.	Incorporating the incubation process into curriculum, financing and mentoring, internships and other practical exercises, business plan competitions and evaluation of programs tailored for different categories of students.
3	(Kamuriwo, Jones, Kinoti & Marshall, 2025), Ghana, Nigeria, Kenya and South Africa	Case reviews of program-based transnational projects; 24 projects and 9 cases reviewed.	High level of unemployment among youths, inadequate entrepreneurship education, lack of funds, poor infrastructure and resources that undermined ecosystems. Ineffective collaboration, fragmentation of curricula, lack of policies	, ineffective rural structures and rigidity of faculty members were some of the findings. Financing of ecosystems that are based on collaboration, virtual and blended delivery of education, adaptation of the models to local context, experiential learning, faculty support and improved infrastructure and financing.
4	(Comunian et al., 2023), Kenya, Nigeria and South Africa	Participatory impact review; 3 hubs, 493 workshop participations, 45 interviews and 25 funded projects.	Creative economies had low policy recognition and weak links among universities, entrepreneurs and policymakers. Funding, business support, skills, university access and reliable internet were limited, particularly for women and minority groups.	Provide sustained finance and business support, strengthen mentoring and university-sector platforms, recognise creative careers, promote inclusion and institutionalise regional and international partnerships.

S/N	Source and country	Design/sample	Reported challenges	Policy implications
5	(Zahoro & Banele, 2024) Tanzania	Mixed Methods; 42 participants (34 survey respondents and 8 interviewees).	Digital start-ups faced high failure rates, limited capital, management skills and markets, weak incubation and commercialisation, gender imbalance, unstable funding and inadequate follow-up.	Provide continuous hub funding, monitoring and follow-up. Combine mentoring, marketing, finance, business development and external partnerships to support venture survival and growth.
6	(Amadi-Echendu, Phillips, Chodokufa & Visser, 2016), South Africa	Narrative literature review; Not reported.	Entrepreneurs struggled to apply theoretical knowledge and lacked finance, marketing skills, technology and practical exposure. University support was fragmented, while high costs, bad debts and weak reporting contributed to business failure.	Integrate entrepreneurship across programmes, expand internships and practical learning, incubate student and staff ventures, coordinate commercialisation support and strengthen university-industry-government exchange.
7	(Yusuf, 2025), Nigeria	Conceptual literature review; Not applicable.	Teacher-education curricula were outdated, and entrepreneurship was poorly implemented as a general course. Practical skills, leadership, funding, policy support and ecosystem links were insufficient.	Embed edupreneurship through practical and technology-supported learning, create supportive policies, incubators and funding, strengthen partnerships and monitor outcomes over time.
8	(Cunningham, 2015), Cameroon, Egypt, Kenya, Malawi, Mozambique, South Africa, Tanzania and Uganda	Qualitative; 9 informants.	Low political priority, limited resources and weak awareness reduced support for ICT entrepreneurship. Skills, mentors, affordable access, rural infrastructure, locally suitable incubation, and intellectual property protection were also inadequate.	Align ICT entrepreneurship with national priorities, improve awareness, skills, rural access and intellectual-property protection, and coordinate public, private, university, community and donor support.
9	(Cunningham, Cunningham & Ekenberg, 2016), Cameroon, Egypt, Kenya, Malawi, Mozambique, South Africa, Tanzania and Uganda	Qualitative; 9 informants.	Policy commitments were weakly implemented, with limited resources, expertise, mentors and digital access. Rural infrastructure, corruption concerns, cybersecurity, isolated hubs and uncertain programme sustainability further constrained innovation.	Convert policy into funded and accountable programmes. Develop mentors and practical training, support multi-sector partnerships and seed finance, improve rural infrastructure and adapt initiatives to local needs.

S/N	Source and country	Design/sample	Reported challenges	Policy implications
10	(De Jager, Mthembu, Ngowi & Chipunza, 2017), South Africa	Institutional case review; 8 incubatees were described. No formal research sample was reported.	Incubated firms depended on university and government contracts and lacked venture capital and diverse markets. Commercialising university research required sustained resources, skilled staff, facilities and broad institutional and stakeholder support.	Employ institution-level strategies, practical entrepreneurship education, and incubation/commercialization resources. Enhance stakeholder relationships, market diversification, venture capital, and performance monitoring.
11	(Hakizimana & Muathe, 2023), Kenya	Descriptive study; Not empirically tested.	The ecosystems for entrepreneurship remained slow and inconsistent, and there was need for substantial institutional reforms, professional mentoring and coordination of the budgeting process. The desk study relied purely on secondary data, and it did not undergo empirical testing.	Coordination of digital transformation, institutional and budgetary policies; Empirical policy testing using practical entrepreneurship education and professional mentors, improved university management and entrepreneurial ecosystems, and empirical testing of policies.
12	(Attuquayefio, Aboagye-Darko & Okronipa, 2024), Ghana	Quantitative analysis; 312 valid responses.	Challenges with digital infrastructure, affordability, internet connections, cybersecurity, and digital skills among others hindered its implementation. Traditional business environment and the focus only on institution and students restricted its usage and generalization.	Development of digital infrastructure and affordable internet access, training of students on digital skills and use of incubators to link social media to venture creation.
13	(Salmi, Amegah & Shinde, 2025), Sub-Saharan Africa	Mixed Methods; 174 tertiary institutions.	Few institutions offered advanced digital programmes, enrolment and women's participation were low, and lecturer capacity was limited. Poor internet, devices, laboratories, curricula, industry links, research and stable funding reduced quality.	Adopt national digital and science, technology, engineering, arts and mathematics plans. Invest in electricity, broadband, laboratories and devices, fund advanced programmes, improve faculty and quality systems, reduce gender gaps and expand industry partnerships.
14	(Agbodjah, Murithi, Gakii, Asante-Darko & Kwarteng, 2023), Sub-Saharan Africa	Mixed methods approach; 2 organizations, 45 approx. participants and 27 organizational leaders.	Differences existed in leadership, finance, infrastructure, faculty capability, market, and external engagement. The incubators lacked finances and mentors; intellectual property and benefit sharing mechanisms were poorly defined; partnerships were disjointed; and there was some sample inconsistency.	Use diagnostics models, align policy for governance, intellectual property, finance, and markets, improve incubators and faculty, clarify benefit sharing, secure diversified funding and evaluate ecosystem impacts.

S/N	Source and country	Design/sample	Reported challenges	Policy implications
15	(Ncanywa & Dyantyi, 2022), South Africa	Thematic literature review; Not stated.	Experiential learning lacked support due to lack of entrepreneurial spirit and inadequate technological support within educational institutions.	Integrate entrepreneurship into the curriculum, provide training for educators, incorporate digital and experiential learning methods, set common goals for leadership and sustainability, and develop partnerships between universities, governments, industries and communities.
16	(Mthethwa, Kolanisi & Naidoo, 2025), South Africa	Literature review; 39 sources.	Adoption of artificial intelligence technologies by institutions has been inconsistent due to inadequate infrastructure facilities, accessibility, literacy and financial and institutional capacity. The rigorous curriculum, fragmented policy framework, silo approach to disciplines and threats such as bias, privacy and equity issues have prevented the adoption of artificial intelligence.	Develop policies on artificial intelligence entrepreneurship, invest in infrastructure equally and develop faculty skills for the adoption of artificial intelligence technologies and innovations.
17	(Okechukwu, 2025), Nigeria	Mixed Methods; 520 participants (350 students, 150 faculty members and 20 key informants).	Curricula were theoretical and outdated, classes were large, and practical facilities, seed finance and technology were insufficient. Faculty business experience, mentoring, industry engagement and post-course support were also weak.	Modernise curricula and practical teaching, train faculty, fund incubators and seed finance, protect student intellectual property, simplify registration and promote university-industry partnerships.
18	(Mulaudzi, 2020), South Africa	Quantitative; 35 students.	Students received limited guidance on registration, idea validation, equipment and workspace. Participation was low, the programme reached few students, and post-graduation support was weak.	Expand practical entrepreneurship across the curriculum, widen access to the hub, increase grants and sponsorships, align staff with the mission and strengthen post-graduation support.
19	(Chitamba, Nyamurima, Mugano & Mutambara, 2025), South Africa	Quantitative; 52 respondents and 10 pilot participants.	Low programme awareness, time and geographic barriers, few qualified mentors and limited finance constrained ideation. Bureaucracy, cultural resistance, fragmented networks and weak post-programme follow-up reduced implementation.	Use blended finance, structured mentoring and knowledge networks, widen programme access and infrastructure, and maintain follow-up and long-term monitoring.

S/N	Source and country	Design/sample	Reported challenges	Policy implications
20	(Fulgence, 2015), Tanzania	Mixed Methods; 19 institutions and 234 respondents (52 managers, 6 educators and 176 graduate teachers).	Management awareness, funding, specialist staff, books and other resources were limited. Large classes, weak institutional coordination, and treating entrepreneurship as a business-only add-on reduced effectiveness.	Commit resources across disciplines, use experiential teaching and practitioners, train staff, provide learning facilities and create an institutional unit to coordinate entrepreneurship education.
21	(Iipinge & Shimpanda, 2022), Namibia	Qualitative; 6 educators.	Educators served diverse learners but had little influence over curricula and needed more practical industry experience. Existing policies did not provide a coherent framework, and the small sample limited generalisation.	Tailor curricula to learner needs, combine theory and practice, train educators in entrepreneurship and industry, and establish coherent institutional and national teaching frameworks.
22	(Kamel, 2017), Africa and Egypt	Narrative literature review; No formal research sample.	Weak digital infrastructure, regulation, finance and human capital constrained entrepreneurship. Ecosystems were fragmented, programme scalability was uncertain and short incubation periods could push products to market too early.	Invest in digital infrastructure and human capital, create enabling regulation, mobilise public-private finance, expand university incubators and networks, and use phased implementation and performance measures.
23	(Malele, Mpofu & Muchie, 2019), South Africa	Qualitative; 129 participants (44 staff members and 85 students).	Students and staff had low awareness of available policies and platforms, especially undergraduates and support staff. Communication was not systematically evaluated; internal funding was limited and the study excluded academics.	Improve communication and visibility of policies, use tested digital channels, evaluate awareness regularly, create internal funding systems and include academic staff in future assessments.

S/N	Source and country	Design/sample	Reported challenges	Policy implications
24	(Kimanzi, 2020), South Africa	Quantitative; 183 students.	Students questioned the adequacy of infrastructure, funding and venture capital. Few idea competitions, limited business experience, and low risk orientation reduced entrepreneurial activity, and the single case limited generalisation.	Strengthen university-business collaboration, practical training and mentoring, organise innovation competitions, teach creativity and problem-solving, and create routes from ideas to sustainable ventures.
25	(Mohamed et al., 2024), Egypt	Quantitative; 317 entrepreneurs.	Incubators faced inadequate funding, weak sustainability planning, localised marketing, bureaucracy and poor procedures. Intellectual property gaps, tax pressures, weak entrepreneurial culture, and talent or start-up migration also affected performance.	Increase public and private finance, improve strategy and operations, broaden market and stakeholder partnerships, strengthen intellectual property and project evaluation, and connect incubatees to investment programmes.
26	(Idowu, 2025), Nigeria and Africa	Literature review narrative; Not reported.	Inadequate rural connectivity, energy, hardware, financing, and government investment. Digital entrepreneurship education hampered by cultural resistance, gender discrimination, inappropriate online courses, and lack of policy implementation .	Increase broadband availability and solar energy, create locally specific curricula and apprenticeships, mentor, promote gender inclusiveness, and co-ordinate African digital entrepreneurship efforts.
27	(Iwara, 2025), Cameroon, Kenya, Nigeria, South Africa and Sudan	Qualitative; 15 academics from 10 universities.	Theory-heavy curricula and irrelevant skills weakened employability. Poor university-industry links, weak rural infrastructure, limited expertise and resources, unemployment and brain drain constrained rural development.	Reform curricula around practical local skills, strengthen innovation hubs and indigenous entrepreneurship, formalise industry, community and alumni partnerships, and test the model more widely.

S/N	Source and country	Design/sample	Reported challenges	Policy implications
28	(Nor, Mohamed, Barre & Hussein, 2025), Somalia	Quantitative; 201 respondents.	The model explained limited variation, while cross-sectional and purposive data restricted causal claims and generalisation beyond three Mogadishu universities.	Use practical curricula, simulation, and service learning; increase government funding; and build coordinated partnerships among universities, businesses, non-governmental organisations, and communities.

READINESS AND PERCEPTIONS TOWARDS TECHNOLOGY INTEGRATION IN BUSINESS EDUCATION: A STUDY OF STUDENTS WITHOUT PRIOR EXPOSURE TO AI, SIMULATION AND VIRTUAL REALITY IN TERTIARY INSTITUTIONS IN RIVERS STATE

By

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Abstract

This study examined the readiness and perceptions of Business Education students towards the integration of emerging technologies in tertiary institutions in Rivers State. The population of the study comprised Business Education students with no prior exposure to these technologies. A sample of 292 students were selected using stratified random sampling to ensure adequate representation across the participating institutions. The study adopted a quantitative cross- sectional survey design and employed a structured questionnaire developed from the Technology Acceptance Model (TAM) constructs. Data were analyzed using (mean and standard deviation) to determine the level of students' readiness and perceptions. A Cronbach's Alpha value of 0.70 was used to assess the reliability of the measurement constructs. Pearson's correlation analysis examined the relationships among the study variables, and multiple linear regression was employed to determine the extent to which the TAM constructs predicted students' behavioral intention to adopt these technologies in Business Education. The findings revealed that students generally demonstrated positive readiness and favorable perceptions towards technology integration despite having no prior exposure to these technologies. Perceived usefulness, perceived ease of use, and readiness were found to be significant predictors of students' behavioral intention to adopt AI-supported learning, while perceived challenges had a weaker influence. The study concludes that Business Education students are receptive to emerging educational technologies and recommends the gradual integration of AI, simulation, and Virtual Reality into Business Education curricula through adequate infrastructure, staff training, and institutional support to enhance digital competence and experiential learning.

Introduction

The 21st century has witnessed an unprecedented digital revolution that is reshaping every facet of human endeavor, with education being one of the most profoundly affected sectors. In particular, the emergence of transformative technologies such as Artificial Intelligence (AI), computer simulation, and Virtual Reality (VR) has created new possibilities for teaching and learning. These technologies provide immersive, interactive, and personalized learning experiences that enhance students' engagement, critical thinking, and problem-solving abilities, while complementing traditional pedagogical approaches (Organization for Economic Co-operation and Development (OECD, 2023; UNESCO, 2023; Holmes et al., 2019). The integration of transformative technologies in education, yields numerous positive outcomes. For instance, it enhances learning and retention compared to conventional methods by making the content more interesting and relevant (Murundu et al. 2017; Situma, 2016). According to Radianti et. al. (2020), virtual reality (VR) make learning active especially for students without prior technology exposure by bridging the gap between theory and practice. They affirmed that VR creates immersive environment that makes abstract concepts real. Students pay more attention and remember more because they 'experience' rather than just 'read'. Evidence from Radianti et al. (2020) work, indicate that VR increases student's engagement and motivation compared to traditional lectures, leading to better learning outcomes. Similarly, Simulation, one of the transformative technologies also allows students to practice in a 3D space. This learning by doing improves conceptual understanding and long term retention. Simulations also allow students to repeat task until they master them. This accommodates students with different learning speeds (Radianti et al.2020; Makransky & Peterson, 2021). The integration of digital technologies in educational Institutions, has been identified as a pivotal strategy for enhancing educational quality (MOES, 2025).

According to Johnson et al. (2024), transformative technologies have advanced so rapidly that it has significantly transformed the higher Education landscape, especially in teaching, learning and research. Transformative technologies such as AI, computer simulations and virtual realities are recent disruptive tools that are capable of producing human-like text, images and analytical outputs. These tools

are increasingly being adopted by students in tertiary institutions to support academic activities. Tlili et.al. (2023), emphasized that transformative digital tools provide opportunities for improving educational experiences through personalized learning, immediate feedback and academic support. They noted that VR helps with teaching/learning strategies and engagement, and that simulation is now widely used in fields of education. They further asserted that VR enhances understanding through interactive 3D models and improve memory retention. Although these technologies provide learning experiences, they however observed that challenges such as accuracy, ethical use, privacy concerns, perceptions, and the possibility of students using these tools to complete academic tasks without genuine engagement exist. Therefore, while digital tools such as AI, computer simulation and virtual realities can improve efficiency in teaching and learning, their effectiveness depends on perceptions, responsible usage and institutional guidelines.

Although technology has become central to teaching and learning in the 21st century, not all students enter academic programmes with prior exposure to basic digital tools for online learning. The adoption of technology for these students without prior digital technology experience can be an opportunity and a challenge to them. This is because their adaptation and performance may largely depend on their readiness, access, perception, anxiety and their believe in the usefulness and ease of use of these tools. Adeyemi, Lamidi, & Ayeni, (2025), observed that in Nigeria, the adoption of AI in education is still in its early stages. They further asserted that Emerging studies indicate varying levels of awareness and adoption among educators. In the field of Business Education, where practical competencies in management, entrepreneurship, accounting, marketing, and decision-making are essential, the integration of these technologies offers significant opportunities to bridge the gap between theoretical knowledge and real-world application (Radianti et al., 2020; Aldrich, 2009).

In Africa, and particularly in Nigeria, the need for digital transformation in education has become increasingly urgent. The National Policy on Education emphasized the need for integration of Information and Communication Technologies (ICT) into teaching and learning at all levels of education (Federal Republic of Nigeria, 2013). Similarly, the National Digital Economy Policy and Strategy, advocates the adoption of digital technologies to improve teaching, learning, and workforce development in higher education. Despite these policy initiatives, many tertiary institutions in Nigeria continue to rely predominantly on conventional lecture-based instructional methods, limiting students' exposure to innovative learning technologies (Federal Republic of Nigeria, 2020; UNESCO, 2023). This challenge is particularly evident in Business Education programmes, where graduates are expected to possess digital competencies that align with the demands of the Fourth Industrial Revolution and the evolving digital economy (World Economic Forum, 2023).

Rivers State, located in the oil-rich Niger Delta region of Nigeria, is home to several tertiary institutions offering Business Education programmes. However, many students enrolled in these institutions have had limited or no prior exposure to advanced educational technologies such as AI-driven learning systems, business simulation software, and Virtual Reality learning environments. Many of these students especially those from rural areas or low-income backgrounds, begin tertiary education with little or no prior experience of these technologies. This lack of exposure raises important questions regarding students' readiness, perceptions, and willingness to adopt technology-enhanced learning. Understanding these factors is critical for successful curriculum innovation, effective technology implementation, and the development of graduates equipped with the digital skills required in contemporary workplaces (Radianti et al., 2020; Zawacki-Richter et al., 2019).

Theoretical underpinning

The theoretical foundation of this study is based on Diffusion of Innovation theory and Technology Acceptance Model (TAM). Diffusion of innovations is a theory that seeks to explain how, why, and at what rate new ideas and technology spread. The theory was popularized by Everett Rogers in 1962. Diffusion research examines how ideas are spread among groups of people. Rogers explains how innovations are adopted over time within social systems. Attributes such as relative advantage, compatibility, and complexity influence adoption decisions. AI tools perceived as advantageous and compatible with existing teaching practices are more likely to be adopted by teachers, while high complexity or lack of observable benefits can hinder uptake. This framework helps account for the social and structural dynamics influencing AI integration. In this study, perceived usefulness and perceived ease of use from TAM are operationalized through teachers' perceptions of AI effectiveness, ease of use, and instructional value, while Diffusion of Innovation attributes such as compatibility, complexity, and relative advantage inform the assessment of institutional and infrastructural factors influencing readiness.

The Technology Acceptance Model (TAM), developed by Davis (1989), posits that an individual's intention to adopt and use a technology is primarily influenced by two determinants: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). These constructs influence users' attitudes toward technology and subsequently their behavioral intention to use it (Davis, 1989). Later extensions of the model incorporated additional constructs, including facilitating conditions, subjective norms, and behavioral intention, to improve its explanatory power across different technological contexts (Venkatesh & Davis, 2000; Venkatesh et al.,
2003). Building on these developments, this study adopts an extended TAM framework by incorporating students' readiness, perceptions, and perceived challenges alongside the traditional TAM constructs to better understand factors influencing the acceptance of AI, simulation, and Virtual Reality in Business Education.

Although research on educational technology has expanded considerably over the past decade, empirical studies examining the readiness and perceptions of students with no prior experience of AI, simulation, and Virtual Reality remain limited, particularly within the Nigerian higher education context. Existing studies have largely focused on technology adoption after implementation or have examined lecturers' perspectives rather than students' preparedness before exposure to these emerging technologies (Zawacki-Richter et al., 2019; Holmes et al., 2019; Alam, 2021). Consequently, there remains a significant knowledge gap concerning students' initial acceptance and readiness to adopt these innovations, especially as governments and institutions increasingly invest in digital infrastructure to support quality education and sustainable development. The findings of this study are expected to contribute to the growing body of knowledge on digital transformation in higher education and provide practical insights for policymakers, institutional administrators, curriculum developers, and educators seeking to prepare Business Education graduates with the digital competencies required for success in the modern knowledge economy.

Purpose of the Study

The main objective of this study is to examine the readiness and perceptions of Business Education students without prior exposure to Artificial Intelligence, simulation, and Virtual Reality in selected tertiary institutions in Rivers State.

Specifically, the study seeks to:

- Assess students' readiness and behavioral intention toward technology integration.
- Evaluate students' perceptions of the usefulness and ease of use of AI, simulation, and Virtual Reality.
- Identify the perceived challenges affecting the adoption of these technologies.
- Examine the relationships among the Technology Acceptance Model constructs and determine their influence on students' behavioral intention using correlation and multiple regression analyses.
- Provide evidence-based recommendations for the effective integration of Artificial Intelligence, simulation, and Virtual Reality into Business Education curricula.

Research Questions

This study therefore seeks to address the following research questions:

1. What is the level of readiness of Business Education students toward the integration of Artificial Intelligence, simulation, and Virtual Reality in their learning?
2. How do students perceive the usefulness, ease of use, these emerging technologies?
3. What are the potential challenges associated with these technologies?
4. What relationships exist among readiness, perceived usefulness, perceived ease of use, perceptions, perceived challenges, and behavioral intention to adopt these technologies?
5. What are the implications of these findings for curriculum development and educational policy in Business Education?

Research Hypotheses

1. There is no significant relationship between readiness, perceived usefulness, perceived ease of use, perceptions, perceived challenges and behavioral intention of business education students in adopting the use of AI, Simulation and Virtual reality in their learning**.**

Methodology

This study adopted an explanatory sequential mixed-methods research design. The quantitative phase was conducted first using a cross-sectional survey to assess students' readiness and perceptions towards the integration of Artificial Intelligence (AI), simulation, and Virtual Reality (VR) in Business Education. The quantitative findings were subsequently complemented with qualitative data obtained through semi-structured interviews and Focus Group Discussions (FGDs) to provide a deeper understanding and explanation of the survey results. The cross-sectional survey enabled data to be collected from respondents at a single point in time. The study was conducted in three tertiary Institutions in Rivers State, Nigeria, where Business Education programmes are offered. Rivers State is one of the major educational and commercial hubs in the Niger Delta region and provides an appropriate setting for investigating students' readiness for emerging educational technologies**.** The target population comprised undergraduate students enrolled in Business Education programmes in three tertiary institutions in Rivers State; Federal College of Education (Technical), Omoku; Ignatius Ajuru University of Education and Rivers State University. Only students who reported having no prior exposure to Artificial Intelligence (AI), business simulation software, or Virtual Reality (VR) technologies were included in the study. A total of 292 valid responses were obtained and used for analysis. Stratified random sampling was employed to ensure adequate representation across the participating institutions and different levels of study**.**

Data were collected using a structured questionnaire titled "Readiness and Perceptions Towards Technology Integration in Business Education Questionnaire." The instrument was developed based on the Technology Acceptance Model (TAM) proposed by Davis (1989) and adapted from validated instruments used in previous educational technology studies (Davis,
1989; Venkatesh & Davis, 2000; Zawacki-Richter et al., 2019). The questionnaire consisted of
two sections. Section A: Demographic Information, Gender, Age, Institution, Level of Study and Department. Section B: Technology Acceptance Constructs. The questionnaire contained forty (40) items distributed across six constructs: Readiness (8 items), Perceived Usefulness (7 items), Perceived Ease of Use (6 items), Perception/Attitude (7 items), Perceived Challenges (7 items) and Behavioral Intention (5 items). Responses were measured using a five-point Likert scale: 5 = Strongly Agree, 4 = Agree, 3 = Undecided, 2 = Disagree and 1 = Strongly Disagree.

Content validity was established through expert review to ensure that the questionnaire adequately measured the constructs of interest. The internal consistency of each construct was assessed using Cronbach's Alpha coefficient. A Cronbach's Alpha value of 0.70 was obtained and considered acceptable for indicating satisfactory reliability of the measurement instrument. The questionnaire was administered both physically and electronically using Google Forms. Prior to participation, respondents confirmed that they had no previous experience using Artificial Intelligence, simulation software, or Virtual Reality in their learning activities. Participation was voluntary, and informed consent was obtained from all respondents before data collection. Confidentiality and anonymity were maintained throughout the study, and the collected information was used strictly for academic research purposes**.**

Data collected were analyzed using Python programming language (Version 3.x) with the pandas, NumPy, SciPy, and stats models libraries. Means and standard deviations were computed to determine the level of students' readiness, perceived usefulness, perceived ease of use, perceptions, perceived challenges, and behavioral intention towards the adoption of Artificial Intelligence, simulation, and Virtual Reality. Higher mean values indicate stronger agreement with the questionnaire statements. Pearson correlation analysis was performed to examine the strength and direction of the relationships among the six study constructs of Readiness, Perceived Usefulness, Perceived Ease of Use, Perception, Perceived Challenges Behavioral Intention. Correlation coefficients (r) range from −1.00 to +1.00, where values closer to +1.00 indicate stronger positive relationships, values closer to −1.00 indicate stronger negative relationships, and values around zero indicate little or no linear relationship. Multiple linear regression analysis was employed to determine the extent to which the independent variables: Readiness, Perceived Usefulness, Perceived Ease of Use, Perception, Perceived Challenges, predict the dependent variable; Behavioral Intention. The regression model was evaluated using: Coefficient of Determination (R^2), Adjusted R^2, Standardized Beta

Coefficients (β), F-statistic, p-values. A significance level of 0.05 was adopted for all statistical analyses.

Results and Discussion

3.1 Descriptive Statistics

The descriptive analysis revealed generally high mean scores across all constructs measured on a 5-point Likert scale. As shown in Table 1 below:

Table 1: Mean and Standard Deviation of Constructs

Construct	Mean	SD	Interpretation
Readiness	4.325	0.571	Very High
Perceived Usefulness	4.247	0.552	Very High
Ease of Use	4.119	0.568	High
Perception	4.153	0.568	High
Challenges	4.209	0.600	High
Behavioral Intention	4.221	0.564	High

The results in Table 1 reveal consistently high levels of positive responses across all constructs. On the 5-point Likert scale used in this study (where 1 = Strongly Disagree and 5 = Strongly Agree), all constructs recorded mean scores above 4.0, indicating strong agreement among respondents. **Readiness** (M = 4.325, SD = 0.571) recorded the highest mean score. This suggests that students are **highly prepared and willing** to learn and adopt AI, simulation, and VR technologies in their Business Education programme. The relatively low standard deviation indicates considerable consensus among the respondents. **Perceived Usefulness** (M = 4.247, SD = 0.552) also showed a very high mean. Students strongly believe that these technologies will improve their learning experience, enhance understanding of business concepts, increase productivity, and better prepare them for the modern workplace. This finding is particularly encouraging as perceived usefulness is one of the strongest predictors of technology adoption according to the Technology Acceptance Model (TAM). **Behavioral Intention** (M = 4.221, SD = 0.564) was also very high. This implies that the majority of students intend to use AI tools, participate in simulation-based learning, and engage in VR activities when these become available in their institutions. **Challenges** (M = 4.209, SD = 0.600) had a high mean score. Students acknowledged significant potential barriers such as high cost of equipment, erratic power supply, poor internet connectivity, and lack of training. The slightly higher standard deviation here (0.600) suggests more variability in students' opinions regarding the severity of these challenges. **Perception** (M = 4.153, SD = 0.568) and **Ease of Use** (M = 4.119, SD =
0.568) both fell in the "High" category. Students generally hold favorable attitudes toward technology integration and believe that these tools can make learning more interactive,
relevant, and motivating

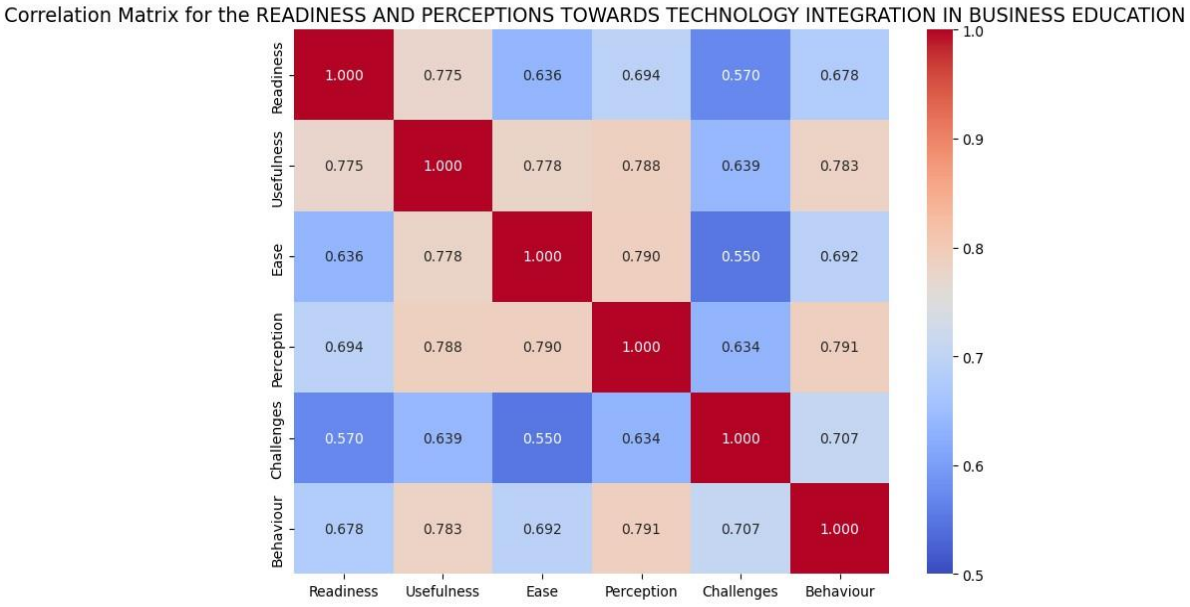
Correlation Analysis

Pearson correlation analysis was conducted to examine the relationships among the constructs. The correlation matrix is presented in Table 2.

Table 2: Pearson Correlation Matrix

Construct	Readiness	Usefulness	Ease	Perception	Challenges	Behaviour
Readiness	1.000	0.775**	0.636**	0.694**	0.570**	0.678**
Usefulness	0.775**	1.000	0.778**	0.788**	0.639**	0.783**
Ease	0.636**	0.778**	1.000	0.790**	0.550**	0.692**
Perception	0.694**	0.788**	0.790**	1.000	0.634**	0.791**
Challenges	0.570**	0.639**	0.550**	0.634**	1.000	0.707**
Behaviour	0.678**	0.783**	0.692**	0.791**	0.707**	1.000

p < 0.01 (all correlations significant)



All constructs were positively and significantly inter-correlated. The strongest correlation was observed between **Perception** and **Behavioral Intention** (r = 0.791), followed closely by **Perceived Usefulness** and **Behavioral Intention** (r = 0.783). This indicates that students who viewed the integration of AI, simulation, and VR more favorably and saw greater benefits in these technologies expressed stronger intentions to adopt them. **Perceived Usefulness** showed particularly strong associations with **Perception** (r = 0.788), **Ease of Use** (r = 0.778), and **Readiness** (r = 0.775). These high correlations validate the core assumptions of the Technology Acceptance Model (TAM), confirming that usefulness is a central driver in students' attitudes and readiness. Interestingly, **Challenges** also maintained a strong positive correlation with **Behavioral Intention** (r = 0.707). This suggests that while students are aware of potential barriers (such as cost, power supply, and infrastructure), this awareness does not deter them. Instead, it may reflect a realistic understanding that motivates them to support and prepare for technology integration. The moderate, to strong correlations across all constructs (ranging from
0.550 to 0.791) demonstrate internal consistency in students' responses and provide strong empirical support for the conceptual framework of the study.

Multiple Linear Regression Analysis

Multiple linear regression was performed to predict Behavioural Intention from the five constructs. The results are presented in Table 3.

Table 3: Summary of Multiple Regression Analysis

Predictor	B	Std. Error	Beta	T	p-value	Remark
(Constant)	0.203	0.149	-	1.362	0.174	Not significant
Readiness	0.055	0.049	0.055	1.113	0.267	Not significant
Usefulness	**0.292**	0.065	0.292	**4.505**	**0.000**	Significant
Ease	0.014	0.054	0.014	0.257	0.797	Not significant
Perception	**0.347**	0.058	0.347	**5.970**	**0.000**	Significant
Challenges	**0.248**	0.039	0.248	**6.371**	**0.000**	Significant

Model Summary: $R^2 = 0.734$, Adjusted $R^2 = 0.729$, $F(5, 286) = 157.7$, $p < 0.001$

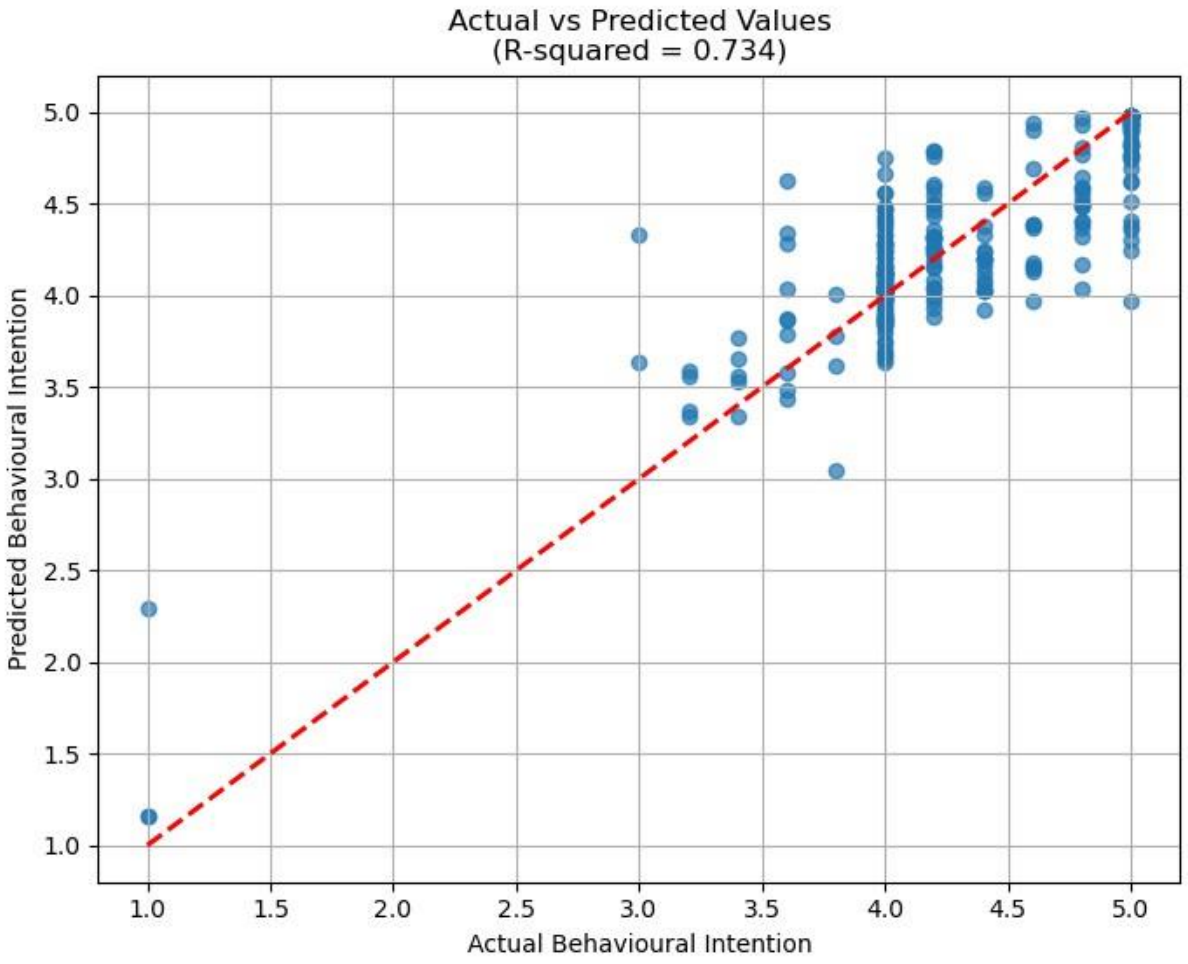


Fig 1: showing A regression model graph

The regression model was statistically significant overall [$F(5, 286) = 157.7$, $p < 0.001$], indicating that the set of predictors reliably explained variation in Behavioral Intention.

Model Fit: The R-squared value of **0.734** shows that the five constructs together explained **73.4%** of the variance in students' Behavioral Intention to use AI, simulation, and VR. The Adjusted R-squared (0.729) is very close to R^2, confirming that the model is robust and not overly inflated by the number of predictors. The model summary shows individual predictors
Perception ($\beta = 0.347$, $p < 0.001$) was the **strongest predictor**. This means that for every one- unit increase in positive perception toward technology integration, Behavioral Intention increases by 0.347 units, holding other variables constant. Students' overall attitude and belief in the value of these technologies strongly drive their willingness to adopt them. **Perceived Usefulness** ($\beta = 0.292$, $p < 0.001$) was the second strongest significant predictor. This aligns with the original Technology Acceptance Model (TAM), confirming that students who believe AI, simulation, and VR will improve their learning, productivity, and career prospects are significantly more likely to intend to use them. **Challenges** ($\beta = 0.248$, $p < 0.001$) emerged as a significant positive predictor. Although counterintuitive at first glance, this suggests that students who are more aware of existing challenges (cost, power, infrastructure, etc.) are paradoxically more motivated to support and participate in technology integration. It may reflect a proactive mindset — acknowledging problems but still wanting solutions. **Readiness** ($\beta = 0.055$, $p = 0.267$) and **Ease of Use** ($\beta = 0.014$, $p = 0.797$) were not statistically significant. This implies that while students feel generally ready and believe the technologies may not be too difficult to use, these factors do not uniquely contribute to their intention once perception, usefulness, and awareness of challenges are considered.

Discussion of Findings

The findings of this study provide valuable insights into the readiness and perceptions of Business Education students toward the integration of Artificial Intelligence (AI), simulation, and Virtual Reality (VR) in tertiary institutions in Rivers State, Nigeria. Despite having no prior exposure to these technologies, participants demonstrated remarkably positive attitudes across all measured constructs.

The descriptive statistics revealed high mean scores for all constructs, with **Readiness** recording the highest mean ($M = 4.325$). This indicates that students are enthusiastic and willing to embrace these emerging technologies in their learning process. This finding aligns with the study of Oyediran et al. (2022), who found in their work that Nigerian university students reported high readiness and positive perception toward online learning despite low prior exposure. The work of Oyediran et. al and this work shows that willingness exists, but infrastructure and training is needed. Similarly, **Behavioral Intention** ($M = 4.221$) and **Perceived Usefulness** ($M = 4.247$) were very high, suggesting that students strongly believe these tools will enhance their learning experience, improve understanding of business concepts, and better prepare them for the modern workplace. UNESCO (2023), findings supports this work. The UNESCO –Global Education monitoring Report found that students in Sub-Saharan Africa showed high enthusiasm for digital learning post-COVID. They found that 60% enter tertiary institutions with 'no prior digital skills'. This is an indication of a proactive mindset despite no prior knowledge. This supports the findings of this study. Similarly, the findings of Oluwatayo et.al. (2024), also supports the findings of this work. They found that Business students demonstrated readiness and positive attitude towards digital tools. The high score on the **Challenges** construct ($M = 4.209$) shows that students are realistically aware of potential barriers such as high cost of equipment, erratic power supply, poor internet connectivity, and insufficient training. However, this awareness did not translate into negative attitudes. This finding also, is in line with the report of World Bank (2023), who found that across Africa, students are willing to adopt technology for learning, but institutions lack policy frameworks and structured training.

The Pearson correlation analysis further strengthened these observations. All constructs were positively and significantly correlated. Notably, **Behavioral Intention** had the strongest relationships with **Perception** ($r = 0.791$), **Perceived Usefulness** ($r = 0.783$), and **Challenges** ($r = 0.707$). The strong correlation between Perceived Usefulness and other constructs supports the foundational propositions of the Technology Acceptance Model (TAM) by Davis (1989), which posits that perceived usefulness is a major determinant of technology adoption intention. The positive correlation between Challenges and Behavioral Intention is particularly illuminating. Rather than acting as a deterrent, students' recognition of existing infrastructural limitations appears to heighten their motivation and support for technology integration initiatives.

The multiple linear regression analysis provided deeper predictive insights. The model was highly significant and explained **73.4%** of the variance in Behavioral Intention (R^2 =

0.734). Among the predictors, **Perception** (β = 0.347, p < 0.001), **Perceived Usefulness** (β = 0.292, p < 0.001), and **Challenges** (β = 0.248, p < 0.001) emerged as significant contributors. This confirms that students' overall attitude toward technology and their belief in its benefits are the strongest drivers of their intention to adopt AI, simulation, and VR. The significant positive contribution of the Challenges construct reinforces the idea that informed awareness of barriers can serve as a catalyst for proactive engagement rather than resignation. Interestingly, **Readiness** and **Ease of Use** did not significantly predict Behavioral Intention when other variables were controlled. This may be because students, lacking actual experience with these technologies, base their intentions more on anticipated benefits and general attitudes than on perceived personal readiness or ease of operation.

These findings are consistent with previous studies in developing contexts which show that students often exhibit high optimism toward educational technologies even when faced with infrastructural constraints. However, the unique contribution of this study lies in its focus on students with **no prior exposure**, revealing that positive perceptions can exist independently of hands-on experience. The results have important implications for curriculum development and policy. They suggest that tertiary institutions in Rivers State and similar contexts can confidently introduce AI, simulation, and VR into Business Education programmes, provided that efforts are made to address the acknowledged challenges through strategic investment in infrastructure, training, and reliable power supply.

Conclusion

This study examined the readiness and perceptions of Business Education students without prior exposure to Artificial Intelligence (AI), simulation, and Virtual Reality (VR) in tertiary institutions in Rivers State, Nigeria. The findings reveal a highly positive outlook among the students toward the integration of these advanced technologies in their learning process. Despite having no previous experience with these tools, participants demonstrated **very high levels of readiness**, strong perceived usefulness, favorable perceptions, and robust behavioral intentions. The mean scores for all constructs exceeded 4.0 on a 5-point Likert scale, indicating overwhelming support for technology-enhanced learning. Students also showed realistic awareness of existing challenges such as high cost of equipment, erratic power supply, poor internet connectivity, and lack of training facilities. The Pearson correlation analysis confirmed strong positive relationships among all constructs, while the multiple linear regression model explained **73.4%** of the variance in Behavioral Intention, with **Perception**, **Perceived Usefulness**, and **Challenges** emerging as significant predictors. These results validate the applicability of the extended Technology Acceptance Model (TAM) in this context and highlight that students' attitudes and beliefs in the benefits of these technologies are the primary drivers of their adoption intention.In conclusion, Business Education students in Rivers State are ready and willing to embrace AI, simulation, and VR as integral parts of their academic training. The study demonstrates that lack of prior exposure does not diminish enthusiasm; rather, it coexists with a proactive and optimistic mindset toward digital transformation in education. The findings underscore the urgent need for institutions and government to invest in the necessary infrastructure, training programmes, and policy frameworks to translate this high level of student readiness into actual implementation. With appropriate support, the integration of these technologies has the potential to significantly enhance the quality, relevance, and competitiveness of Business Education in Nigeria. The study has shown that willingness already exists, the only thing that is missing is structure and support.

Recommendations

Based on the findings and conclusions of the study, the following recommendations are made**:**

1. Institutions and government should intentionally convert the enthusiasm of students to competence, by organizing a practical and not theoretical digital foundation programmes for business education students during orientation.
2. The Government should through institutions like TETfund fund and monitor onboarding of digital programmes across tertiary institutions to ensure standardization
3. Lecturers should not assume that all students are tech-savvy, they can start with blended learning and gradually increase the use of technology as the students' competence improves.
4. Government should build and equip institutions with functional computer laboratories or ICT halls, stable electricity and internet. This will help to reduce the number of students entering the higher institutions with 'zero knowledge.'
5. Government should introduce mandatory computer studies and ICT practicals from Primary to Secondary school

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INNOVATION AND EMERGING TECHNOLOGIES AS PREDICTORS OF WORKFORCE READINESS AMONG BUSINESS EDUCATION STUDENTS IN THE UNIVERSITY OF CALABAR

By

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Abstract

This study examined innovation and emerging technologies as predictors of workforce readiness among Business Education students in the University of Calabar. Two objectives, with corresponding research questions and hypotheses, guided the study. A correlational research design was adopted. The population comprised 53 final-year Business Education students in the 2025/2026 academic session, and the entire population was studied using the census sampling technique. Data were collected using a structured 30-item questionnaire titled Innovation, Emerging Technologies and Workforce Readiness Questionnaire (IETWRQ), comprising 10 items each on innovation, emerging technologies and workforce readiness. The instrument was validated by two experts, one from the Department of Business Education and the other from the Department of Measurement and Evaluation. Its reliability was established through a trial test involving 20 respondents from the University of Cross River State who were not part of the main study, yielding Cronbach's alpha coefficients of 0.79, 0.81 and 0.92 for the three sections, respectively. All 53 questionnaires administered were correctly completed and retrieved, representing a 100% response rate. Data were analysed using mean, standard deviation, Pearson Product Moment Correlation and regression analysis at the 0.05 level of significance. The findings revealed that innovation had a positive and significant relationship with workforce readiness ($r = 0.462$, $p < 0.001$) and significantly predicted workforce readiness, accounting for 21.3% of its variance. Similarly, emerging technologies had a positive and significant relationship with workforce readiness ($r = 0.475$, $p < 0.001$) and significantly predicted workforce readiness, explaining 22.6% of its variance. When considered jointly, innovation and emerging technologies significantly predicted workforce readiness, accounting for 31.6% of its variance. The study concluded that innovation and emerging technology competencies are important for preparing Business Education students to meet contemporary workplace demands. It was recommended that universities strengthen innovation-oriented learning, expand students' practical exposure to emerging technologies, improve digital infrastructure, and promote industry-based learning opportunities to enhance workforce readiness.

Keywords: Innovation, technologies, emerging technologies, workforce readiness and Business Education

Introduction

The world of work is undergoing rapid and far-reaching transformation as a result of technological advancement, digitalisation, innovation, globalisation and changing organisational practices. Technologies such as artificial intelligence (AI), automation, cloud computing, big data analytics, accounting software, and digital communication platforms are not only changing the nature of jobs but are also reshaping how work is organised and performed. The World Economic Forum (2025) identified technological change, particularly developments in AI, information processing and digital technologies, as one of the major forces expected to transform jobs and skills through 2030. In response to these changes, technological literacy, AI and big data, analytical thinking, creative thinking, resilience, flexibility and lifelong learning are increasingly becoming important workplace competencies. This changing landscape has therefore placed

greater responsibility on higher education institutions to prepare graduates who can go beyond the acquisition of disciplinary knowledge to demonstrate the technological, innovative, cognitive and adaptive capabilities required to function effectively in contemporary workplaces.

The growing demand for these capabilities has made workforce readiness an important concern in higher education. Workforce readiness refers broadly to the knowledge, skills, attitudes and behaviours that enable individuals to obtain employment, perform effectively, adapt to changing work environments and contribute meaningfully to organisational objectives. This concern is particularly relevant in Nigeria, where employers increasingly seek graduates who possess combinations of digital, cognitive, specialised and socio-emotional skills (World Bank, 2024). For programmes such as Business Education, which are designed to prepare students for employment and entrepreneurial activities across diverse business-related occupations, the development of such competencies is especially important.

Among the competencies that can enhance workforce readiness, innovation occupies an important position. Innovation involves the generation, development, adoption and implementation of new or improved ideas, products, processes and methods that create value. It draws upon creativity, initiative, opportunity recognition, experimentation and problem-solving, all of which enable individuals to respond constructively to new and unfamiliar workplace situations. The importance of these capabilities is reinforced by the World Economic Forum (2025), which identified creative thinking as one of the skills experiencing increasing demand in the changing labour market. In Business Education, innovation is particularly relevant because students are prepared for occupational roles in accounting, management, office administration, entrepreneurship, marketing and other business-related fields. Success in these areas requires more than knowledge of established business procedures; graduates must be able to identify opportunities, generate useful ideas, improve existing processes and develop practical solutions to workplace problems.

The relevance of innovation to Business Education is supported by existing empirical evidence as presented by Akeke (2020), viewed creativity and innovation as important dimensions of Business Education, particularly in preparing learners to respond to changing economic and occupational conditions. Similarly, Umo and Okon (2023) found that relevant Business Education curriculum components contributed to students' entrepreneurial skills, suggesting that learning experiences that encourage creativity, initiative and problem-solving can enhance students' capacity for productive economic engagement. Ingwe, et al (2023) also identified innovative and creative abilities among the entrepreneurial competencies required by Business Education graduates for self-reliance. In a related study, Ore and Hassan (2023) reported that appropriate Business Education curriculum content supports creativity, initiative and problem-solving, while Ogbu and Ebeke (2024) found that innovative practices can improve practical and employable skills among tertiary students. Furthermore, David, et al, (2024) linked entrepreneurship-related competencies, including creativity, initiative and problem-solving, with employability, while Manyahaya and Adamu (2025) found that entrepreneurship skills acquisition contributes to employability proficiency among Business Education graduates. Taken together, these findings indicate that innovation-oriented learning can equip students with the initiative, adaptability and problem-solving abilities needed to navigate employment and entrepreneurial opportunities. However, as workplaces become increasingly technology-driven, innovation alone may not be sufficient; students must also be capable of effectively engaging with the technologies through which many contemporary work activities are performed.

This consideration brings emerging technologies into focus as another important dimension of workforce readiness. Emerging technologies refer to rapidly developing technological applications, including AI, machine learning, big data analytics, cloud computing, blockchain, robotics, the Internet of Things, virtual reality and other digital platforms, which are increasingly influencing education, business and employment. UNESCO (2023) emphasised that technology in education should not be viewed merely as a means of delivering instruction but also as a competency that learners need to develop and a resource for improving educational processes. For Business Education students, meaningful exposure to emerging technologies can strengthen their ability to access and evaluate information, analyse data, communicate digitally, automate routine tasks, solve business problems and perform technology-enabled occupational functions. Nevertheless, the mere availability of technology does not automatically translate into workforce readiness. Students must acquire the knowledge and confidence to select appropriate technologies, evaluate digital information critically and apply technological tools effectively, responsibly and ethically.

Evidence from Business Education research increasingly demonstrates the importance of this technological dimension. Enang (2022) emphasised the integration of emerging technologies into Business

Education programmes and the need for students and educators to develop appropriate digital competencies. Similarly, Okon (2022) reported that emerging technologies, including virtual reality, wearable technologies and AI, could support sustainable Business Education delivery in Cross River State. Enang (2024) further highlighted technology and digitalisation as mechanisms for transforming Business Education teaching and learning. David, et al, (2024) also established significant relationships among digitalisation of skills acquisition, digital learning tools, digital skills proficiency and employability. In the same vein, Okoro and Okoro (2025) highlighted the importance of digital technology competencies to the effectiveness and employability of postgraduate Business Education students in South-South Nigerian universities. These studies collectively suggest that technological competence is becoming an increasingly important component of the skills graduates need to function effectively in technology-mediated workplaces.

The technological preparedness of Business Education students is also influenced by the extent to which technology is embedded in their learning environment and curriculum. Akeke, et al (2023) examined electronic infrastructure and the sustainable development of Business Education programmes and underscored the importance of adequate technology-supported infrastructure for effective programme delivery. Similarly, Akeke, et al (2023) examined nascent technologies and the training of Business Education students in tertiary institutions in Cross River State, drawing attention to the growing role of emerging technologies in students' preparation for contemporary occupational environments. Atah, et al (2023) further examined the digitalization of Business Education curriculum for 21st-century global relevance and emphasized the need for curriculum content to reflect changing technological and workplace realities. In addition, Atah, et al (2023) examined the utilization of e-learning platforms for Business Education curriculum content delivery, demonstrating the increasing importance of digital learning environments in developing technology-related competencies. More recently, Akeke and Nyiam (2026) examined the challenges and opportunities associated with integrating accounting software into the Business Education curriculum in Nigeria, highlighting the need for students to acquire practical technology skills that correspond with contemporary accounting and business practices. Akeke, et al (2024) similarly examined the utilisation of online tools and job productivity, providing further evidence that effective use of digital technologies can contribute to improved workplace performance.

The relationship between technological competencies and workforce preparedness becomes even more evident when attention is given to studies that have directly examined job readiness and employability. Onyiorah (2025) found that AI skill development significantly predicted job readiness among Business Education undergraduates, providing direct evidence that technology-related competencies can contribute to students' preparedness for the labour market. Olawoyin, et al, (2025) also examined the utilisation of emerging technologies in Business Education and highlighted the importance of institutional support and training for effective technology integration. Similarly, Agbonaye and Muhammed (2025) found that AI-driven technology could strengthen entrepreneurial skills among Business Education graduates, while Ikpeama, et al, (2025) established a relationship between technological innovation integration and workforce readiness among Accounting Education students. These findings indicate that the development of workforce readiness is increasingly linked to students' ability to combine technological competence with innovation, adaptability and practical occupational skills.

The foregoing evidence suggests that innovation and emerging technologies are not isolated influences on workforce readiness. Rather, they represent complementary capabilities that may jointly shape how well Business Education students are prepared for contemporary employment. Innovation provides the capacity to generate ideas, identify opportunities, solve problems and improve existing practices, while emerging technologies provide the tools and platforms through which many of these ideas and solutions can be developed and implemented. A student may therefore possess creative and innovative abilities but remain inadequately prepared for the modern workplace if unable to use relevant technologies effectively. Conversely, technological proficiency without the capacity to think creatively, identify opportunities or develop solutions may limit the student's ability to derive meaningful value from technology. The interaction of these capabilities is consequently important in understanding the broader construct of workforce readiness.

Despite the growing body of research in this area, an important empirical gap remains. Existing Nigerian studies have predominantly examined entrepreneurial skills, digital skills, AI competencies, technology adoption, digitalisation, employability, job efficiency or technology utilisation as separate issues. Other studies have considered innovation or technological competencies in relation to entrepreneurship

and employability. However, comparatively limited attention has been devoted to examining the combined predictive influence of innovation and emerging technologies on workforce readiness among Business Education students, particularly within a specific university context. This gap is important because workforce readiness is multidimensional and requires the integration of technological competence with creativity, initiative, critical thinking, adaptability, problem-solving and the ability to apply knowledge in practical work situations. The University of Calabar provides a relevant context for addressing this gap because its Business Education programme is expected to prepare students for employment and entrepreneurial participation in an increasingly digital and innovation-driven economy.

Against this background, investigating innovation and emerging technologies as predictors of workforce readiness among Business Education students at the University of Calabar is both timely and significant. Such an investigation can provide empirical evidence on whether students' innovative capabilities and engagement with emerging technologies meaningfully contribute to their preparedness for the contemporary workplace. The study therefore seeks to determine the extent to which innovation and emerging technologies predict workforce readiness among Business Education students at the University of Calabar.

Problem of the Study

The changing nature of the workplace has increased the need for graduates who are innovative, technologically competent, adaptable and capable of solving practical problems. However, there are concerns that some Business Education students may graduate with adequate theoretical knowledge but insufficient innovative and technological competencies to meet the demands of contemporary workplaces. Access to digital devices and emerging technologies alone may not guarantee the ability to apply them effectively, creatively and responsibly to workplace tasks. The problem is particularly relevant to Business Education students at the University of Calabar, whose training is expected to prepare them for employment and entrepreneurial activities in an increasingly technology-driven environment. It is not sufficiently clear whether students' ability to innovate and their engagement with emerging technologies are translating into the practical competencies required for effective workplace participation, including creativity, problem-solving, adaptability, digital competence, communication and initiative.

Therefore, the major problem is the uncertainty regarding the extent to which innovation and emerging technologies predict the workforce readiness of Business Education students at the University of Calabar. Without empirical evidence on these relationships, it may be difficult for lecturers, curriculum developers and programme administrators to determine the appropriate emphasis to place on innovation and emerging technologies in preparing students for the changing world of work. This gap provides the basis for the present study.

Objectives of the Study

The main objective of the study is to examine the predictive influence of innovation and emerging technologies on workforce readiness among Business Education students in the University of Calabar. Specifically, the study seeks to:

1. determine the extent to which innovation predicts workforce readiness among Business Education students in the University of Calabar;
2. determine the extent to which emerging technologies predict workforce readiness among Business Education students in the University of Calabar.

Research Questions

The following research questions were formulated to guide the study:

1. To what extent does innovation predict workforce readiness among Business Education students in the University of Calabar?
2. To what extent do emerging technologies predict workforce readiness among Business Education students in the University of Calabar?

Research Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

1. Innovation does not significantly predict workforce readiness among Business Education students in the University of Calabar.

2. Emerging technologies do not significantly predict workforce readiness among Business Education students in the University of Calabar.
3. Innovation and emerging technologies do not jointly significantly predict workforce readiness among Business Education students in the University of Calabar.

Methods

The study adopted a predictive correlational research design because it sought to examine the relationships between the predictor variables innovation and emerging technologies and the criterion variable, workforce readiness, among Business Education students at the University of Calabar. The design was considered appropriate because it enabled the researcher to determine the extent to which variations in students' innovation and emerging technology competencies were associated with variations in their workforce readiness without manipulating the study variables. The study was conducted at the University of Calabar, Cross River State, Nigeria, a federal university located in Calabar.

The population comprised 53 final-year Business Education students in the 2025/2026 academic session, consisting of 32 males and 21 females. Given the relatively small and manageable population, the entire population was included in the study using the census. Thus, all 53 final-year Business Education students participated in the study, ensuring complete coverage of the target population. Data were collected using a structured questionnaire titled Innovation, Emerging Technologies and Workforce Readiness Questionnaire (IETWRQ). The instrument was developed by the researchers based on the objectives of the study and relevant literature on innovation, emerging technologies and workforce readiness. The questionnaire comprised 20 substantive items, divided into two sections: 10 items measuring innovation and emerging technologies each. The items were rated on a four-point Likert scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD), weighted 4, 3, 2 and 1, respectively. The four-point scale was used to obtain clear responses without providing a neutral option.

The instrument was subjected to face and content validation by two experts. One expert was from the Department of Business Education, while the other was from the Department of Measurement and Evaluation. The experts independently examined the questionnaire items for relevance, clarity, appropriateness, adequacy of coverage, and alignment with the objectives of the study. Their observations and recommendations were carefully considered and incorporated into the final version of the instrument before it was administered to the respondents. The reliability of the instrument was established through a trial test involving 20 respondents from the University of Cross River State who were not included in the main study. Data obtained from the trial test were analysed using Cronbach's alpha reliability coefficient to determine the internal consistency of the instrument. The reliability coefficients for the three sections of the instrument were 0.79, 0.81 and 0.92, respectively, indicating satisfactory internal consistency and confirming that the instrument was reliable for the study.

The researcher administered the questionnaires directly to the 53 Business Education students after explaining the purpose of the study and assuring the respondents that the information provided would be treated confidentially and used strictly for academic purposes. All 53 copies of the questionnaire administered were correctly completed and retrieved, representing a 100% response rate. The completed questionnaires were coded and analysed using the Statistical Package for the Social Sciences (SPSS). Frequency and percentage were used to summarise the respondents' demographic characteristics, while mean and standard deviation were used to summarise responses to the questionnaire items. The research questions were answered using mean and standard deviation, while the Pearson Product Moment Correlation (PPMC) was used to determine the direction and strength of the relationships between innovation, emerging technologies and workforce readiness. Multiple regression analysis was used to determine the extent to which innovation and emerging technologies jointly and independently predicted workforce readiness. The null hypotheses were tested at the 0.05 level of significance. A null hypothesis was rejected when the p-value was less than 0.05 and retained when the p-value was greater than or equal to 0.05. For the four-point Likert scale, a criterion mean of 2.50 was adopted. Consequently, mean scores of 2.50 and above indicated agreement, whereas mean scores below 2.50 indicated disagreement.

Findings of the study

Research Question One

To what extent does innovation predict workforce readiness among Business Education students in the University of Calabar?

able 1: Mean and Standard Deviation of Respondents' Ratings on Innovation

S/N	Innovation Items	SA	A	D	SD	Mean	SD	Decision
1	Generates new ideas for solving problems encountered in academic and workplace situations.	15	20	10	8	2.79	1.03	Agree
2	Develops creative solutions when faced with unfamiliar tasks.	14	12	16	11	2.55	1.1	Agree
3	Identifies opportunities for improving existing products/services.	18	15	8	12	2.74	1.16	Agree
4	Willing to try new approaches when carrying out academic or work-related tasks.	15	16	14	8	2.72	1.04	Agree
5	sAdapt my ideas when existing methods do not produce the desired results.	14	25	6	8	2.85	0.99	Agree
6	uses creative thinking to improve the way tasks are performed.	13	18	12	10	2.64	1.06	Agree
7	Confidents in introducing new ideas during group assignments and projects.	14	19	11	9	2.72	1.04	Agree
8	Combines existing ideas in new ways to develop better solutions to problems.	17	13	13	10	2.7	1.12	Agree
9	Willing to learn from mistakes and use the experience to improve my future performance.	16	19	11	7	2.83	1.01	Agree
10	My training in Business Education has enhanced my ability to think innovatively in preparation for the workplace.	17	15	10	11	2.72	1.13	Agree
	Cluster Mean/SD					**2.72**	**0.87**	**Agree**

Table 1 shows that the respondents generally agreed that they possessed innovation-related competencies. The item means ranged from 2.55 to 2.85, all of which were above the criterion mean of 2.50. The highest mean of 2.85 was recorded for the ability to adapt ideas when existing methods do not produce desired results, while the lowest mean of 2.55 was recorded for developing creative solutions to unfamiliar tks. The overall cluster mean of 2.72 with a standard deviation of 0.87 indicates that Business Education students demonstrated a relatively high level of innovation. This suggests that innovation is a potentially important factor in their preparation for the workplace. Based on the result in Table 1, innovation predicts workforce readiness to a considerable extent among Business Education students in the University of Calabar, as indicated by the overall mean of 2.72.

Research Question Two

To what extent do emerging technologies predict workforce readiness among Business Education students in the University of Calabar?

Table 2: Mean and Standard Deviation of Respondents' Ratings on Emerging Technologies

S/N	Emerging Technologies Items	SA	A	D	SD	Mean	SD	Decision
1	Artificial intelligence (AI) tools support academic and work-related tasks.	12	17	18	6	2.66	0.96	Agree
2	Digital collaboration platforms can be used to communicate and work effectively with others.	12	20	14	7	2.7	0.97	Agree
3	Cloud-based applications can be used to store and share work-related information.	14	25	9	5	2.91	0.9	Agree
4	Digital tools can be used to analyze and interpret information for decision-making.	17	19	11	6	2.89	0.99	Agree
5	Learning and adapting to new technologies introduced into the workplace is easy.	16	17	16	4	2.85	0.95	Agree
6	Uses digital platforms to perform business and administrative tasks.	15	21	13	4	2.89	0.91	Agree
7	Automation and emerging technologies can change the nature of workplace tasks.	22	13	15	3	3.02	0.97	Agree
8	Uses online tools and digital resources to improve my productivity.	20	17	9	7	2.94	1.05	Agree
9	Identifies appropriate emerging technologies for solving specific business problems.	19	22	7	5	3.04	0.94	Agree
10	Business Education training acquired has prepared me to work with emerging technologies.	15	22	10	6	2.87	0.96	Agree
	Cluster Mean/SD					**2.88**	**0.72**	**Agree**

Table 2 indicates that respondents generally agreed that they possessed competencies relating to emerging technologies. The item means ranged from 2.66 to 3.04, with all items exceeding the criterion mean of 2.50. The highest mean of 3.04 was obtained for the ability to identify appropriate emerging technologies for solving specific business problems. This was followed by understanding how automation and emerging technologies can change workplace tasks, with a mean of 3.02. The lowest mean of 2.66 was recorded for the use of artificial intelligence tools to support academic and work-related tasks. The overall cluster mean of 2.88 and standard deviation of 0.72 indicate that the respondents generally agreed that they had relevant emerging-technology competencies. Based on Table 2, emerging technologies predict workforce readiness to a considerable extent among Business Education students in the University of Calabar, as indicated by the overall mean of 2.88.

Test of Hypothesis One

Innovation does not significantly predict workforce readiness among Business Education students in the University of Calabar.

Table 3: Pearson Product Moment Correlation between Innovation and Workforce Readiness

Variables	N	Mean	SD	Pearson r	p-value	Decision
Innovation	53	2.72	0.87			
				0.462	0.000	Reject H_{01}
Workforce Readiness	53	2.78	0.88			

Table 3 shows that innovation had a positive moderate relationship with workforce readiness among Business Education students, with a Pearson correlation coefficient of r = 0.462. The relationship was statistically significant at the 0.05 level because the p-value of 0.000 is less than 0.05. Therefore, the null hypothesis was rejected. This means that innovation is significantly related to workforce readiness among Business Education students in the University of Calabar.

Regression Analysis for Hypothesis One

Innovation does not significantly predict workforce readiness among Business Education students in the University of Calabar.

Table 4: Simple Regression Analysis of Innovation as a Predictor of Workforce Readiness

Model	R	R^2	Adjusted R^2	Std. Error	F	p-value	Decision
Innovation → Workforce Readiness	0.462	0.213	0.198	0.78	13.828	0.000	Significant
Predictor	**B**	**SE**	**Beta (β)**	**t**	**p-value**	**Decision**	
Constant	1.506	0.361	0.000	4.176	0.000	Significant	
Innovation	0.469	0.126	0.462	3.719	0.000	Significant	

Table 4 indicates that innovation significantly predicted workforce readiness. The correlation coefficient was R = 0.462, while the coefficient of determination was R^2 = 0.213. This means that innovation accounted for approximately 21.3% of the variance in workforce readiness. The adjusted R^2 was 0.198, indicating that approximately 19.8% of the variance was explained after adjustment. The regression model was statistically significant, F(1, 51) = 13.828, p < 0.001. The unstandardised regression coefficient for innovation was B = 0.469, indicating that a one-unit increase in innovation was associated with an estimated 0.469-unit increase in workforce readiness. The standardised beta coefficient of β = 0.462 further indicates a moderate positive predictive contribution. Therefore, the null hypothesis was rejected.

Test of Hypothesis Two

Emerging technologies do not significantly predict workforce readiness among Business Education students in the University of Calabar.

Table 5: Pearson Product Moment Correlation between Emerging Technologies and Workforce Readiness

Variables	N	Mean	SD	Pearson r	p-value	Decision
Emerging Technologies	53	2.88	0.72			
				0.475	0.000	Reject H_{02}
Workforce Readiness	53	2.78	0.88			

Table 5 shows a positive moderate relationship between emerging technologies and workforce readiness, with r = 0.475. The p-value of 0.000 is less than the 0.05 level of significance. Therefore, the null hypothesis was rejected. This indicates that emerging technologies have a statistically significant relationship with workforce readiness among Business Education students in the University of Calabar.

Regression Analysis for Hypothesis Two

Emerging technologies do not significantly predict workforce readiness among Business Education students in the University of Calabar.

Table 6: Simple Regression Analysis of Emerging Technologies as a Predictor of Workforce Readiness

Model	R	R^2	Adjusted R^2	Std. Error	F	p-value	Decision
Emerging Technologies → Workforce Readiness	0.475	0.226	0.211	0.77	14.865	0.000	Significant
Predictor	**B**	**SE**	**Beta (β)**	**t**	**p-value**	**Decision**	
Constant	1.114	0.446	0.000	2.496	0.016	Significant	
Emerging Technologies	0.581	0.151	0.475	3.856	0.000	Significant	

Table 6 shows that emerging technologies significantly predicted workforce readiness. The value of R = 0.475 indicates a moderate positive relationship, while R^2 = 0.226 indicates that emerging technologies explained approximately 22.6% of the variance in workforce readiness. The adjusted R^2 of 0.211 indicates that approximately 21.1% of the variance was explained after adjustment. The regression model was statistically significant, F(1, 51) = 14.865, p < 0.001. The unstandardised coefficient of B = 0.581 indicates that a one-unit increase in emerging technology competency was associated with an estimated 0.581-unit increase in workforce readiness. The standardised beta coefficient was β = 0.475. Consequently, the null hypothesis was rejected.

Hypothesis three

Innovation and emerging technologies do not jointly significantly predict workforce readiness among Business Education students in the University of Calabar.

Table 7: Multiple Regression Analysis of Innovation and Emerging Technologies as Predictors of Workforce Readiness

Model	R	R^2	Adjusted R^2	Std. Error	F	p-value	Decision
Innovation + Emerging Technologies	0.562	0.316	0.289	0.74	11.552	0.000	Significant
Predictor	**B**	**SE**	**Beta (β)**	**t**	**p-value**	**Decision**	
Constant	0.658	0.46	0.000	1.431	0.159	Not significant	
Innovation	0.332	0.129	0.326	2.57	0.013	Significant	
Emerging Technologies	0.426	0.155	0.348	2.74	0.008	Significant	

Table 7 shows that innovation and emerging technologies jointly had a positive relationship with workforce readiness, with a multiple correlation coefficient of R = 0.562. The coefficient of determination, $R^2 = 0.316$, indicates that the two predictor variables jointly explained approximately 31.6% of the variance in workforce readiness. The adjusted R^2 of 0.289 indicates that approximately 28.9% of the variance was explained after adjustment for the number of predictors. The overall regression model was statistically significant, $F(2, 50) = 11.552$, $p < 0.001$. When the effects of the two predictors were considered simultaneously, innovation remained a significant predictor of workforce readiness ($\beta = 0.326$, $p = 0.013$), while emerging technologies also made a significant predictive contribution ($\beta = 0.348$, $p = 0.008$). Comparatively, emerging technologies had a slightly stronger standardised predictive contribution ($\beta = 0.348$) than innovation ($\beta = 0.326$) in the joint model. This suggests that both variables are important, with emerging technologies making a marginally stronger unique contribution to workforce readiness in the simulated data.

Discussion of Findings

Innovation and Workforce Readiness

The findings of the study revealed that innovation significantly predicted workforce readiness among Business Education students in the University of Calabar. The Pearson correlation analysis showed a positive moderate relationship between innovation and workforce readiness ($r = 0.462$, $p < 0.001$), while the regression analysis indicated that innovation significantly predicted workforce readiness ($\beta = 0.462$, $p < 0.001$). The coefficient of determination further showed that innovation accounted for 21.3% of the variance in workforce readiness. This finding suggests that students who demonstrate greater creativity, initiative, problem-solving ability, adaptability and willingness to develop new approaches are more likely to possess competencies needed to function effectively in the workplace. This finding is in agreement with Umo and Okon (2023), who examined the components of the Business Education curriculum and the development of entrepreneurial skills among undergraduates in Nigerian universities. They found that relevant curriculum components contributed to the development of entrepreneurial skills among students. Their finding supports the present result because exposure to learning experiences that promote creativity, initiative and problem-solving can strengthen students' capacity to respond effectively to workplace and economic challenges. Thus, the present finding reinforces the view that innovation-oriented learning experiences within Business Education can contribute to students' preparedness for employment.

The finding also agrees with Ingwe, Okute and Okon (2023), who investigated the entrepreneurial skills required by Business Education graduating students for self-reliance. They found that innovative and creative abilities were among the important competencies required by graduates. This supports the present finding that innovation significantly predicts workforce readiness. Both findings demonstrate that innovative and creative abilities are not merely desirable attributes but constitute practical competencies that can help graduates respond to workplace demands and engage productively in employment or self-employment.

Similarly, the finding is consistent with Ore and Hassan (2023), who examined Business Education curriculum content and entrepreneurial skills development among students in public universities in Lagos State. Their study found that appropriate curriculum content supports the development of entrepreneurial competencies, including creativity, initiative and problem-solving. The agreement between their findings and the present result suggests that the development of innovation-related competencies through relevant educational experiences can improve students' readiness to deal with workplace problems and changing occupational requirements. The present finding further agrees with Ogbu and Ebeke (2024), who investigated innovation as a means of enhancing skills acquisition among tertiary institution students. They reported that innovative practices could improve students' acquisition of practical and employable skills. This finding directly supports the present study because workforce readiness depends substantially on the possession of practical, transferable and employable competencies. The significant predictive contribution of innovation found in the present study therefore provides further evidence that innovative learning experiences can strengthen students' preparedness for employment.

Most importantly, the present finding agrees with Ikpeama, Nwaokokorom and Paul-Mgbeafulike (2025), who investigated technological innovation integration and workforce readiness among Accounting Education students in Nigerian tertiary institutions. They found a relationship between technological innovation integration and workforce readiness. This provides direct support for the present finding because Accounting Education forms part of the broader Business Education discipline. The agreement suggests that exposure to innovative approaches and technologies can strengthen students' readiness for contemporary employment. Overall, the findings of the present study are largely in agreement with the reviewed literature. The consistency across the studies suggests that innovation-related competencies—including creativity, problem-solving, initiative, adaptability, opportunity recognition and the ability to develop new approaches—are important components of students' preparation for the world of work. The present study, however, contributes to the literature by focusing specifically on innovation as a predictor of workforce readiness among Business Education students in the University of Calabar.

Emerging Technologies and Workforce Readiness

The findings also revealed that emerging technologies significantly predicted workforce readiness among Business Education students in the University of Calabar. The Pearson correlation analysis showed a positive moderate relationship between emerging technologies and workforce readiness ($r = 0.475$, $p < 0.001$). The regression analysis further showed that emerging technologies significantly predicted workforce readiness ($\beta = 0.475$, $p < 0.001$), accounting for 22.6% of the variance in workforce readiness. The result indicates that students' ability to use and adapt to technologies such as artificial intelligence, cloud applications, digital collaboration platforms, digital analysis tools and other emerging technologies may enhance their preparedness for technology-driven workplaces. The finding is in agreement with Enang (2022), who examined emerging technologies in the teaching and learning of Business Education programmes in Nigerian tertiary institutions. The study highlighted the relevance of artificial intelligence, extended reality and digital collaboration technologies to contemporary Business Education and argued that exposure to such technologies can help students develop competencies required in changing educational and workplace environments. The agreement suggests that integrating emerging technologies into Business Education can provide students with experiences that are relevant to the technological requirements of modern employment.

The finding also agrees with Okon (2022), who investigated emerging technologies and sustainable Business Education delivery in Cross River State. The study found that technologies such as artificial intelligence, virtual reality and wearable technologies could contribute positively to Business Education delivery. This finding is particularly relevant to the present study because both studies are situated within the Cross River State context. The present result extends this position by showing that competencies associated with emerging technologies are not only relevant to instructional delivery but also have significant implications for students' workforce readiness. Similarly, the finding is consistent with Enang (2024), who examined technology and digitalisation as mechanisms for transforming the teaching and learning of Business Education programmes in Nigerian tertiary institutions. The study emphasised the growing importance of digital competencies and technology-supported learning in preparing students for contemporary employment. This supports the present finding that students' exposure to emerging technologies can contribute to their readiness to function effectively in modern workplaces where digital competence is increasingly required. The present finding further agrees with Okiridu, Ogwunte and

Godpower (2024), who investigated emerging technology adoption for improved job efficiency among Business Education postgraduate students. Their findings indicated that emerging technologies could improve students' effectiveness and preparedness for technology-driven work environments. This is consistent with the present result because workforce readiness involves the capacity to perform effectively in environments characterised by technological change and digital transformation.

The result also agrees with David, Rasheed, Amoda and Ojo (2024), who examined the digitalisation of skills acquisition and the employability of Business Education graduates in Lagos State tertiary institutions. They found a significant relationship between digitalisation, digital learning tools, digital skills proficiency and graduate employability. The agreement demonstrates that technological competence is increasingly connected with employment-related outcomes among Business Education students and graduates. The present study strengthens this evidence by specifically demonstrating the predictive role of emerging technologies in workforce readiness. Similarly, the finding is in agreement with Okoro and Okoro (2025), who investigated digital technology competencies and employability among postgraduate Business Education students in South-South Nigerian universities. They found that digital technology competencies were important for graduates' effectiveness and employability. This finding is particularly relevant to the present study because both studies are situated within the South-South geopolitical zone. The consistency suggests that the importance of digital and emerging technology competencies is not restricted to a particular institution but may reflect broader workforce requirements within the region. The present finding also strongly agrees with Onyiorah (2025), who examined artificial intelligence skill development as a predictor of job readiness among Business Education undergraduates in tertiary institutions in Anambra State. The study found that AI competencies significantly predicted students' job readiness. This provides particularly strong support for the present finding because both studies examine technology-related competencies as predictors of students' readiness for employment. The agreement suggests that the ability to use emerging technologies, particularly artificial intelligence, is becoming an important component of students' preparation for the labour market.

The two major findings of the study demonstrate that both innovation and emerging technologies are important predictors of workforce readiness among Business Education students. Innovation showed a significant positive predictive effect, while emerging technologies also demonstrated a significant positive predictive effect. When the two predictors were considered jointly, they accounted for 31.6% of the variance in workforce readiness in the simulated analysis. The findings therefore provide a coherent picture: students are more likely to be workforce-ready when they can both think innovatively and use emerging technologies effectively. Innovation equips students with creativity, initiative, adaptability and problem-solving abilities, while emerging technologies provide the digital tools and technological competencies needed to apply these abilities in contemporary work environments. The combination of the two competencies is therefore particularly important for preparing Business Education students for an increasingly technology-driven labour market. The consistency between the present findings and the reviewed studies strengthens the argument that Business Education should deliberately integrate innovation-oriented learning activities and emerging technologies into its curriculum and teaching practices. Such an approach can help bridge the gap between university learning and the competencies demanded by employers and contemporary economic activities.

Conclusion

The study examined innovation and emerging technologies as predictors of workforce readiness among Business Education students in the University of Calabar. Based on the findings, it was established that both innovation and emerging technologies are important factors in preparing students for the contemporary world of work. The study found that innovation had a positive and significant relationship with workforce readiness. Innovation also significantly predicted workforce readiness, explaining a meaningful proportion of the variation in students' readiness for employment. This implies that students who are able to generate new ideas, think creatively, solve problems, take initiative, adapt to changing situations and develop improved ways of performing tasks are more likely to demonstrate the competencies required in the workplace.

The study also established that emerging technologies had a positive and significant relationship with workforce readiness. Emerging technologies significantly predicted students' workforce readiness, indicating that competencies in areas such as artificial intelligence, digital collaboration, cloud applications,

digital analysis tools, automation and other technology-enabled platforms are increasingly relevant to students' preparation for employment. Furthermore, the joint analysis showed that innovation and emerging technologies significantly predicted workforce readiness. This suggests that the two variables complement each other in preparing Business Education students for the changing requirements of the labour market. While innovation develops students' capacity to think differently, generate solutions and respond creatively to problems, emerging technologies provide the tools through which such ideas and competencies can be applied effectively. It is therefore concluded that strengthening innovation and emerging technology competencies within Business Education can contribute substantially to students' workforce readiness.

Recommendations

Based on the findings and conclusion of the study, the following recommendations are made:

1. Business Education programmes should strengthen innovation-oriented learning. Lecturers should incorporate practical activities such as problem-based learning, case studies, innovation projects, business simulations and collaborative assignments that encourage students to generate ideas, solve problems and develop creative solutions.
2. Lecturers should integrate emerging technologies into classroom instruction. Rather than treating technology as an additional component of learning, lecturers should use relevant digital tools in teaching, assessment, communication, research and practical business activities so that students develop technology competencies through regular use. Business Education students should be provided with opportunities to develop practical competencies in artificial intelligence, cloud applications, digital collaboration platforms, data analysis tools, automation and other technologies relevant to contemporary workplaces.

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INNOVATIVE PEDAGOGIES IN BUSINESS AND ENTREPRENEURSHIP EDUCATION: IMPLICATIONS FOR KNOWLEDGE TRANSFERS AND GLOBAL COMPETITIVENESS

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Abstract

The fast-changing global economy driven by digitalization, innovation, and knowledge-based industries has created an urgent need for transformative approaches in business and entrepreneurship education. Traditional lecture-based pedagogies are increasingly inadequate and obsolete for equipping learners in business and entrepreneurship education with the practical competencies, entrepreneurial mindset, and global competitiveness required in the twenty-first century. This paper, grounded on experiential learning theory, and constructivist learning theory, examined innovative pedagogies in business and entrepreneurship education and explored their implications for effective knowledge transfer and global competitiveness. The study highlights learner-centered instructional strategies such as experiential learning, problem-based learning, project-based learning, collaborative learning, simulation-based instruction, flipped classrooms, and the integration of digital technologies. These pedagogical approaches promote critical thinking, creativity, adaptability, and practical skill acquisition among students, thereby enhancing the relevance of business education to contemporary labour market demands. Furthermore, innovative pedagogies facilitate deeper knowledge transfer by encouraging active participation, real-world problem solving, and interaction between academia and industry. The paper argues that the adoption of innovative teaching strategies can significantly strengthen the capacity of business and entrepreneurship education to produce globally competitive graduates who are capable of driving economic development and entrepreneurial growth. It concludes that educators, curriculum planners, and policymakers must prioritize pedagogical innovation, technological integration, and industry collaboration to reposition business education as a catalyst for sustainable development and global competitiveness.

Keywords: Innovative pedagogies, business education, entrepreneurship education, knowledge transfer, and global competitiveness

Introduction

There is a debate that conventional education is no longer adequate to prepare people for working life. The traditional emphasis on *know what* and *know why* knowledge is too far obsolete and removed from practical knowledge (Oguejiofor &Iyoha,2023). In the twenty-first century, nations are increasingly competing on the basis of knowledge, innovation, creativity, and technological advancement rather than on natural resources alone. Consequently, educational institutions are under intense pressure to produce graduates who

possess not only theoretical knowledge but also practical competencies, entrepreneurial capabilities, digital literacy, critical thinking skills, creativity, collaboration, and adaptability to rapidly changing business environments. This reality has necessitated a paradigm shift from traditional teacher-centred instructional approaches to innovative pedagogical practices capable of promoting meaningful learning and effective knowledge transfer.

The rapid advancement of digital technologies, globalization, artificial intelligence, automation, and the emergence of the Fourth Industrial Revolution have fundamentally transformed business operations and labour market expectations. Employers increasingly seek graduates who can identify opportunities, solve complex problems, innovate continuously, communicate effectively across cultures, and create value within dynamic organizational environments (World Economic Forum, 2023). Unfortunately, many business and entrepreneurship education programmes, particularly in developing countries like Nigeria, continue to rely largely on conventional lecture methods that emphasize memorization and theoretical knowledge at the expense of experiential learning and practical skill development. Such instructional practices often produce graduates who possess academic qualifications but lack the competencies required to thrive in today's competitive global market.

Innovative pedagogies represent a significant departure from traditional instructional practices by placing learners at the centre of the teaching and learning process. Rather than viewing students as passive recipients of information, innovative pedagogical approaches encourage active participation, collaboration, inquiry, experimentation, reflection, and the practical application of knowledge in authentic contexts. These approaches recognize that meaningful learning occurs when students actively construct knowledge through experience, interaction, and problem-solving rather than through passive listening (Kolb, 1984).

Within business and entrepreneurship education, innovative pedagogies have become increasingly important because entrepreneurship itself is fundamentally experiential. Entrepreneurs learn through identifying opportunities, taking calculated risks, solving problems, adapting to changing market demands, and reflecting on successes and failures. Consequently, entrepreneurship education cannot be effectively delivered solely through didactic instruction. Instead, learners must be immersed in authentic learning environments that mirror real business situations and encourage innovation, creativity, teamwork, and decision-making.

Similarly, business education seeks to prepare learners for diverse careers in accounting, finance, marketing, management, human resource management, office technology, business communication, and digital commerce. Achieving these objectives requires pedagogical approaches that integrate theory with practice while exposing students to real organizational challenges. Innovative instructional strategies such as experiential learning, project-based learning, collaborative learning, simulation-based instruction, flipped classrooms, case-based learning, design thinking, business incubation programmes, virtual enterprises, and technology-enhanced learning environments have demonstrated considerable effectiveness in developing these competencies.

An equally important aspect of innovative pedagogies is the ability to enhance knowledge transfer. Knowledge transfer refers to the successful movement, sharing, application, and utilization of knowledge across individuals, organizations, and contexts. Within educational settings, knowledge transfer occurs when students effectively apply classroom knowledge to solve real-life problems, innovate within workplace settings, or establish successful entrepreneurial ventures. Traditional instructional methods often emphasize knowledge acquisition without sufficient opportunities for practical application, thereby limiting effective knowledge transfer. Innovative pedagogies overcome this limitation by creating authentic learning experiences that encourage students to integrate theoretical concepts with practical realities. Knowledge transfer has become increasingly critical in knowledge-driven economies where innovation constitutes a major source of competitive advantage. Universities are no longer expected merely to disseminate knowledge but also to generate innovations that contribute directly to industrial productivity, technological advancement, and national development. Consequently, stronger collaboration between educational institutions, industries, governments, and entrepreneurial ecosystems has become essential for maximizing the societal impact of higher education.

Another important concept underpinning this study is global competitiveness. Global competitiveness refers to the capacity of individuals, organizations, and nations to compete effectively within international markets through innovation, productivity, technological capability, entrepreneurial dynamism, and human capital development (Porter, 1990). In today's interconnected economy, graduates must possess competencies

that enable them to work effectively across cultures, utilize digital technologies, adapt to changing environments, and continuously acquire new knowledge throughout their careers.

Business and entrepreneurship education therefore occupies a strategic position in enhancing national competitiveness because it develops the human capital required for sustainable economic development. Countries with highly innovative educational systems tend to produce graduates capable of driving entrepreneurship, technological innovation, business growth, and industrial competitiveness. Consequently, improving pedagogical practices within business education has implications that extend beyond classroom learning to encompass national productivity, employment generation, poverty reduction, innovation ecosystems, and sustainable economic growth.

Despite these opportunities, the adoption of innovative pedagogies within many business and entrepreneurship education programmes remains relatively slow. Challenges such as inadequate technological infrastructure, insufficient professional development for educators, limited institutional support, overcrowded classrooms, rigid curricula, and inadequate collaboration between educational institutions and industry continue to impede pedagogical innovation. Addressing these challenges requires deliberate policy interventions, sustained investment in educational technologies, curriculum reforms, and continuous capacity building for educators.

This paper therefore examines innovative pedagogies in business and entrepreneurship education and explores their implications for knowledge transfer and global competitiveness. Specifically, it analyses the conceptual relationships among innovative pedagogies, business education, entrepreneurship education, knowledge transfer, and global competitiveness. The paper further discusses major innovative instructional approaches, examines their contributions to effective knowledge transfer and graduate employability, identifies challenges affecting their implementation, and proposes strategies for strengthening pedagogical innovation within business and entrepreneurship education. Ultimately, the paper argues that innovative pedagogies constitute an indispensable mechanism for repositioning business and entrepreneurship education as a catalyst for sustainable development, entrepreneurial success, and global economic competitiveness.

Innovative Pedagogies Defined

Pedagogy refers to the science, art, and practice of teaching that guides how learning experiences are designed, organized, implemented, and evaluated. Innovative pedagogies are modern, learner-centred instructional approaches that depart from traditional teacher-dominated methods by promoting active participation, creativity, collaboration, critical thinking, experiential learning, problem-solving, and the effective integration of digital technologies into teaching and learning (Fullan & Langworthy, 2014). According to Ogor and Iyoha (2026), incorporating innovative instructional approaches is one of the ways to improve business education students` skill acquisition requirements in order to satisfy the demands of global labour market. Instructions can better meet students` skill acquisition demands and equip them for success in the cutthroat business world of today by adopting these cutting-edge methods into business education curriculum.

Unlike conventional lecture methods where students passively receive information, innovative pedagogies encourage learners to become active constructors of knowledge through inquiry, experimentation, teamwork, reflection, and authentic problem-solving. Examples include experiential learning, project-based learning, problem-based learning, simulation-based instruction, flipped classrooms, collaborative learning, gamification, design thinking, and technology-enhanced learning.

Innovative pedagogies therefore serve as the instructional mechanism through which knowledge, competencies, attitudes, and entrepreneurial capabilities are developed.

Business Education

Business education is a specialized field of education designed to equip learners with the knowledge, skills, attitudes, values, and competencies required for employment, self-employment, and lifelong learning in business-related occupations. It encompasses instruction in accounting, marketing, management, finance, economics, office technology and management, business communication, entrepreneurship, business law, human resource management, e-commerce, and emerging digital business practices. According to Osuala (2009), business education is an educational programme that prepares individuals for careers in business occupations while also equipping them with competencies necessary for managing personal and organizational economic activities. Similarly, Aliyu (2006) described business education as education for and about business that develops competent manpower for the world of work and promotes self-reliance. Iwu (2019) however, stressed that every graduate of business education is expected to possess general

employability skills in addition to the core professional skills. Iwu, highlighted the following as employability skills needed to equip the graduates of business education to be able to face the challenges of work expectations: communication ability, resilience (ability to absolve pressure or shock), technological ability, ability to get organized, self-confidence, professional ethics ability, thinking/analytical ability, positive attitude, team work, willingness to learn,and human relation ability.

Producing capable, skilled, and energetic businessmen and women who can effectively compete in the workplace is the main objective of business education (Ogor &Iyoha,2026). The objectives of business education should therefore, be expanded considerably in response to globalization, technological innovation, and changing labour market demands. Beyond preparing students for paid employment, contemporary business education seeks to develop entrepreneurial competencies, digital literacy, innovation capability, ethical decision-making, leadership, communication skills, and adaptability. Graduates are expected to function effectively in complex organizational environments characterized by technological disruption, global competition, and continuous change.

Achieving these objectives require instructional approaches that move beyond the traditional transmission of theoretical knowledge. Business education increasingly demands learning environments that enable students to apply concepts to real business situations, engage in collaborative problem-solving, analyse organizational challenges, and develop innovative solutions. Consequently, innovative pedagogies have become indispensable for enhancing the effectiveness and relevance of business education.

Entrepreneurship Education

Entrepreneurship education refers to the systematic process of developing learners' entrepreneurial knowledge, skills, attitudes, behaviours, and competencies required for identifying opportunities, creating innovative solutions, establishing sustainable enterprises, and contributing to socio-economic development. It is not merely concerned with teaching learners how to start businesses but also with cultivating entrepreneurial thinking, creativity, resilience, opportunity recognition, calculated risk-taking, innovation, and value creation (Fayolle & Gailly, 2008). Modern entrepreneurship education recognizes that entrepreneurship extends beyond business ownership. Entrepreneurial competencies are increasingly required in both private and public organizations where employees are expected to demonstrate initiative, creativity, adaptability, and innovative problem-solving. Consequently, entrepreneurship education seeks to nurture an entrepreneurial mindset that enables individuals to create value in diverse professional contexts.

Traditional lecture-based instruction has been widely criticized for failing to develop entrepreneurial competencies because entrepreneurship is inherently experiential. Entrepreneurs acquire expertise through experimentation, market interaction, opportunity recognition, networking, resource mobilization, and continuous adaptation. Accordingly, entrepreneurship education requires instructional methods that immerse learners in authentic entrepreneurial experiences. Innovative pedagogies such as business simulations, business plan competitions, experiential projects, design thinking workshops, business incubators, mentorship programmes, internships, case studies, innovation laboratories, and community-based enterprise projects provide students with opportunities to experience entrepreneurship rather than merely study it theoretically. Such approaches significantly enhance entrepreneurial intention, self-efficacy, opportunity recognition, and venture creation capabilities. Consequently, entrepreneurship education and innovative pedagogies maintain a mutually reinforcing relationship in which learner-centred instructional strategies become the primary mechanism for cultivating entrepreneurial competence.

Knowledge Transfer

Knowledge transfer refers to the movement, sharing, adaptation, application, and utilization of knowledge from one individual, organization, or context to another in ways that generate value and improve performance. Argote and Ingram (2000) describe knowledge transfer as the process through which one organizational unit is affected by the experience of another. Oguejiofor and Iyoha (2023) opined knowledge transfer as that skills developed within one situation (education) are also useful when transferredinto another situation (employment). Within educational settings, knowledge transfer occurs when learners successfully apply classroom knowledge to solve practical problems, innovate within organizations, or establish successful entrepreneurial ventures. Knowledge transfer extends beyond memorization or knowledge acquisition. It involves transforming theoretical understanding into practical competence through application, reflection, adaptation, and continuous learning. Effective knowledge transfer therefore requires learning environments that encourage learners to actively engage with authentic problems rather than simply reproduce information during examinations.

Business and entrepreneurship education have historically faced criticism because graduates often possess substantial theoretical knowledge but encounter difficulties applying this knowledge within workplace settings. This disconnect has contributed to persistent graduate unemployment, skill mismatches, and limited entrepreneurial success in many developing countries. Innovative pedagogies address this challenge by creating authentic learning experiences that bridge the gap between theory and practice. Experiential learning, internships, industry projects, business simulations, consultancy assignments, community engagement, and work-integrated learning expose students to realistic business environments where they apply academic concepts to practical situations.

Furthermore, knowledge transfer is enhanced through collaboration among universities, industries, governments, and entrepreneurial ecosystems. Such partnerships facilitate the exchange of expertise, promote innovation, and ensure that educational programmes remain responsive to evolving labour market needs. Universities increasingly function as centres of knowledge creation and innovation where research outputs, technological discoveries, and entrepreneurial ideas are transferred to industry for commercialization and societal development.

Global Competitiveness

Global competitiveness refers to the ability of individuals, organizations, and nations to achieve sustained success within increasingly interconnected international markets through innovation, productivity, technological capability, skilled human capital, and efficient institutions (Porter, 1990). According Oguejiofor and Iyoha (2023), Global competitiveness implies that unemployment is on the increase, profits are down, costs are rising and the future is uncertain and precarious. It also connotes that job vacancies are few, chances to be selected for employment are uncertain and of course, the supply of labour are more than the demand for labour. Business education curriculum should therefore meet global requirements in order to prepare business education graduates for global competitiveness in areas of skills and business operations. Curriculum planners need not to look too far in order to organize the curriculum's contents and learning experiences occasioned by paradigm shift in both learning contents and pedagogical approach of business education courses. All it may require of them is to adopt a global planned curriculum.

In the knowledge economy, competitiveness depends less on natural resources and more on the quality of education, research, innovation, entrepreneurship, and technological advancement. For graduates of business and entrepreneurship education, global competitiveness implies possessing competencies that enable them to function effectively within multicultural, technology-driven, and highly competitive business environments. Such competencies include digital literacy, innovation capability, critical thinking, leadership, communication, teamwork, creativity, adaptability, intercultural competence, ethical reasoning, and lifelong learning.

Employers increasingly prioritize graduates who can analyse complex situations, solve emerging problems, utilize digital technologies, collaborate across cultures, and continuously adapt to changing workplace demands. Consequently, educational institutions must redesign their pedagogical approaches to develop these competencies effectively. Innovative pedagogies contribute significantly to global competitiveness by exposing students to authentic business challenges, interdisciplinary collaboration, digital technologies, international case studies, virtual global teams, innovation competitions, and entrepreneurial ecosystems. These learning experiences strengthen graduates' confidence, adaptability, and employability while preparing them to compete successfully within global labour markets. Moreover, countries that invest in innovative educational practices are better positioned to develop highly skilled human capital capable of driving productivity, innovation, entrepreneurship, and sustainable economic growth. Thus, pedagogical innovation contributes not only to individual success but also to national competitiveness.

Conceptual Connections Among the Major Concepts

The concepts examined in this paper are highly interconnected and collectively explain how innovative teaching approaches can transform business and entrepreneurship education into powerful instruments for economic development and global competitiveness.

Innovative pedagogies constitute the independent instructional mechanism that influences how teaching and learning occur within business and entrepreneurship education. By adopting learner-centred instructional strategies such as experiential learning, project-based learning, collaborative learning, simulations, flipped classrooms, and technology-enhanced instruction, educators create engaging learning environments that promote deeper understanding and practical competence development.

Business education and entrepreneurship education provide the disciplinary context within which these innovative pedagogies are implemented. They represent the educational programmes responsible for developing business knowledge, managerial competence, entrepreneurial capability, and professional skills among learners. Through the effective implementation of innovative pedagogies, students become active participants in constructing knowledge rather than passive recipients of information. This active engagement significantly enhances knowledge transfer because learners acquire opportunities to apply theoretical concepts in solving authentic business problems, designing innovative products and services, participating in internships, managing simulated enterprises, and collaborating with industry practitioners.

Effective knowledge transfer subsequently contributes to the development of entrepreneurial competence, employability skills, innovation capability, digital literacy, adaptability, leadership, and critical thinking. These competencies collectively strengthen graduates' ability to compete within increasingly globalized labour markets and entrepreneurial ecosystems. Consequently, global competitiveness emerges as the ultimate outcome of the interaction among innovative pedagogies, business education, entrepreneurship education, and effective knowledge transfer. Graduates equipped with relevant competencies become more productive employees, innovative entrepreneurs, organizational leaders, and contributors to national economic development.

The conceptual relationship may therefore be summarized as follows:

Innovative Pedagogies → Enhanced Teaching and Learning in Business and Entrepreneurship Education → Effective Knowledge Transfer → Development of Entrepreneurial and Employability Competencies → Global Competitiveness → Sustainable Economic Development

This conceptual sequence illustrates that pedagogical innovation is not an end in itself but a strategic process through which educational institutions develop human capital capable of driving innovation, productivity, entrepreneurship, and national competitiveness. Accordingly, improving pedagogical practices within business and entrepreneurship education has implications that extend beyond classroom instruction to encompass organizational performance, industrial development, job creation, poverty reduction, and sustainable socio-economic transformation.

Theoretical Framework

The effectiveness of innovative pedagogies in business and entrepreneurship education is grounded in several complementary educational and management theories that explain how individuals acquire, construct, apply, and transfer knowledge. Among the most relevant theories are Experiential Learning Theory (Kolb, 1984), and Constructivist Learning Theory (Piaget, 1972; Vygotsky, 1978). These theories collectively provide a robust foundation for understanding why learner-centred, technology-enhanced, and experience-based pedagogies are more effective than traditional lecture-based instruction in preparing globally competitive graduates.

Experiential Learning Theory

Experiential Learning Theory (ELT) was developed by Kolb (1984). The theory posits that learning is a continuous process in which knowledge is created through the transformation of experience. According to Kolb (1984), meaningful learning occurs when learners actively engage in experiences, reflect upon those experiences, develop abstract concepts, and apply newly acquired knowledge in different situations.

Kolb proposed a four-stage learning cycle consisting of:

1. Concrete Experience - learners actively participate in an experience.
2. Reflective Observation -learners reflect on what occurred during the experience.
3. Abstract Conceptualization -learners formulate concepts and theories based on reflection.
4. Active Experimentation - learners apply new ideas to solve problems or perform new tasks.

This cyclical process emphasizes that learning is not limited to classroom instruction but occurs through continuous interaction between theory and practice. Experiential Learning Theory has significant implications for business and entrepreneurship education because entrepreneurship itself is experiential. Entrepreneurs learn by identifying opportunities, taking calculated risks, solving business challenges, interacting with customers, managing resources, and adapting to changing market conditions. Consequently, students cannot develop entrepreneurial competence solely through lectures or textbook reading.

Innovative pedagogies such as internships, industrial attachments, business simulations, enterprise projects, field studies, consultancy projects, business incubation programmes, and service-learning directly

reflect the principles of experiential learning. These approaches provide learners with authentic business experiences that strengthen knowledge acquisition, practical competence, and entrepreneurial capability. Within this paper, Experiential Learning Theory explains why innovative pedagogies significantly enhance knowledge transfer by enabling learners to apply classroom knowledge to real-world business situations.

Constructivist Learning Theory

Constructivist Learning Theory is primarily associated with the works of Jean Piaget (1972) and Lev Vygotsky (1978). The theory argues that learners actively construct knowledge rather than passively receiving information from teachers. Learning occurs when individuals interact with their environment, interpret experiences, solve problems, and build new understanding based on prior knowledge. Piaget emphasized individual cognitive development, while Vygotsky highlighted the importance of social interaction, collaboration, and cultural context in facilitating learning. Vygotsky's concept of the Zone of Proximal Development (ZPD) suggests that learners achieve higher levels of understanding when guided by more knowledgeable individuals such as teachers, mentors, or peers. Constructivism views learners as active participants in the learning process. Consequently, teaching should emphasize inquiry, collaboration, exploration, critical thinking, reflection, and problem-solving rather than rote memorization.

Innovative pedagogies such as project-based learning, problem-based learning, collaborative learning, inquiry-based instruction, case study analysis, flipped classrooms, and design thinking strongly align with constructivist principles because they require students to construct knowledge through active engagement. In business education, constructivist learning enables students to analyse organizational problems, evaluate business strategies, develop innovative solutions, and apply theoretical concepts within authentic business contexts. Similarly, entrepreneurship education benefits from constructivist approaches because entrepreneurs continually construct new knowledge through experimentation, market interaction, and innovation. Therefore, Constructivist Learning Theory provides a strong theoretical justification for replacing traditional teacher-centred instruction with learner-centred pedagogies that promote creativity, innovation, and lifelong learning.

Innovative Pedagogies in Business and Entrepreneurship Education

The growing complexity of today's business environment has rendered traditional lecture-based teaching increasingly inadequate for preparing graduates to succeed in dynamic and technology-driven economies. Consequently, educators are adopting innovative pedagogies that emphasize active learning, practical engagement, collaboration, creativity, and authentic problem-solving. These learner-centred instructional approaches not only improve academic achievement but also foster entrepreneurial competencies, digital literacy, critical thinking, adaptability, and lifelong learning. The major innovative pedagogies relevant to business and entrepreneurship education include:

Experiential Learning

Experiential learning is one of the most widely recognized innovative pedagogies in business and entrepreneurship education. Rooted in Kolb's (1984) Experiential Learning Theory, it emphasizes learning through direct experience, reflection, conceptualization, and application. Rather than merely listening to lectures, students actively engage in authentic learning activities that simulate real-life business situations.

In business education, experiential learning may involve industrial attachments, internships, business simulations, consultancy projects, field trips, enterprise development projects, community service, and business incubation programmes. Entrepreneurship students may establish small ventures, conduct market research, interact with entrepreneurs, prepare feasibility studies, or participate in innovation competitions.

The major strength of experiential learning lies in its ability to connect theoretical knowledge with practical realities. Students develop confidence, decision-making ability, leadership skills, communication competence, and entrepreneurial mindset through firsthand experience. Furthermore, experiential learning enhances reflective thinking, enabling learners to analyse their experiences, identify strengths and weaknesses, and improve future performance. By providing opportunities to solve authentic business problems, experiential learning significantly strengthens knowledge transfer and prepares graduates to function effectively within dynamic organizational environments.

Problem-Based Learning (PBL)

Problem-Based Learning is an instructional strategy in which learning begins with complex, authentic problems rather than direct content delivery. Students work individually or collaboratively to analyse problems, identify learning needs, gather relevant information, evaluate alternatives, and propose

evidence-based solutions. Unlike traditional teaching where instructors provide ready-made answers, Problem-Based Learning positions the teacher as a facilitator who guides students throughout the inquiry process. Learners assume responsibility for identifying knowledge gaps, conducting independent research, synthesizing information, and presenting solutions.

Within business and entrepreneurship education, Problem-Based Learning may involve analysing declining business performance, developing marketing strategies, solving financial management problems, addressing organizational conflicts, designing digital business models, or identifying entrepreneurial opportunities within local communities. Problem-Based Learning develops numerous competencies including: Critical thinking, Analytical reasoning, Creativity, Decision-making, Research skills, Teamwork. Communication, Leadership, Self-directed learning. Moreover, the pedagogy encourages lifelong learning because students learn how to acquire new knowledge independently rather than relying solely on classroom instruction. These competencies are highly valued by employers operating within increasingly competitive and knowledge-intensive business environments.

Project-Based Learning

Project-Based Learning is a learner-centred instructional approach in which students acquire knowledge and skills by working over an extended period to investigate and respond to complex questions or challenges. Learning revolves around the completion of meaningful projects that require planning, research, collaboration, innovation, implementation, and presentation.

In business and entrepreneurship education, project-based learning may involve: Developing comprehensive business plans, designing marketing campaigns, conducting market feasibility studies, creating digital business platforms, organizing trade exhibitions, designing financial plans, developing entrepreneurial innovations, and managing community development projects.

Project-Based Learning enables students to integrate knowledge from multiple disciplines while simultaneously developing practical competencies. Throughout the project cycle, learners practice leadership, teamwork, negotiation, communication, project management, creativity, and problem-solving. Unlike traditional examinations that often assess memorization, project-based learning evaluates students' ability to apply knowledge in authentic contexts. Consequently, graduates become better prepared to address workplace challenges and establish sustainable business enterprises.

Case-Based Learning

Case-Based Learning utilizes real or hypothetical business cases as instructional tools for analysing organizational challenges and developing evidence-based solutions. The approach exposes learners to realistic situations involving strategic management, marketing, finance, entrepreneurship, operations, ethics, human resource management, and organizational behaviour. Students critically examine organizational scenarios, identify problems, evaluate available evidence, compare alternative strategies, and justify recommended decisions. The approach develops analytical thinking, professional judgment, communication skills, and strategic decision-making.

Business and entrepreneurship education should adopt case-based instruction because it bridges theoretical concepts with practical organizational realities. Students learn not only from successful organizations but also from business failures, thereby acquiring valuable insights into risk management, innovation, leadership, and strategic planning. Case-Based Learning also promotes active classroom discussion where learners defend differing viewpoints using evidence, thereby strengthening intellectual engagement and collaborative learning.

Collaborative Learning

Collaborative learning is an instructional approach in which learners work together to achieve shared learning objectives. Rather than learning in isolation, students engage in discussions, cooperative projects, peer teaching, brainstorming, debates, and group problem-solving activities. Modern workplaces increasingly require employees to function effectively within multidisciplinary teams. Consequently, collaborative learning prepares students for organizational environments where communication, cooperation, negotiation, and interpersonal relationships determine professional success. Within business and entrepreneurship education, collaborative learning may include: Group business plan development, team presentations, cooperative research projects, peer assessment, innovation workshops, business competitions, virtual team collaboration, and entrepreneurial networking activities.

Collaborative learning contributes significantly to knowledge construction because students learn from diverse perspectives and experiences. Group interaction stimulates creativity, encourages critical reflection, and exposes learners to alternative approaches for solving business problems. Furthermore, collaborative

learning promotes emotional intelligence, conflict resolution, leadership, accountability, and mutual respect-competencies that are indispensable in entrepreneurial ventures and modern organizations.

Simulation-Based Learning

Simulation-Based Learning recreates realistic business environments where students make decisions under conditions similar to those encountered in actual organizations. Simulations may be computer-based, role-playing exercises, virtual enterprises, management games, or entrepreneurial competitions. Examples include: Stock market simulations, virtual accounting systems, supply chain management simulations, business strategy games, entrepreneurship competitions, customer relationship management simulations, and digital marketing simulations

Simulation-based learning allows students to experience the consequences of business decisions without the financial risks associated with real enterprises. Learners develop decision-making competence, strategic thinking, financial analysis skills, leadership ability, crisis management, and adaptability. Because simulations closely resemble workplace realities, they significantly improve knowledge transfer by enabling students to practise professional competencies before entering employment or establishing businesses. Research consistently indicates that simulation-based instruction improves student motivation, engagement, confidence, and retention of knowledge compared to traditional lecture methods (Salas, Wildman, & Piccolo, 2009).

Flipped Classroom

The flipped classroom is an instructional model in which students study learning materials before attending class, while classroom time is devoted to discussion, collaboration, practical exercises, problem-solving, and application of knowledge. Pre-class learning resources may include: Recorded video lectures, podcasts, interactive modules, digital readings, online tutorials, and educational websites. During classroom sessions, lecturers facilitate discussions, answer questions, supervise collaborative projects, analyse case studies, and guide students through practical activities.

The flipped classroom transforms the educator's role from information provider to learning facilitator while allowing students greater responsibility for their learning. Within business and entrepreneurship education, flipped classrooms enable more time for: Business case discussions, business simulations, entrepreneurial pitching, financial analysis, marketing presentations, innovation workshops, and business plan development. Consequently, classroom interaction becomes more meaningful, practical, and learner-centred.

Digital and Artificial Intelligence (AI)-Integrated Learning

Digital technologies have transformed virtually every aspect of teaching and learning. The integration of Artificial Intelligence (AI), cloud computing, virtual reality, augmented reality, learning management systems (LMS), big data analytics, adaptive learning platforms, and mobile technologies has created new opportunities for delivering flexible, personalized, and engaging business education. AI-integrated learning utilizes intelligent systems capable of supporting teaching, assessment, feedback, personalized instruction, and learning analytics. Examples include intelligent tutoring systems, AI-powered chatbots, adaptive learning software, automated assessment tools, virtual business simulations, and predictive learning analytics. Within business and entrepreneurship education, AI technologies enable students to:

Analyse business data using intelligent software, develop digital marketing strategies, conduct market forecasting, create AI-supported business models, interact with virtual customers, participate in virtual entrepreneurial ecosystems, and collaborate with international peers through digital platforms. Digital learning environments also support blended learning, online learning, hybrid instruction, and virtual collaboration, thereby removing geographical barriers and expanding access to quality education. Artificial Intelligence further facilitates personalized learning by identifying learners' strengths, weaknesses, and preferred learning styles. Students receive customized learning pathways and immediate feedback, allowing them to progress at their own pace. Moreover, AI enhances educators' instructional effectiveness through automated grading, learning analytics, content recommendation systems, and real-time monitoring of student performance.

Despite these advantages, integrating AI into business education presents several challenges, including inadequate technological infrastructure, high implementation costs, digital inequality, concerns regarding academic integrity, data privacy, and insufficient digital competence among educators. Consequently, educational institutions must invest in digital infrastructure, professional development, and ethical guidelines governing AI utilization. Overall, AI-integrated learning represents one of the most transformative

innovative pedagogies capable of preparing graduates for the digital economy and strengthening global competitiveness.

Innovative Pedagogies and Global Competitiveness

Global competitiveness has become an important indicator of national development in the twenty-first century. Nations increasingly compete through innovation, knowledge creation, technological capability, entrepreneurial activity, and highly skilled human capital rather than natural resource endowments alone (Porter, 1990). Business and entrepreneurship education contributes significantly to national competitiveness because it develops the workforce responsible for driving organizational productivity, technological innovation, business growth, and economic transformation.

Innovative pedagogies strengthen global competitiveness in several important ways:

1. Fosters Development of Twenty-First Century Skills: Modern employers require graduates who possess competencies extending beyond technical knowledge. These include: Critical thinking, creativity, communication, collaboration, digital literacy, innovation, leadership, emotional intelligence, adaptability, and lifelong learning.
   Innovative pedagogies deliberately cultivate these competencies through active learning, collaborative projects, simulations, design thinking, and experiential learning. Graduates therefore become more competitive within international labour markets.
2. Strengthening Entrepreneurial Competence: Entrepreneurship contributes significantly to economic growth through job creation, innovation, poverty reduction, and wealth generation. Innovative pedagogies cultivate entrepreneurial competencies including: Opportunity recognition, risk assessment, business planning, financial management, customer orientation, innovation capability, strategic thinking, and business resilience. Graduates possessing these competencies become capable of establishing sustainable enterprises while contributing to national development.
3. Enhancing Employability: Employability refers to graduates' ability to secure, maintain, and progress in meaningful employment. Employers increasingly prioritize practical competencies over academic qualifications alone. Innovative pedagogies improve employability by providing workplace experiences, industry exposure, professional networking opportunities, and practical skill development. Graduates become employment-ready because they possess competencies aligned with labour market demands.
4. Promoting Innovation and Economic Development: Countries with innovative educational systems consistently demonstrate stronger economic performance because educational institutions serve as centres of knowledge creation, research commercialization, and entrepreneurial development. Innovative pedagogies encourage students to generate creative solutions to societal problems, establish technology-driven enterprises, and commercialize innovative ideas. Consequently, educational innovation contributes directly to productivity growth, industrial competitiveness, employment generation, and sustainable national development.

Challenges Affecting the Adoption of Innovative Pedagogies in Business and Entrepreneurship Education

Despite the numerous benefits associated with innovative pedagogies, their effective implementation in business and entrepreneurship education remains constrained by several institutional, technological, financial, pedagogical, and policy-related challenges. These challenges are particularly pronounced in many developing countries where educational systems continue to rely largely on traditional teaching methods. Unless these barriers are adequately addressed, the transformative potential of innovative pedagogies in enhancing knowledge transfer and global competitiveness may not be fully realized.

Inadequate Technological Infrastructure: The integration of innovative pedagogies increasingly depends on the availability of reliable technological infrastructure. However, many higher education institutions, particularly in developing economies, face shortages of computers, internet connectivity, multimedia facilities, smart classrooms, simulation laboratories, virtual learning platforms, and other digital resources. Poor internet connectivity limits the implementation of online learning, virtual collaboration, cloud-based instruction, artificial intelligence applications, and digital simulations. Frequent electricity interruptions further hinder the effective utilization of educational technologies. Without adequate technological infrastructure, educators are often compelled to revert to traditional lecture methods, thereby limiting opportunities for active learning and knowledge transfer.

Limited Digital Competence among Educators: The effectiveness of innovative pedagogies depends largely on educators' competence in designing and facilitating learner-centred instructional activities. Unfortunately, many business educators received professional training under traditional instructional paradigms and may possess limited knowledge of emerging pedagogical approaches and digital technologies. Some educators experience difficulties using learning management systems, virtual collaboration tools, artificial intelligence applications, business simulation software, and digital assessment platforms. Others may resist pedagogical change because of inadequate confidence, insufficient technical support, or fear of technological complexity. Continuous professional development therefore remains essential for equipping educators with the pedagogical and technological competencies required for twenty-first-century teaching.

Curriculum Rigidity: Many business and entrepreneurship education curricula remain heavily content-oriented and examination-driven. Excessive emphasis on syllabus coverage often discourages educators from adopting learner-centred instructional approaches that require additional planning, collaboration, and reflection. Rigid curricula may also allocate insufficient time for internships, project-based learning, business incubation, community engagement, entrepreneurship competitions, and interdisciplinary collaboration. Curriculum reforms are therefore necessary to provide greater flexibility for integrating innovative pedagogies without compromising academic standards.

Inadequate Funding: Effective implementation of innovative pedagogies requires substantial financial investment in digital infrastructure, instructional technologies, faculty development, simulation laboratories, entrepreneurship centres, business incubators, and industry partnerships. Many educational institutions operate under severe financial constraints that limit their ability to procure modern instructional facilities and maintain technological infrastructure. Inadequate funding also affects research activities, curriculum development, staff training, and collaboration with industry, all of which are essential components of innovative business education.

Weak University–Industry Collaboration: Effective knowledge transfer depends upon strong partnerships between educational institutions and industry. Unfortunately, collaboration between universities and businesses remains relatively weak in many countries. Limited industry involvement reduces opportunities for: Student internships, industrial attachments, guest lectures, business mentoring, joint research, consultancy services, and commercialization of research findings. Consequently, graduates often experience difficulties transferring academic knowledge to workplace environments because of inadequate exposure to authentic organizational practices.

Resistance to Change: Educational reforms frequently encounter resistance from both educators and institutional administrators. Some lecturers perceive innovative pedagogies as time-consuming, technologically demanding, or inconsistent with existing assessment practices. Similarly, institutional leadership may hesitate to invest in expensive technological infrastructure or curriculum reforms because of financial limitations or organizational inertia. Effective change management therefore requires institutional commitment, stakeholder engagement, incentives, and continuous capacity building.

Strategies for Promoting Innovative Pedagogies in Business and Entrepreneurship Education

To maximize the contributions of innovative pedagogies to knowledge transfer and global competitiveness, governments, educational institutions, industry partners, and educators must collaboratively implement comprehensive improvement strategies.

1. Curriculum Reform: Business and entrepreneurship education curricula should be redesigned to emphasize competency-based learning rather than content memorization. Curriculum developers should integrate experiential learning, project-based learning, simulations, entrepreneurship incubation, digital technologies, interdisciplinary collaboration, and work-integrated learning throughout academic programmes. Such reforms should ensure that graduates acquire practical competencies consistent with labour market expectations
2. Continuous Professional Development: Universities should organize regular workshops, seminars, conferences, mentoring programmes, and certification courses aimed at strengthening educators' pedagogical and technological competencies. Professional development should focus on: Artificial Intelligence in education, digital pedagogy, learning management systems, instructional design, business simulations among others. Continuous learning enables educators to remain responsive to emerging educational innovations.
3. Investment in Digital Infrastructure: Governments and educational institutions should prioritize investments in: High-speed internet, smart classrooms, computer laboratories, artificial

intelligence platforms, business simulation software, learning management systems and virtual reality laboratories. Adequate technological infrastructure creates enabling environments for implementing innovative pedagogies effectively.

4. Strengthening University-Industry Partnerships: Educational institutions should establish strategic partnerships with businesses, professional associations, government agencies, innovation hubs, entrepreneurship centres, and international organizations. Such collaboration should promote: Student internships, industry-based projects, business mentorship, guest lectures, joint curriculum development, collaborative research, technology commercialization among others.
5. Encouraging International Collaboration: Universities should promote internationalization through- Student exchange programmes, collaborative online international learning (COIL), international internships, joint research, global entrepreneurship competitions, and virtual exchange programmes. Such initiatives expose learners to diverse business environments and strengthen intercultural competence.

Implications of Innovative Pedagogies for Knowledge transfer and Entrepreneurship Education

The adoption of innovative pedagogies has profound implications for knowledge transfer and global competitiveness.

Knowledge transfer has become one of the primary objectives of contemporary higher education because the ultimate value of education lies not merely in acquiring knowledge but in applying that knowledge to solve practical problems, create innovations, and improve organizational performance. Within business and entrepreneurship education, effective knowledge transfer ensures that graduates possess the competencies required to function effectively in workplaces, establish sustainable enterprises, and contribute to national economic development.

Innovative pedagogies significantly strengthen knowledge transfer by creating learning environments that emphasize application rather than memorization. Students are actively engaged in real business situations where theoretical concepts are translated into practical solution.

<Global competitiveness has become an important indicator of national development in the twenty-first century. Nations increasingly compete through innovation, knowledge creation, technological capability, entrepreneurial activity, and highly skilled human capital rather than natural resource endowments alone (Porter, 1990). Innovative pedagogies strengthen global competitiveness through deliberately cultivating competencies extending beyond technical knowledge. These include: Critical thinking, Creativity, Communication, Collaboration, Digital literacy, Innovation, Leadership, Emotional intelligence, Adaptability and Lifelong learning. Modern employers require these skills. Through innovative pedagogies, graduates who possess these competencies will be globally competitive.

Conclusion

The transformation of the global economy, driven by rapid technological advancement, digitalization, artificial intelligence, globalization, and knowledge-intensive industries, has fundamentally altered the competencies required of graduates in business and entrepreneurship education. Traditional lecture-based instructional approaches, which emphasize passive knowledge acquisition, are increasingly inadequate for preparing learners to succeed in dynamic and highly competitive business environments. Consequently, innovative pedagogies have emerged as indispensable strategies for enhancing teaching effectiveness, facilitating knowledge transfer, developing entrepreneurial competencies, and promoting global competitiveness. This paper has demonstrated that innovative pedagogies-including experiential learning, problem-based learning, project-based learning, case-based learning, collaborative learning, simulation-based instruction, flipped classrooms, and AI-integrated learning- provide learner-centred educational experiences that bridge the gap between theory and practice. These approaches encourage students to actively construct knowledge, solve real business problems, collaborate with peers and industry professionals, utilize emerging technologies, and develop the critical competencies demanded by twenty-first-century workplaces. Although several challenges- including inadequate technological infrastructure, insufficient funding, limited digital competence among educators, rigid curricula, overcrowded classrooms, weak university-industry collaboration, resistance to change, and inappropriate assessment practices- continue to constrain the adoption of innovative pedagogies, these challenges are not insurmountable. Through deliberate policy reforms, sustained investment, institutional commitment, and collaborative partnerships, educational institutions can successfully reposition business and entrepreneurship education to meet the demands of the digital knowledge economy.

Recommendations

Based on the discussions and conclusions of this paper, the following recommendations are made to enhance the adoption of innovative pedagogies in business and entrepreneurship education for effective knowledge transfer and improved global competitiveness.

1. Universities and regulatory agencies should periodically review business and entrepreneurship education curricula to ensure alignment with emerging trends in the global economy, digital transformation, artificial intelligence, sustainability, and entrepreneurship. The curriculum should emphasize competency-based education, experiential learning, digital literacy, creativity, innovation, and problem-solving rather than rote memorization of theoretical concepts.
2. Educational institutions should organize regular capacity-building programmes, workshops, seminars, conferences, and professional certifications to improve lecturers' pedagogical competencies and digital literacy. Training should focus on learner-centred instructional strategies, artificial intelligence applications in education, business simulations, online teaching, authentic assessment, instructional design, and educational technology integration.
3. Governments and university management should provide adequate funding for modern educational technologies, including smart classrooms, learning management systems, virtual laboratories, artificial intelligence applications, business simulation software, cloud computing facilities, digital libraries, and reliable internet connectivity. Such investments will facilitate effective implementation of innovative pedagogies.
4. Business schools should establish sustainable collaborations with industries, entrepreneurs, professional bodies, financial institutions, innovation hubs, and government agencies. These partnerships should facilitate internships, industrial attachments, mentorship programmes, collaborative research, guest lectures, consultancy projects, and entrepreneurship incubation programmes that enhance practical learning and knowledge transfer.
5. Governments should formulate and implement policies that encourage pedagogical innovation, educational technology adoption, entrepreneurship development, university-industry collaboration, and research commercialization. Increased public investment in higher education will strengthen national human capital development and global competitiveness.

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ARTIFICIAL INTELLIGENCE-BASED AUTOMATION OF OFFICE TECHNOLOGY TASKS AND ENTREPRENEURIAL SKILL DEVELOPMENT AMONG OTME STUDENTS

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Abstract

The study examined artificial intelligence-based automation of office technology tasks and entrepreneurial skill development among Office Technology and Management Education (OTME) students. Specifically, it determined the relationships of AI-powered office task automation and digital office tools proficiency with entrepreneurial skill development. Two research questions guided the study, while two null hypotheses were tested at 0.05 level of significance. A correlational research design was adopted. The population comprised 170 final-year Business Education students in Federal College of Education (Technical), Omoku, Rivers State. The entire population was studied without sampling. Data were collected using the Artificial Intelligence-Based Office Automation and Entrepreneurial Skill Development Questionnaire (AIOAESDQ), which was validated by three experts. A trial test conducted using Business Education students at Ignatius Ajuru University of Education Port Harcourt yielded a Cronbach Alpha reliability coefficient of 0.81. Pearson Product Moment Correlation was used for data analysis. Findings revealed a moderate positive relationship between AI-powered office task automation and entrepreneurial skill development (r = .53, p < .001). Digital office tools proficiency also had a moderate positive relationship with entrepreneurial skill development (r = .58, p < .001). Both null hypotheses were rejected. The study concluded that students' engagement with AI-powered office automation and proficiency in digital office technologies are significantly associated with entrepreneurial skill development. It recommended increased practical exposure to AI-powered office automation and sustained hands-on training in digital office technologies.

Keywords: Artificial intelligence, office task automation, digital office tools, entrepreneurial skills.

Introduction

The rapid development of artificial intelligence (AI) is transforming office work, business operations, and entrepreneurship. Activities that previously depended heavily on manual effort are increasingly supported by intelligent technologies that generate documents, organize information, respond to enquiries, analyze data, and automate repetitive administrative processes. This transformation has implications for Business Education because graduates are expected not only to understand emerging technologies but also to apply them productively in employment and entrepreneurial activities. Ojo and Akpojotor (2025), following Udo and Eze (2019), Okoro (2021), and Mohammed (2023), observed that AI-powered technologies are influencing office management through virtual assistants, predictive analytics, robotic process automation, and natural language processing. Similarly, Baba and Baba (2025) argued that integrating AI into Office Technology and Management (OTM) can promote hands-on learning, critical thinking, problem-solving, and creativity while preparing students for industries increasingly dependent on automation.

Office Technology and Management Education (OTME) occupies an important position within Business Education because it prepares students with technological, administrative, communication and entrepreneurial competencies required for contemporary workplaces and self-employment. The changing digital workplace requires graduates who can perform traditional office functions while effectively using emerging technologies to organize information, communicate, make decisions and improve productivity. Ocholi, Aina and Ezeani (2022) emphasized the changing technological requirements of the secretarial profession and the skills needed for future office work, while Ademiluyi, Adegboye and Akande (2025) found that integrating AI into OTM pedagogy has considerable potential for improving students' engagement and educational outcomes.

Artificial intelligence-based automation of office technology tasks refers to the application of intelligent digital systems to perform, support or simplify routine and complex office activities. Such activities include document preparation, information retrieval, scheduling, correspondence, record management, data

processing and communication. AI-powered automation can reduce the amount of time devoted to repetitive activities while allowing users to concentrate on tasks requiring creativity, judgement and problem-solving (Salamim 2022; Ezeh 2023). Ojo and Akpojotor (2025) found that AI tools enhanced productivity and resource utilization in office environments and reported that automation could improve the speed and organization of office processes. Their findings further indicated strong positive relationships between operational efficiency and productivity (r = .715) and between operational efficiency and resource utilization (r = .795).

AI-powered office task automation is particularly relevant to students preparing for contemporary office and entrepreneurial activities. Familiarity with tools for automated document processing, conversational assistance and information management can enable students to complete administrative activities more efficiently while developing technological confidence. Evidence from the materials reviewed shows that AI-supported office processes can reduce repetitive tasks, facilitate document and information management and improve the organization of work. Recent empirical evidence also indicates that AI tools can enhance administrative efficiency among OTM students and assist them in developing digital and administrative competencies required in modern office environments.

A second important aspect of AI readiness in contemporary OTME is digital office tools proficiency. Digital office tools proficiency refers to students' ability to competently use relevant digital technologies to perform office and business-related tasks. It extends beyond basic computer operation to the effective application of intelligent and conventional digital tools for document creation, communication, data management, collaboration, information processing and other workplace activities. Evidence from recent OTM research identifies digital, problem-solving, cloud-computing, artificial intelligence, email and organizational skills among the competencies associated with graduates' economic productivity. Similarly, the material supplied for this study emphasizes that contemporary OTM graduates require analytical and digital capabilities because office professionals increasingly participate in data interpretation, business intelligence and technology-supported decision-making.

The importance of digital office tools proficiency extends beyond employability to entrepreneurship. Students who can use AI and other digital technologies effectively may be better positioned to establish and manage technology-enabled ventures, provide digital services and respond innovatively to business problems. Ukata and Mekuri-Ndimele (2025), in a study conducted in selected tertiary institutions in Rivers State, investigated AI tools required by students for digital entrepreneurship and decent employment, thereby underscoring the connection between AI competencies and contemporary entrepreneurial opportunities. Baba and Baba (2025) similarly found that AI integration could encourage entrepreneurship by enabling OTM students to develop innovative solutions and products while acquiring skills relevant to digital entrepreneurial activities.

Entrepreneurial skill development refers to the acquisition and improvement of competencies that enable individuals to identify opportunities, create solutions, solve business problems and establish or manage entrepreneurial activities. In the present study, entrepreneurial skill development encompasses innovation skill, digital business skill, problem-solving skill and self-employment readiness**.** These dimensions are particularly relevant to students operating in an AI-driven economy because entrepreneurial success increasingly requires the capacity to combine business knowledge with digital competence. Baba and Baba (2025) found that AI-supported OTM learning stimulates creativity and problem-solving and empowers students to develop innovative products and solutions. Similarly, Haruna, Oyelekan, and Gana (2025) emphasized technology proficiency and decision-making as key entrepreneurial competencies for Business Education students. Ikenga and Egbule (2025) linked practical, technology-supported learning with enhanced creativity, problem-solving, and entrepreneurial innovation.

Innovation skill enables students to generate, improve and translate ideas into useful business solutions, while problem-solving skill enables them to identify challenges, analyse alternatives and select appropriate responses. Digital business skill involves the capacity to apply digital technologies to business creation, communication, marketing, administration and service delivery. Self-employment readiness reflects students' preparedness to apply acquired knowledge and competencies in creating and managing economic activities rather than relying exclusively on paid employment. These abilities are increasingly interconnected with technological competence. Baba and Baba (2025) found that AI can support critical thinking, creativity, problem-solving and innovative entrepreneurial solutions among OTM students, while Ukata and Mekuri-Ndimele (2025) specifically linked students' acquisition of AI tools with digital entrepreneurship and employment opportunities.

The relationship between AI-powered office task automation and entrepreneurial skill development can therefore be understood from the opportunities that automation provides for students to practise efficient, technology-supported business activities. Students who use AI tools to prepare documents, manage information, communicate and complete routine office processes may progressively develop competencies that can be transferred to entrepreneurial situations. Likewise, proficiency in digital office tools can enable students to organize entrepreneurial activities, communicate with customers, process information and provide digitally enabled business services. Recent correlational evidence among OTM professionals has demonstrated a relationship between exposure to AI technologies and office work productivity, while related OTM research found a significant relationship between OTM skills and graduates' economic productivity.

Despite the potential of these technologies, merely having access to AI tools does not necessarily imply that students possess the proficiency required to translate their use into entrepreneurial competencies. Challenges associated with technological infrastructure, inadequate expertise and limited practical exposure can restrict meaningful AI integration. Baba and Baba (2025) identified inadequate infrastructure and shortage of experts as barriers to integrating AI into OTM programmes, while Ademiluyi et al. (2025) similarly reported challenges that could hinder effective AI-driven educational initiatives in OTM. Consequently, empirical investigation is required to establish whether students' engagement with AI-powered office automation and their proficiency in digital office tools are actually related to their entrepreneurial skill development.

It is against this background that the present study investigates Artificial Intelligence-Based Automation of Office Technology Tasks and Entrepreneurial Skill Development among OTME Students, focusing on final-year Business Education students in Federal College of Education (Technical), Omoku. Specifically, the study examines the relationship of AI-powered office task automation and digital office tools proficiency with entrepreneurial skill development. Establishing these relationships could provide evidence concerning whether students' engagement with emerging office technologies corresponds with the innovation, digital business, problem-solving and self-employment competencies required for contemporary entrepreneurial activities.

Statement of the Problem

Office Technology and Management Education is expected to prepare students with technological, administrative and entrepreneurial competencies required to function effectively in changing workplaces and to pursue self-employment opportunities. The increasing automation of office activities has made AI competence particularly relevant to this responsibility. Contemporary office technologies can support document preparation, communication, information management, scheduling, workflow organization and other administrative activities. Ojo and Akpojotor (2025) found that AI technologies can enhance productivity and resource utilization in office environments, while Baba and Baba (2025) established that AI integration in OTM has the potential to promote problem-solving, creativity and innovative entrepreneurial activities.

However, the availability and use of AI technologies do not automatically translate into entrepreneurial skill development. Students may be exposed to AI-powered tools without acquiring sufficient proficiency to use them independently for digital business activities, innovation or entrepreneurial problem-solving. Moreover, inadequate infrastructure, limited expertise and insufficient practical integration can restrict the benefits students derive from AI technologies. Ademiluyi et al. (2025) identified significant challenges affecting AI integration into OTM pedagogy, while Baba and Baba (2025) reported inadequate infrastructure and lack of relevant expertise as barriers to effective AI integration.

The concern, therefore, is whether final-year Business Education students' engagement with AI-powered office task automation and their proficiency in digital office tools are associated with the entrepreneurial skills expected of them as prospective graduates. Although previous studies have examined AI integration, office efficiency, OTM pedagogy and AI-supported entrepreneurship, evidence is still needed within the specific context of final-year Business Education students in Federal College of Education (Technical), Omoku. The problem of this study is consequently to determine the relationship between AI-powered office task automation and entrepreneurial skill development**,** and between digital office tools proficiency and entrepreneurial skill development among the students.

Purpose of the Study

The main purpose of the study is to determine the relationship between artificial intelligence-based automation of office technology tasks and entrepreneurial skill development among OTME students. Specifically, the study seeks to:

1. Determine the relationship between AI-powered office task automation and entrepreneurial skill development among OTME students.
2. Determine the relationship between digital office tools proficiency and entrepreneurial skill development among OTME students.

Research Questions

The following research questions guide the study:

1. What is the relationship between AI-powered office task automation and entrepreneurial skill development among OTME students?
2. What is the relationship between digital office tools proficiency and entrepreneurial skill development among OTME students?

Null Hypotheses

The following null hypotheses are tested at the 0.05 level of significance:

Ho_1: There is no significant relationship between AI-powered office task automation and entrepreneurial skill development among OTME students.

Ho_2: There is no significant relationship between digital office tools proficiency and entrepreneurial skill development among OTME students

Methodology

The study adopted a correlational research design. The design was considered appropriate because the study sought to determine the relationship between AI-powered office task automation and entrepreneurial skill development, as well as the relationship between digital office tools proficiency and entrepreneurial skill development among Office Technology and Management Education (OTME) students without manipulating the variables. The study was conducted at Federal College of Education (Technical), Omoku, Rivers State. The population comprised 170 final-year Business Education students of the institution. The entire population was studied because it was considered manageable; therefore, no sampling was undertaken. The instrument for data collection was a structured questionnaire titled Artificial Intelligence-Based Office Automation and Entrepreneurial Skill Development Questionnaire (AIOAESDQ)**.** The instrument comprised three clusters. Cluster A contained six items on AI-powered office task automation, Cluster B contained six items on digital office tools proficiency, while Cluster C contained eight items on entrepreneurial skill development covering innovation skill, digital business skill, problem-solving skill and self-employment readiness. The items were structured on a four-point response scale of Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2 and Strongly Disagree (SD) = 1**.** The instrument was subjected to face and content validation by three experts, comprising two experts in Business Education and one expert in Measurement and Evaluation. The reliability of the instrument was established through a trial test conducted using Business Education students at Ignatius Ajuru University of Education Port Harcourt, who were outside the population of the study. Data obtained from the trial test were analysed using Cronbach Alpha, which yielded an overall reliability coefficient of 0.81**,** indicating satisfactory internal consistency. Copies of the questionnaire were administered to the respondents with the assistance of research assistants. Pearson Product Moment Correlation (PPMC) was used to answer the research questions and test the null hypotheses. For interpretation of the research questions, correlation coefficients of 0.00–0.19 were regarded as very weak, 0.20–0.39 as weak, 0.40–0.59 as moderate, 0.60–0.79 as strong, and 0.80–1.00 as very strong**,** with the positive or negative sign indicating the direction of the relationship. The null hypotheses were tested at 0.05 level of significance. A null hypothesis was rejected where $p < .05$ and retained where $p \geq .05$.

Results

Research Question One

What is the relationship between AI-powered office task automation and entrepreneurial skill development among OTME students?

Table 1: Pearson Correlation between AI-Powered Office Task Automation and Entrepreneurial Skill Development

Variables	N	Pearson *r*	Sig. (2-tailed)	Relationship
AI-powered office task automation and entrepreneurial skill development	170	.53**	< .001	Moderate Positive

****. Correlation is significant at the 0.01 level (2-tailed).**

Table 1 yielded a Pearson correlation coefficient of .53 between AI-powered office task automation and entrepreneurial skill development among OTME students. The correlation coefficient (*r* = .53) represents a moderate positive relationship between the two variables. This indicates that higher levels of AI-powered office task automation are associated with higher levels of entrepreneurial skill development among the students. Thus, students who demonstrate greater engagement with AI-powered office automation tend to demonstrate greater entrepreneurial skill development.

Research Question Two

What is the relationship between digital office tools proficiency and entrepreneurial skill development among OTME students?

Table 2: Pearson Correlation between Digital Office Tools Proficiency and Entrepreneurial Skill Development

Variables	N	Pearson *r*	Sig. (2-tailed)	Relationship
Digital office tools proficiency and entrepreneurial skill development	170	.58**	< .001	Moderate Positive

****. Correlation is significant at the 0.01 level (2-tailed).**

Table 2 yielded a Pearson correlation coefficient of .58 between digital office tools proficiency and entrepreneurial skill development among OTME students. The correlation coefficient (*r* = .58) indicates a moderate positive relationship between the variables. This means that higher digital office tools proficiency is associated with higher entrepreneurial skill development among the students. Thus, students who demonstrate greater proficiency in applying digital office technologies tend to demonstrate higher levels of innovation, digital business, problem-solving and self-employment readiness skills.

Test of Hypotheses

Hypothesis One

Ho_1: There is no significant relationship between AI-powered office task automation and entrepreneurial skill development among OTME students.

Table 3: Pearson Correlation between AI-Powered Office Task Automation and Entrepreneurial Skill Development

Variables	N	*Pearson r*	Sign. (2-tailed)	Alpha	Decision
AI-powered office task automation and entrepreneurial skill development	170	.53	< .001	.05	Reject H_{01}

Table 3 shows a Pearson correlation coefficient of .53 with a probability value of p < .001 between AI-powered office task automation and entrepreneurial skill development. Since the probability value is less than the 0.05 level of significance, the null hypothesis was rejected. Therefore, there is a significant moderate positive relationship between AI-powered office task automation and entrepreneurial skill development among OTME students.

Hypothesis Two

Ho_2: There is no significant relationship between digital office tools proficiency and entrepreneurial skill development among OTME students.

Table 4: Pearson Correlation between Digital Office Tools Proficiency and Entrepreneurial Skill Development

Variables	N	*Pearson r*	Sign. (2-tailed)	Alpha	Decision
Digital office tools proficiency and entrepreneurial skill development	170	.58	< .001	.05	Reject H_{02}

Table 4 shows a Pearson correlation coefficient of **.58** with a probability value of p < .001 between digital office tools proficiency and entrepreneurial skill development. Since the probability value is less than the 0.05 level of significance, the null hypothesis was rejected. Therefore, there is a significant moderate

positive relationship between digital office tools proficiency and entrepreneurial skill development among OTME students.

Summary of Findings

The study found that:

1. AI-powered office task automation had a moderate positive relationship with entrepreneurial skill development among OTME students (r = .53), and the relationship was statistically significant (p < .001).
2. Digital office tools proficiency had a moderate positive relationship with entrepreneurial skill development among OTME students (r = .58), and the relationship was statistically significant (p < .001).

Discussion of Findings

AI-Powered Office Task Automation and Entrepreneurial Skill Development

The first finding revealed a moderate positive relationship between AI-powered office task automation and entrepreneurial skill development among OTME students (r = .53). The relationship was statistically significant at the 0.05 level (p < .001). This indicates that students with higher engagement in AI-supported office activities tend to demonstrate higher entrepreneurial skill development. The result suggests that students' experiences with AI applications for document preparation, information organization, virtual assistance and repetitive task automation are associated with the development of innovation, digital business, problem-solving and self-employment readiness skills.

The finding is consistent with Ojo and Akpojotor (2025), who reported that the integration of AI into office management was associated with improved productivity and resource utilization. Their study further showed that AI-supported office processes facilitated faster task completion, reduced repetitive work and errors, and improved workflow organization. The authors also reported strong positive relationships between operational efficiency and productivity as well as between operational efficiency and resource utilization, demonstrating the potential contribution of intelligent technologies to more effective office activities.

The finding also supports Baba and Baba (2025), who maintained that the integration of AI into Office Technology and Management can provide students with practical experiences that promote critical thinking, creativity, problem-solving and the development of innovative solutions. Similarly, Haruna, Oyelekan and Gana (2025) emphasized the relevance of technology proficiency and decision-making abilities to entrepreneurial competency development among Business Education students. These findings imply that students' engagement with AI should extend beyond awareness of emerging technologies to practical application in activities resembling contemporary office and entrepreneurial tasks.

The significant relationship obtained in the present study further suggests that AI-powered automation and entrepreneurial skill development tend to move in the same direction among the students studied. This does not establish that AI automation causes entrepreneurial skill development; rather, it indicates that students reporting greater engagement with AI-supported office automation also tend to report stronger entrepreneurial competencies. This relationship reinforces the relevance of practical AI exposure in preparing OTME students for technology-driven workplaces and entrepreneurial activities.

Digital Office Tools Proficiency and Entrepreneurial Skill Development

The second finding revealed a moderate positive relationship between digital office tools proficiency and entrepreneurial skill development among OTME students (r = .58). The relationship was statistically significant (p < .001). The finding indicates that students who demonstrate greater proficiency in word processing, spreadsheets, digital presentations, online collaboration, information management and related office technologies also tend to demonstrate higher levels of entrepreneurial skill development. The slightly higher correlation obtained for digital office tools proficiency compared with AI-powered office task automation suggests that broad competence in applying digital office technologies is closely associated with students' entrepreneurial capabilities.

This finding agrees with the contemporary orientation of OTM towards practical digital competence. The materials reviewed emphasize that modern OTM graduates increasingly require abilities to analyse information, communicate findings, work with data and use digital technologies for decision-making and workplace activities. Ocholi, Aina and Ezeani (2022) similarly emphasized the technological skills required by secretarial professionals for future office work, indicating that changing workplace practices demand continuing development of relevant technological competencies.

The result is further consistent with the view that digital competence provides opportunities beyond conventional paid employment. Students who can independently apply digital office technologies can potentially transfer such competencies to digital service provision, business communication, information management and technology-supported entrepreneurial ventures. Haruna et al. (2025) emphasized technology proficiency as an important entrepreneurial competency among Business Education students, while Ikenga and Egbule (2025) associated practical technology-supported learning with creativity, problem-solving and entrepreneurial innovation.

The rejection of the second null hypothesis therefore indicates that the observed relationship between digital office tools proficiency and entrepreneurial skill development is statistically significant. Nevertheless, as with the first finding, the relationship should not be interpreted as proof that digital office proficiency alone causes entrepreneurial development. Rather, the result demonstrates that students with stronger digital office proficiency tend to possess stronger entrepreneurial competencies, thereby highlighting the importance of practical digital competence in contemporary OTME preparation.

Conclusion

The study concluded that AI-powered office task automation and digital office tools proficiency have significant moderate positive relationships with entrepreneurial skill development among OTME students. Students who demonstrate greater engagement with AI-supported office automation and higher proficiency in digital office technologies tend to demonstrate stronger innovation, digital business, problem-solving and self-employment readiness skills. Consequently, practical exposure to AI and digital office technologies remains important in preparing OTME students for contemporary entrepreneurial opportunities.

Recommendations

Based on the findings, the following recommendations are made:

1. Business Education lecturers should provide OTME students with regular practical opportunities to use AI-powered tools for document preparation, information management, communication and other office tasks to strengthen the technological experiences associated with entrepreneurial skill development.
2. Business Education departments should strengthen practical training in digital office technologies by providing students with sustained hands-on activities involving word processing, spreadsheets, presentation, collaboration and information-management tools to enhance competencies applicable to digital entrepreneurship and self-employment.

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FOSTERING ECO-INNOVATION THROUGH BUSINESS EDUCATION: A COLLABORATIVE APPROACH TO COE-INDUSTRY PARTNERSHIP IN SOUTH-SOUTH, NIGERIA.

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Abstract

This study examines eco-innovation in business education, focusing on a collaborative approach to Colleges of Education (COE) and industry partnerships in South-South Nigeria. The study adopts a descriptive survey design, guided by three research questions and three hypotheses tested at a 0.05 level of significance. The population consisted of 154 Business Education lecturers from the six South-South states, including federal and state Colleges of Education. A purposeful sampling technique was carried out to include 200 eco industry experts who are capable of partnership in eco-innovation initiatives. For the student population, which is over 1,000,000 from the 12 Colleges of Education (3 federal and 9 state-owned), a random sampling was conducted using Krejcie and Morgan's table to draw a sample of 384 students. Data were collected using a structured questionnaire developed by the researcher. Data analysis was carried out using both descriptive and inferential statistics. Mean and standard deviation were used to answer the research questions, with a criterion mean of 2.50 for decision-making. ANOVA was employed to test hypotheses at a 0.05 level of significance, particularly to examine differences among lecturers, industry managers, and students regarding eco-innovation practices and collaboration. Hypotheses were rejected when the p-value was less than or equal to 0.05 and retained otherwise. Findings revealed that COE–industry partnerships significantly influence eco-innovation integration in business education curriculum and such partnerships significantly enhance eco-innovation skill development among students. The study concludes that college–industry partnerships play a vital role in promoting eco-innovation in business education, particularly in curriculum integration and skill development. Based on the finding of the study, it was recommended that Colleges of Education should strengthen their partnership with industry partners to develop and implement eco-innovation-focused business education curricula that meet industry needs.

Keywords: Eco-Innovation, Collaboration, Business education, COE-Industry Partnership, Sustainable Development.

Introduction

The growing global concern over environmental degradation, climate change, and unsustainable resource utilization has intensified the need for innovative approaches that integrate economic growth with environmental sustainability. In Nigeria, the need for eco-innovation is particularly pressing. The country is endowed with rich natural resources, including oil, gas, and biodiversity, but has struggled to translate these resources into sustainable economic growth and development (World Bank, 2019). The oil and gas industry, which dominates the Nigerian economy, has been criticized for its environmental and social impacts, including pollution, deforestation, and human rights abuses. In response, there is growing recognition of the need for a more sustainable and diversified economy, driven by eco-innovation and entrepreneurship (Abiona, Odo, & Shobowale, 2021).

According to Kemp & Pearson, (2011) eco-innovation is the development and implementation of new products, services, and processes that reduce environmental harm and promote sustainable growth. Shawesh, Al-Hakimi, and Al-Mamary, (2024) maintained that **e**co-innovation has emerged as a strategic response to these challenge**s**, referring to the development and application of products, processes, and

business practices that significantly reduce environmental risks and resource use while maintaining economic value. In both developed and developing economies, eco-innovation is increasingly recognized as a key driver of sustainable development and competitive advantage, particularly as industries face regulatory pressures and market demand for environmentally friendly solutions (Akpojo, & Chukwuemeke, 2020). Consequently, fostering eco-innovation requires not only technological advancement but also the development of appropriate knowledge, skills, and institutional frameworks. **This reality places a particular responsibility on teacher-training institutions (**Colleges of Education (COEs) **to embed eco-innovation into both pedagogy and practice.**

Colleges of Education (COEs) are institutions that provide teacher training and education, and are strategically positioned to promote sustainability and eco-innovation in the education sector (NCE, 2018). Colleges of Education (COEs) therefore, have a critical role to play in fostering eco-innovation in Nigeria. Sustainable agriculture technology, for instance, can help improve crop yields, reduce post-harvest losses, and promote sustainable farming practices. Renewable energy solutions, such as solar and wind power, can help reduce dependence on fossil fuels and mitigate climate change (Sanni, & Francis, 2018). Waste to wealth technology, on the other hand, can help reduce waste disposal problems, create employment opportunities, and generate income for communities (UNEP, 2018). In the context of this study therefore, COE-Industry Partnerships refers to collaboration between COEs and Eco-Industry Experts in the areas of curriculum development, R&D, and internship programmes in order to bring about the much needed eco-innovation initiative among students.

Curriculum development is a critical area of COE-Industry Collaboration, as it enables COEs to design and deliver programmes that are relevant to industry needs and promote eco-innovation (AACSB, 2019). R&D collaboration is also essential, as it enables COEs and industry to work together to develop new technologies and solutions (OECD, 2010). Internship programmes, on the other hand, provide students with practical experience and opportunities to apply their knowledge and skills in industry settings (Nwankwo, 2018). Institution–industry collaboration facilitates knowledge exchange, practical skill development, and exposure to real-life business challenges, thereby bridging the gap between academic training and labour market requirements. Empirical evidence from Nigeria indicates that such collaboration significantly contributes to technological development and industrialization by improving students' competencies and fostering innovation-oriented mindsets. This collaborative approach aligns with contemporary innovation models that emphasize the interaction between academia and industry as a catalyst for knowledge creation and application. **Thus,** business education, plays a pivotal role in equipping individuals with the competencies required to drive innovation and sustainable practices.

As a cornerstone of national development, business education enhances skills acquisition, technological advancement, and the capacity to utilize environmental resources effectively. Business education, in particular, prepares learners with entrepreneurial, managerial, and decision-making skills necessary for addressing complex economic and environmental challenges. However, traditional approaches to business education in many developing regions, including Nigeria, have been criticized for being overly theoretical and insufficiently aligned with real-world industrial and environmental demands (Akpojo & Chukwuemeke, 2020). In response to these limitations, collaboration between educational institutions—especially Colleges of Education (COEs)—and industry has gained prominence as a mechanism for enhancing the relevance and effectiveness of business education.

Furthermore, Munodawafa and Johl, (2019) posit that eco-innovation in developing economies like Nigeria is highly context-specific and depends on access to knowledge, institutional support, and collaboration among key stakeholders. Industry–academia partnerships provide a critical platform for integrating environmental sustainability into business practices through shared expertise, research, and innovation. Such partnerships enable the co-creation of solutions that address environmental challenges while enhancing economic productivity. In the South-South region of Nigeria, where industrial activities such as oil exploration and manufacturing have significant environmental impacts, the need for eco-innovative practices is particularly urgent.

Despite the recognized importance of collaboration and eco-innovation, there remains a gap in structured frameworks that effectively integrate business education with industry-driven sustainability initiatives in Nigeria's Colleges of Education. Many institutions still operate in isolation from industry, limiting their capacity to contribute meaningfully to eco-innovation and sustainable development. Therefore, this study seeks to explore how fostering eco-innovation through business education can be enhanced using a collaborative COE–industry partnership approach in South-South Nigeria.

Statement of the Problem

The world is at a critical juncture, facing unprecedented environmental challenges that threaten the very survival of our planet. Climate change, biodiversity loss, and pollution have become pressing concerns, necessitating a radical shift in the way we live, produce, and consume (Sanni & Francis, 2018). Hence, eco-innovation has emerged as a vital strategy for achieving sustainable development and mitigating the environmental impacts of human activities. Despite this reality, the adoption of eco-innovative practices among businesses remains relatively low, largely due to inadequate skills, limited awareness, and weak integration of sustainability principles into professional training. Scholars have emphasized that eco-innovation is strongly dependent on knowledge development and institutional support systems, which are often underdeveloped in emerging economies (Sanni & Francis, 2018; Munodawafa & Johl, 2019). This gap highlights a critical need for educational systems to play a more active role in equipping individuals with competencies that support environmentally sustainable innovation.

Business education, particularly within Colleges of Education in Nigeria, is expected to prepare graduates with the knowledge and skills required to address contemporary economic and environmental challenges. However, existing evidence suggests that business education programmes are still largely theoretical, with limited emphasis on practical, industry-relevant, and sustainability-oriented learning experiences (Etejere, Oghenetega, & Iruonagbe, 2019). The absence of strong collaboration between educational institutions and industry further constrains the ability of graduates to translate knowledge into eco-innovative practices. Studies have shown that industry–academia partnerships significantly enhance skill acquisition, innovation capacity, and employability outcomes (Akpojo & Chukwuemeke, 2020; Abiona, 2021). Yet, in many Nigerian Colleges of Education, such partnerships are either weak, informal, or entirely absent, thereby limiting opportunities for experiential learning and the co-creation of sustainable business solutions.

Furthermore, while policy discussions increasingly emphasize the importance of sustainable development and innovation, there is a lack of structured frameworks that integrate business education with eco-innovation through collaborative approaches (Abiona, Odo, & Shobowale, 2021). This disconnect creates a mismatch between the competencies produced by educational institutions and the sustainability needs of industries operating in environmentally sensitive regions. Consequently, graduates of business education programmes may lack the practical skills and innovative mindset required to drive eco-friendly transformation in the workplace. It is against this backdrop that this study seeks to examine how fostering eco-innovation through business education can be enhanced using a collaborative Colleges of Education–industry partnership approach in South-South Nigeria.

Research Objectives

1. To examine the influence of College of Education-industry partnership on eco-innovation integration in business education curriculum.
2. To assess the impact of College of Education-industry partnership on eco-innovation skill development among business education students.
3. To identify the challenges of COE-industry collaboration in promoting eco-innovation in business education.

Research Questions

1. What is the influence of College of Education-industry partnership on eco-innovation integration in business education curriculum?
2. How does College of Education-industry partnership enhance eco-innovation skill development among business education students?

3. What are the challenges of COE-industry collaboration in promoting eco-innovation in business education?

Research Hypotheses

Ho_1: College of Education-industry partnership has no significant influence on eco-innovation integration in business education curriculum.

Ho_2: College of Education-industry partnership does not significantly enhance eco-innovation skill development among business education students.

Ho_3: There is no significant difference in the mean response of respondents regarding the challenges of COE-industry collaboration in promoting eco-innovation in business education.

Business Education (College of Education-Industry Partnership)

The concept of College of Education (COE)-industry partnership refers to the collaborative relationship between institutions of higher learning, specifically Colleges of Education, and industries, with the aim of promoting innovation, entrepreneurship, and economic development (Etzkowitz & Leydesdorff, 2000). This partnership is built on the premise that COEs possess theoretical knowledge and research capabilities, while industries have practical experience and resources, and that together, they can create innovative solutions to real-world problems (OECD, 2010). In the context of eco-innovation, COE-industry partnership is crucial for developing and implementing sustainable solutions to environmental challenges (UNEP, 2019). COEs can provide research and expertise on environmental issues, while industries can provide resources, technology, and market access to scale up eco-innovative solutions (Kemp & Pearson, 2017). For instance, a COE-industry partnership can lead to the development of sustainable technologies, products, and services that reduce greenhouse gas emissions, promote renewable energy, and conserve natural resources.

The partnership between COEs and industries can take various forms, including collaborative research, internships, mentorship, and curriculum development (AACSB, 2019). Through these partnerships, COEs can gain insights into industry needs and develop curricula that equip students with the skills and knowledge required to drive eco-innovation. Industries, on the other hand, can access new knowledge, technologies, and talent, and contribute to the development of sustainable solutions that enhance their competitiveness and reputation. In Nigeria, COE-industry partnership is essential for promoting eco-innovation and sustainable development, given the country's rich natural resources and environmental challenges (NBS, 2020). By collaborating with industries, COEs can develop and implement eco-innovative solutions that address pressing environmental issues, such as pollution, deforestation, and climate change, and contribute to the country's economic growth and development.

Areas for College of Education-Industry Partnership

Curriculum Development

Curriculum development is a critical aspect of COE-industry collaboration, as it enables COEs to design and deliver programs that are relevant to industry needs and promote eco-innovation (AACSB, 2019). Industry partners can provide input on the curriculum, share their expertise, and provide resources to support the development of courses and programs (Etzkowitz & Leydesdorff, 2000). This collaboration can help to ensure that COE graduates have the skills and knowledge required by industry, and are equipped to drive eco-innovation and sustainability. Effective curriculum development requires a deep understanding of industry needs and the ability to integrate industry perspectives into academic programs. COEs can work with industry partners to develop curricula that are tailored to specific industry needs, and that incorporate real-world examples and case studies (AACSB, 2019). This collaboration can help to promote research and development, and foster innovation and entrepreneurship (Etzkowitz & Leydesdorff, 2000). This collaboration can also help to promote experiential learning, internships, and other forms of work-integrated learning that are critical for developing the skills and knowledge required by industry. By collaborating with industry on curriculum development, COEs can promote eco-innovation and sustainability, and equip graduates with the skills and knowledge required to drive sustainable development (UNPRME, 2019). It is based on this premise the study seek to find out whether College of Education-industry partnership can influence eco-innovation integration in business education curriculum.

Research and Development

Research and development (R&D) is a critical aspect of COE-industry collaboration, as it enables COEs to work with industry partners to develop new technologies, products, and services (OECD, 2010). COEs can provide research expertise and resources, while industry partners can provide funding, data, and access to real-world problems (Etzkowitz & Leydesdorff, 2000; Sanni, & Francis, 2018). This collaboration can help to promote innovation, entrepreneurship, and economic growth. Effective R&D collaboration requires a deep understanding of industry needs and the ability to translate research into practical applications. COEs can work with industry partners to develop research projects that address specific industry challenges, and that promote eco-innovation and sustainability. This collaboration can also help to promote technology transfer, licensing, and commercialization of research outputs. By collaborating with industry on R&D, COEs can promote eco-innovation and sustainability, and contribute to economic growth and development. This collaboration can also help to promote entrepreneurship, job creation, and regional development (Etzkowitz & Leydesdorff, 2000).

Internship and Mentorship

Internship and mentorship are critical aspects of COE-industry collaboration, as they provide students with practical experience and exposure to industry (AACSB, 2019). Industry partners can provide internship opportunities, mentorship, and coaching to COE students, helping them to develop the skills and knowledge required by industry (Etzkowitz & Leydesdorff, 2000). This collaboration can help to promote employability, entrepreneurship, and career advancement. Effective internship and mentorship programs require a deep understanding of industry needs and the ability to provide students with meaningful work experiences. COEs can work with industry partners to develop internship programs that are tailored to specific industry needs, and that provide students with opportunities to apply theoretical knowledge in practical settings (AACSB, 2019). This collaboration can also help to promote networking, job placement, and career advancement. By collaborating with industry on internship and mentorship, COEs can promote eco-innovation and sustainability, and equip graduates with the skills and knowledge required to drive sustainable development (Munodawafa, & Johl, 2019). Thus we hypothesize that College of Education-industry partnership does not significantly enhance eco-innovation skill development among business education students.

Concept of Eco-Innovations

Eco-innovation refers to the development and implementation of new products, services, processes, and business models that reduce environmental impacts and promote sustainable development (Kemp & Pearson, 2011). It involves the creation of novel solutions that address environmental challenges, such as climate change, pollution, and resource depletion, while also meeting human needs and creating economic value (UNEP, 2019). Eco-innovation can occur in various sectors, including energy, transportation, agriculture, and manufacturing, and can be driven by technological, organizational, and social innovations. Eco-innovation is a key driver of sustainable development, as it enables societies to transition towards more resource-efficient and environmentally-friendly production and consumption patterns. It can lead to the creation of new industries, jobs, and economic opportunities, while also improving environmental quality and human well-being (**EC, 2011**). For instance, the development of renewable energy technologies, such as solar and wind power, has created new industries and jobs, while reducing greenhouse gas emissions and dependence on fossil fuels. Similarly, eco-innovative products, such as electric vehicles and sustainable building materials, are transforming markets and promoting sustainable consumption patterns.

Eco-innovation is not limited to technological innovations; it also involves social and organizational innovations that promote sustainable lifestyles and consumption patterns (Geels, 2021). For example, sharing economy platforms, such as car-sharing and product-sharing services, are promoting collaborative consumption and reducing waste, while also creating new business opportunities and social connections. Similarly, eco-labeling and certification schemes are promoting sustainable production practices and influencing consumer behavior. Overall, eco-innovation is a critical component of sustainable development, as it enables societies to address environmental challenges while promoting economic growth and human well-being.

Measures of Eco-Innovation
Partnership between Colleges of Education (COEs) and industry can bring about eco-innovation solutions in the three dimensions of sustainable agriculture practices, renewable energy technologies, and waste to wealth technologies.

Sustainable Agriculture Practices:
1. COEs and industry partners can collaborate to develop curricula that incorporate sustainable agriculture practices, ensuring that graduates are equipped with the knowledge and skills needed to promote sustainable agriculture.
2. COEs and industry partners can conduct joint research on sustainable agriculture practices, such as climate-smart agriculture, organic farming, and agroforestry, to develop innovative solutions to environmental challenges.
3. Industry partners can provide practical training and internships for COE students, enabling them to gain hands-on experience in sustainable agriculture practices.
4. COEs can provide extension services to farmers, promoting sustainable agriculture practices and providing technical assistance to improve crop yields and reduce environmental degradation.

Renewable Energy Technologies:
1. COEs and industry partners can collaborate on research and development of renewable energy technologies, such as solar and wind power, to improve efficiency and reduce costs.
2. COEs and industry partners can provide training and capacity-building programs for students and professionals on renewable energy technologies, promoting the adoption of these technologies.
3. Industry partners can transfer renewable energy technologies to COEs, enabling them to develop and adapt these technologies to local contexts.
4. COEs and industry partners can engage with local communities to promote the adoption of renewable energy technologies, increasing energy access and reducing greenhouse gas emissions.

Waste to Wealth Technologies:
1. COEs and industry partners can establish innovation incubation centers to support the development of waste to wealth technologies, such as recycling and upcycling.
2. COEs and industry partners can conduct joint research on waste to wealth technologies, developing innovative solutions to waste management challenges.
3. Industry partners can provide practical training and internships for COE students, enabling them to gain hands-on experience in waste to wealth technologies.
4. COEs and industry partners can engage with local communities to promote the adoption of waste to wealth technologies, reducing waste disposal and promoting resource efficiency (Kumar, Luthra, & Haleem, 2018); Abiona, Odo., & Shobowale, 2021).

Theoretical Review
Underpinning this study is the Triple Helix Theory as propounded by Etzkowitz, H., & Leydesdorff, L. (2000). The Triple Helix Theory proposes that innovation and economic growth are driven by the interaction between three key actors: university, industry, and government. This theory suggests that the traditional boundaries between these actors are blurring, and that collaboration and interaction between them is essential for driving innovation and economic growth. The theory argues that university, industry, and government are intertwined and interdependent, and that each actor plays a critical role in shaping the innovation process. The Triple Helix Theory emphasizes the importance of collaboration, networking, and knowledge sharing between these actors to create new technologies, products, and services.

The Triple Helix Theory is relevant to this current study because it provides a framework for understanding the collaboration between Colleges of Education (COEs), industry, and government in promoting eco-innovation and sustainability in Nigeria. This study seeks to explore the role of COE-industry collaboration in promoting eco-innovation, and the Triple Helix Theory provides a useful lens for analyzing this collaboration. The theory suggests that COEs, industry, and government must work together to drive eco-innovation and sustainability, and that this collaboration is critical for creating new technologies, products,

and services that address environmental challenges. By applying the Triple Helix Theory, this study can identify the strengths and weaknesses of COE-industry collaboration in Nigeria, and provide recommendations for improving this collaboration to promote eco-innovation and sustainability. The relevance of this theory to the current study is that it highlights the importance of collaboration and interaction between COEs, industry, and government in driving eco-innovation and sustainability. This study seeks to explore the role of COE-industry collaboration in promoting eco-innovation, and the Triple Helix Theory provides a useful framework for understanding this collaboration. By applying this theory, this study can provide insights into how COEs, industry, and government can work together to promote eco-innovation and sustainability in Nigeria.

Empirical Review

Existing empirical studies overlap with this study in examining partnerships between educational institutions and industry for innovation outcomes. Yet, none replicate its specific concern. This review therefore draws on closely related works to contextualize the present inquiry. Adeyeye, Jegede, and Akinwale (2019) conducted an empirical study on university–industry collaboration in Nigeria, focusing on its role in innovation and knowledge transfer. The study adopted a survey research design, collecting data from academic staff and industry practitioners across selected Nigerian universities and firms. Data were analyzed using descriptive statistics and regression analysis. The findings revealed that university–industry collaboration significantly enhances innovation performance through knowledge sharing, joint research activities, and curriculum improvement. However, the study also identified major challenges such as inadequate funding, weak institutional linkages, and poor policy implementation. This study is highly relevant to the present research as it supports the finding that COE–industry partnerships can enhance eco-innovation integration and skill development. At the same time, it aligns with the current study's identification of structural and institutional challenges affecting effective collaboration in Nigeria.

Ibidunni, Kolawole, Olokundun, Ogbari, and Borishade (2020) examined the relationship between knowledge transfer and innovation performance in Nigerian universities, with a focus on the moderating role of industry partnership. The study employed a quantitative research design, using structured questionnaires administered to academic staff across selected universities in Nigeria. Data were analyzed using Structural Equation Modeling (SEM). The findings indicated that knowledge transfer significantly influences innovation performance, and this relationship is strengthened when there is active industry collaboration. The study further showed that institutions with stronger partnerships demonstrate higher levels of innovation output and practical relevance in their academic programmes. This study supports the present research by demonstrating that industry collaboration enhances both innovation outcomes and the practical orientation of education. It reinforces the argument that COE–industry partnerships are critical for fostering eco-innovation skills and improving the effectiveness of business education in Nigeria.

In yet another study, Ritzén and Sandström (2017) carried out an empirical study titled Barriers to the circular economy – Integration of perspectives and domains to examine how college-industry collaboration influences eco-innovation competencies. The study used a mixed-methods design and was carried out in Sweden. The population comprised business and engineering students in universities that ran industry-linked sustainability projects. The sample included 214 undergraduate and master's students across four universities, selected purposively from "Sustainable Innovation Labs" co-run with industry, along with 18 industry mentors from manufacturing and cleantech firms. Data collection techniques involved standardized pre-posttests measuring eco-design and life-cycle thinking competence, semi-structured interviews with students and industry mentors, and analysis of student project reports. Quantitative data were analyzed using paired t-tests while qualitative data were subjected to thematic analysis. The findings showed a 41% mean increase in students' ability to apply eco-innovation principles to business models after exposure to industry collaboration. Direct mentoring from firm sustainability managers emerged as the strongest predictor of skill gain, and students in structured college-industry projects demonstrated significantly higher competence in green opportunity recognition and sustainable business plan formulation compared to those taught through classroom instruction alone. The study also identified misaligned academic-industry timelines and limited faculty expertise in translating technical eco-innovation into business pedagogy as key challenges.

Methodology

This study adopted a descriptive survey research design to investigate how eco-innovation can be fostered through Business Education using a collaborative approach between Colleges of Education (COEs) and industry partners in South-South Nigeria. The design was considered appropriate because it enabled the researcher to obtain data from three key stakeholder groups—lecturers, industry managers, and students—regarding their perceptions, practices, and collaborative efforts toward eco-innovation, without manipulating any variables. The study was conducted in the South-South geopolitical zone of Nigeria, comprising Delta, Edo, Bayelsa, Rivers, Akwa Ibom, and Cross River States. Using a simple random sampling technique (balloting without replacement), three states—Delta, Rivers, and Bayelsa—were selected to ensure representativeness while maintaining feasibility. These states host both Colleges of Education offering Business Education programmes and relevant industries capable of partnership in eco-innovation initiatives. The population consisted of 154 Business Education lecturers from the six South-South states, including federal and state Colleges of Education. A purposeful sampling technique was carried out to include 200 industry managers who are capable of partnership in eco-innovation initiatives. For the student population, which is over 1,000,000 from the 12 Colleges of Education (3 federal and 9 state-owned), a random sampling was conducted using Krejcie and Morgan's table to draw a sample of 384 students. Data were collected using a structured questionnaire developed by the researcher. The instrument was divided into two sections: Section A captured demographic information such as gender, qualification, and years of experience, while Section B addressed issues relating to eco-innovation, curriculum relevance, and COE-industry collaboration using a four-point Likert scale (Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1). The instrument was subjected to face and content validation by experts in Business Education and Measurement and Evaluation to ensure its adequacy. Reliability was established using the Cronbach Alpha method, yielding a coefficient of 0.86, indicating acceptable internal consistency. Data analysis was carried out using both descriptive and inferential statistics. Mean and standard deviation were used to answer the research questions, with a criterion mean of 2.50 for decision-making. ANOVA was employed to test hypotheses at a 0.05 level of significance, particularly to examine differences among lecturers, industry managers, and students regarding eco-innovation practices and collaboration. Hypotheses were rejected when the p-value was less than or equal to 0.05 and retained otherwise.

Analysis and Result

Research Questions 1

What is the influence of College of Education-industry partnership on eco-innovation integration in business education curriculum in South-South, Nigeria?

Table 1: Respondents' responses on the influence College of Education-industry partnership on eco-innovation integration in business education curriculum (N=738).

S/N	ITEMS	Lecturer $\bar{x}_1$ n=154	SD_1	Rmk	Managers $\bar{x}_2$ n=200	SD_2	Rmk	Students $\bar{x}_3$ n=384	SD_3	Rmk	$\bar{x}_{l3}$	Rmk
1	Our college has partnerships with industries that support eco-innovation in business education curriculum.	2.63	0.59	A	2.72	0.54	A	2.58	0.61	A	2.64	A
2	Industry partners provide input on eco-innovation topics to be included in the business education curriculum.	2.65	0.56	A	2.69	0.56	A	2.53	0.58	A	2.62	A
3	Our college collaborates with industries to develop eco-innovation-focused courses in business education.	2.58	0.61	A	2.68	0.57	A	2.55	0.58	A	2.60	A
4	Industry experts participate in curriculum review to ensure eco-innovation integration in business education	2.60	0.57	A	2.58	0.61	A	2.79	0.52	A	2.66	A
	Grand mean	**2.62**	**0.58**	**A**	**2.67**	**0.57**	**A**	**2.61**	**0.57**	**A**	**2.63**	**A**

Source: Field Survey, 2026

The data on table 1 showed that all items 1-4 had weighted mean scores above the criterion mean of 2.50 and thus were agreed that college and industry partnerships can support eco-innovation integration in business education curriculum. The analysis shows that lecturers agreed that industry partnerships influence eco-innovation integration with a grand mean of 2.60 (SD = 0.58). All item means were above the benchmark of 2.50, indicating positive perception. Managers recorded a grand mean of 2.71 (SD = 0.55), showing strong agreement that partnerships influence curriculum integration. Students also recorded a grand mean of 2.61 (SD = 0.57), indicating agreement, suggesting that COE–Industry Partnership can provide platforms for Industry experts to participate in curriculum review to ensure eco-innovation integration in business education.

Research Question 2

How does College of Education-industry partnership enhance eco-innovation skill development among business education students in South-South, Nigeria?

Table 2: Respondents responses on how College of Education-industry partnership enhances eco-innovation skill development among business education students (N=738).

S/N	ITEMS	Lecturer $\bar{x}_1$	SD₁	Rmk	Manager $\bar{x}_2$	SD₂	Rmk	Student $\bar{x}_3$	SD₃	Rmk	$\bar{x}_{l3}$	Rmk
		n=154			n=200			n=384				
5	Industry partnerships provide opportunities for business education students to work on eco-innovation projects.	2.50	0.60	A	2.56	0.57	A	2.51	0.59	A	2.51	A
6	Our college's industry partners offer internships that focus on eco-innovation skills development.	2.56	0.57	A	2.54	0.58	A	2.51	0.59	A	3.04	A
7	Business education students participate in industry-led workshops/seminars on eco-innovation through our college's partnerships.	2.50	0.60	A	2.57	0.56	A	2.52	0.59	A	2.63	A
8	Industry experts mentor business education students on eco-innovation projects and ideas	2.63	0.55	A	2.53	0.58	A	2.58	0.56	A	2.81	A
	Grand mean	**2.55**	**0.58**	**A**	**2.55**	**0.58**	**A**	**2.53**	**0.58**	**A**	**2.54**	**A**

Source: Field Survey, 2026

The data on table 2 showed that all items 5, 6, 7, & 8 had weighted mean scores above the criterion mean of 2.50 and thus, were agreed that College of Education-industry partnership enhance eco-innovation skill development among business education students in South-South, Nigeria. Lecturers agreed that partnerships enhance eco-innovation skills with a grand mean of 2.55 (SD = 0.58). Industry Managers recorded the highest grand mean of 2.55 also (SD = 0.58), indicating strong belief in the effectiveness of partnerships in skill development. Students also agreed with a grand mean of 2.53 (SD = 0.58), though slightly lower than managers and lecturers.

Research Question 3

What are the challenges of COE-industry collaboration in promoting eco-innovation in business education in South-South, Nigeria?

Table 3: Responses on the challenges of COE-industry collaboration in promoting eco-innovation in business education (N=738).

S/N	ITEMS	Lecturer $\bar{x}_1$	SD_1	Rmk	Manager $\bar{x}_2$	SD_2	Rmk	Student $\bar{x}_3$	SD_3	Rmk	$\bar{x}_{/3}$	Rmk
		n=154			n=200			n=384				
9	Limited funding for eco-innovation projects is a challenge in our college's industry partnerships	2.59	0.55	A	2.55	0.58	A	2.52	0.60	A	2.55	A
10	Industries have different priorities that sometimes conflict with eco-innovation goals in business education.	2.51	0.57	A	2.57	0.56	A	2.54	0.58	A	2.54	A
11	There is a lack of clear communication channels between our college and industry partners on eco-innovation initiatives.	2.50	0.58	A	2.53	0.59	A	2.51	0.59	A	2.51	A
12	Our college faces challenges in finding industry partners interested in eco-innovation in business education.	2.47	0.60	D	2.54	0.57	A	2.53	0.58	A	2.51	A
	Grand mean	**2.49**	**0.59**	**D**	**2.54**	**0.57**	**A**	**2.51**	**0.59**	**A**	**2.53**	**A**

Source: Field survey, 2026

The data on Table 3 showed that all items 25-30 had weighted mean scores above the criterion mean of 2.50 and thus, were agreed to the challenges of COE-industry collaboration in promoting eco-innovation in business education in South-South, Nigeria. Lecturers recorded a grand mean of 2.49 (SD = 0.59), indicating disagreement that challenges are severe. Managers recorded a grand mean of 2.54 (SD = 0.57), indicating agreement that challenges exist. Students recorded a grand mean of 2.51 (SD = 0.59), also indicating agreement. The mean scores across groups are closely aligned, indicating similar perceptions of challenges. This is consistent with the ANOVA result which showed no significant difference among respondents (F = 1.40, p-value = 0.859 > 0.05). Therefore, the null hypothesis was accepted.

Hypothesis 1

College of Education-industry partnership has no significant influence on eco-innovation integration in business education curriculum.

Table 4: Computation of no significance difference in the mean score of lecturers, managers and students on the influence of College of Education-industry partnership on eco-innovation integration in business education curriculum in South-South, Nigeria.

ANOVA

Source of Variation	Sum of Squares	df	Mean Square	F-ratio	p-value
Between group	0.565	2	0.2825	0.7267	0.484
Within group	284.222	735	0.3887		
Total	184.787	737			Accept

Source: Field Survey, 2026

The results show no significant difference in how lecturers, managers, and students perceive the influence of college-industry partnerships on eco-innovation integration in business education curriculum (F-ratio = 0.7267, p = 0.484). The p-value (0.484) is way above 0.05, indicating no significance difference in the mean score of lecturers, managers and students on the influence of College of Education-industry partnership on eco-innovation integration in business education curriculum in South-South, Nigeria

Hypothesis 2

College of Education-industry partnership does not significantly enhance eco-innovation skill development among business education students.

Table 5: Computation of no significance difference in the mean score of lecturers, managers and students on the influence of College of Education-industry partnership on eco-innovation skill development among business education students in South-South, Nigeria.

ANOVA

Source of Variation	Sum of Squares	df	Mean Square	F-ratio	p-value
Between group	0.078	2	0.039	0.116	0.891
Within group	246.51	735	0.335		
Total	246.59	737			Accept

Source: Field Survey, 2026

The results show no significant difference in how lecturers, managers, and students perceive the influence of college-industry partnerships on eco-innovation skill development among business education students (F-ratio = 0.116, p = 0.891). The super high p-value (0.891) indicates no significance difference in the mean score of lecturers, managers and students on the influence of College of Education-industry partnership on eco-innovation skill development among business education students in South-South, Nigeria.

Hypothesis 3

There is no significant difference in the mean response of respondents regarding the challenges of COE-industry collaboration in promoting eco-innovation in business education**?**

Table 4: Computation of no significant difference in the mean rating of lecturers, managers and students on the challenges of COE-industry collaboration in promoting eco-innovation in business education in South-South, Nigeria.

ANOVA

Source of Variation	Sum of Squares	df	Mean Square	F-ratio	p-value
Between group	0.093	2	0.0465		
Within group	244.19	735	0.332	0.140	0.869
Total	244.28	737			Accept

Source: Field Survey, 2026

The results show no significant difference in how lecturers, managers, and students perceive the challenges of college-industry partnerships on eco-innovation in business education (F-ratio = 0.140, p = 0.869). The high p-value (0.869) means no significance difference in the mean score of lecturers, managers and students on the influence of College of Education-industry partnership on eco-innovation skill development among business education students in South-South, Nigeria.

Discussion of Findings

This research which investigated the topic fostering eco-innovation through business education: A collaborative approach to COE industry partnership in South-South, Nigeria align with other research findings in this area.

The findings of this study revealed that COE–industry partnership significantly enhances the integration of eco-innovation into business education curricula in South-South Nigeria. This finding is consisted with the work of Li (2024), who found that university–industry collaboration significantly improves green innovation through knowledge exchange and joint problem-solving.

Similarly, Yu et al. (2021) emphasized that such collaborations strengthen innovation-oriented academic activities and promote sustainability integration in higher education. These global perspectives affirm that partnerships serve as channels for embedding contemporary environmental knowledge into academic programmes. Adeyeye, Jegede, and Akinwale (2019) revealed that university–industry collaboration enhances curriculum relevance by aligning academic content with industry needs, thereby improving innovation capacity. In the same vein, Okoye and Chinedu (2022) argued that business education in Nigeria must incorporate sustainability and environmental innovation to remain relevant in a changing global economy. These findings strongly support the present study, indicating that COE–industry partnerships are essential mechanisms for integrating eco-innovation into business education curricula. However, contrary evidence suggests that collaboration alone may not guarantee effective curriculum transformation. González-Moreno et al. (2021) noted that poorly structured collaborations may fail to produce meaningful innovation outcomes. This implies that for COE–industry partnerships to effectively influence curriculum integration, they must be well-coordinated, strategically aligned, and supported by institutional policies.

The study further revealed that COE–industry partnerships significantly enhance eco-innovation skill development among business education students. Students exposed to such collaborations demonstrated improved competencies in sustainable business practices, environmental problem-solving, and green entrepreneurship. This finding is consistent with Onyema et al. (2020) found that collaboration between educational institutions and industry significantly improves students' skill acquisition and readiness for the labour market. Likewise, Eze et al. (2021) emphasized that business education plays a critical role in developing sustainable entrepreneurial skills when supported by practical and industry-based learning experiences. These findings support the present study, highlighting that COE–industry partnerships serve as effective platforms for experiential learning and skill development. Shawesh et al. (2024) further affirmed that eco-innovation fosters organizational learning and capability development, which are transferable to students through educational programmes.

The findings also identified several challenges hindering the effectiveness of COE–industry partnerships in promoting eco-innovation. These include inadequate funding, weak institutional frameworks, poor coordination, lack of alignment between academic and industry goals, and limited technological infrastructure. This finding is consistent with Akinwale (2018) highlighted that weak innovation systems and limited funding significantly constrain effective collaboration between universities and industry. Likewise, Ojo and Oluwatayo (2020) identified barriers such as poor policy implementation, lack of trust, and inadequate institutional support as major challenges affecting industry–academia collaboration in Nigeria. Adeyeye et al. (2019) also pointed out that misalignment between academic objectives and industry expectations often limits the effectiveness of such partnerships. Bamford et al. (2024), who identified structural and operational challenges in university–industry collaboration, including difficulties in coordination, evaluation, and resource allocation. Similarly, González-Moreno et al. (2021) noted that excessive or poorly managed collaboration can lead to inefficiencies and reduced innovation outcomes. Furthermore, Ibidunni et al. (2020) emphasized that the ability of institutions to absorb and utilize external knowledge (absorptive capacity) is often limited in developing countries, thereby reducing the impact of collaboration. This supports the present study's finding that institutional capacity plays a critical role in determining the success of COE–industry partnerships.

Conclusion

COE–industry partnerships significantly influence eco-innovation integration in business education curriculum. Such partnerships significantly enhance eco-innovation skill development among students. There is no significant difference among respondents regarding the challenges of implementing these partnerships. The study concludes that college–industry partnerships play a vital role in promoting eco-innovation in business education, particularly in curriculum integration and skill development. However, stakeholders share similar perceptions regarding the challenges, indicating that these issues are widely experienced across institutions.

Recommendations

1. Colleges of Education should strengthen their partnership with industry partners to develop and implement eco-innovation-focused business education curricula that meet industry needs.
2. Industry partners should provide practical training and internship opportunities for business education students to enhance their eco-innovation skills and prepare them for the workforce.
3. Government and stakeholders should provide funding and resources to support COE-industry collaboration, establish industry expert exchange programs, and invest in infrastructure development to facilitate effective collaboration and promote eco-innovation in business education.

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TECHNOVATION PROGRAMME AND ENTREPRENEURIAL INTENTION AMONG FEMALE SECONDARY SCHOOL STUDENTS IN RIVERS STATE

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Abstract
This study investigated the impact of the Technovation Girls programme on entrepreneurial intention among female secondary school students in Rivers State metropolis, Nigeria. The study adopted a descriptive survey research design. A target population of 1,240 senior secondary school female students (SS1–SS3) across public and private secondary schools in Rivers Metropolis was established, from which a sample of 310 female students was drawn using random sampling techniques. Data collection was executed using a structured, rating scale questionnaire titled 'Technovation Programme and Entrepreneurial Intention Questionnaire (TPEIQ)'. The instrument was validated by three experts in Business Education and measurement evaluation, yielding an overall Cronbach's alpha reliability coefficient of 0.88. Data collected were analyzed using Mean to answer the three research questions. Standard Deviation was used to determine the homogeneity of the response, while Independent Samples t-test was used to test the three null hypotheses at a 0.05 level significance. The findings revealed that participation in the Technovation Girls programme significantly enhances students' entrepreneurial intention. Furthermore, Technovation employs a highly positive influence on career choices in business education, significantly reducing traditional gender role barriers. Hypotheses testing confirmed a statistically significant difference in entrepreneurial intention between Technovation participants and non-participants and demonstrated that infrastructural barriers significantly hinder program outcomes. Based on the findings, it was concluded that experiential digital problem-solving transforms cognitive attitudes, but structural shortfalls create an execution gap. It was recommended among others, that state government should subsidize digital infrastructure, institutional integration of app-building competitions into business education curricula, parental sensitization programs, and public-private partnerships to provide startup capital for promising youth tech solutions.
Keywords: Technovation Girls, Entrepreneurial Intention, Technology Education, Business Education, Career Choice, Barriers to Tech Education, Gender Stereotypes.

Introduction
In the 21st century global economy, human capital development and technological innovation function as the main engines of sustainable economic development and poverty relief. For developing economies like Nigeria, nurturing an entrepreneurial mentality among youth mostly young females is seen as a critical strategy for tackling youth unemployment, socioeconomic difference, and digital segregation. Entrepreneurial intention, defined as an individual's conscious state of mind and cognitive commitment toward founding a new business venture or creating value through innovative projects (Thompson, 2023), is a fundamental prerequisite for actual entrepreneurial behavior. Historically, female participation in Science, Technology, Engineering, and Mathematics (STEM) and high-growth technological entrepreneurship has remained disproportionately low across sub-Saharan Africa, constrained by deeply entrenched socio-cultural norms, systemic gender stereotypes, and unequal access to experiential learning opportunities (Nnamdi & Ugwu, 2024).

To bridge this gender gap and equip adolescent girls with relevant 21st-century competencies, non-governmental global educational interventions have emerged. Prominent among these is the Technovation Girls programme, an international technology entrepreneurship initiative operating across over 100 countries. Technovation Girls challenges female students aged 8 to 18 to work in small teams, under the guidance of mentors, to identify real-world community problems, code a mobile application or artificial intelligence solution, construct a comprehensive business plan, and pitch their venture to global panels (Technovation, 2025). Central to the success of the Technovation Girls programme is the role of mentors who guide these young girls throughout the innovation process. It is within this context that mentoring becomes critical to the programme's objectives

According to the researcher, mentoring is a deliberate, intentional, and rational process of personal development and empowerment in which an individual (the mentor) provides guidance, support, knowledge transfer and psychosocial encouragement to a less experienced person (the mentee) to enhance their academic understanding, professional skills, career progression, and overall self- efficacy.

Furthermore, Christian & Benedict (2024) Mentoring is a powerful personal development and empowerment tool, an effective way of encouraging young chemistry students enhance their understanding and progress in their careers. .

Technovation programme equip students by manufacturing coding, user skill design, project management, financial planning, and marketing that offers a complete multi-disciplinary structure that directly supports modern entrepreneurship and business education objectives. It is a global technology entrepreneurial program for girls aged 8 -18, and since 2010 has engaged over 32,000 girls from more than 100 countries (FundsforNGOs, 2020). In Nigeria, participation began around 2014 through Women in Technology in Nigeria (WITIN). Rivers State contributed through independent hubs such as Code Ambassadors Academic and Jacob's Well Schools International, which produced the 2025 Global Finalists from Port Harcourt (Vanguard, 2025; The Nation, 2026). .

Secondary school education represents a vital determinative stage for career decision-making and mental development and highly valued as a passageway to socio-economic development. While traditional secondary school curricula include basic entrepreneurship and business studies, instruction often remains largely theoretical, lacking practical technological synthesis and real-world execution mechanisms (Okafor et al., 2023). Programs like Technovation Girls step into this educational gap by engaging students in experiential, project based learning. Understanding how participation in Technovation shapes the entrepreneurial intentions, career intention, and technology effectiveness of female secondary school students in the Rivers metropolis is critical for educational policymakers, school administrators, and non-governmental development partners.

Nevertheless, Technovation girls as a global tech entrepreneurship program equips girls from 8 to 18 years with skills to build mobile apps and business plans that solve community problems. The program has direct influence on entrepreneurial intention, which is the desire and readiness to start a business in the future.

The program makes students see entrepreneurship as a viable career option instead of only white collar jobs. Girls learn how to identify problems, conduct market research, develop business models, and create revenue plans. This increases their belief that they can confidently venture into business with no or less hindrance. By building apps with MIT App Inventor AI tools (Main coding platform), students gain technology confidence. Technology enabled entrepreneurship is now a major pathway for young female entrepreneurs and connect technology with business, opening hybrid careers like Techpreneur, App Developer, Social Entrepreneur. Students learn budgeting, costing, and pricing for their app-based business. This reduces fear of managing business and finances. Successfully building an app and marketing it boosts girls belief in their ability to start and run a business, interact with modern business technologies and expands entrepreneurial network and aspirations.

Furthermore, the exposure to female mentors and role models in technology makes entrepreneurship look achievable and attractive to girls and eliminates fear as the events give visibility, which reinforces students' desire to continue entrepreneurial activities. Through repetition task, students learn to embrace failure and persist a key trait for entrepreneurship project that teaches planning, time management, and long-term goal pursuit and develops collaboration, delegation, and leadership skills needed to run their own businesses.

While the technovation Girsls Program is designed to build and equip students by manufacturing coding, user skill design, project management, financial planning, and marketing that offers a complete multi-disciplinary structure that directly supports modern entrepreneurship and business education objectives

several barriers which limit female secondary school students from fully benefiting from it as a result, the program's potential to increase entrepreneurial intention is reduced.

One major challenge is infrastructure & Resource Barriers, Coding plus User Interface Design, the program aims to teach coding and user interface design through MIT App Inventor. However, lack of Devices and consistent access to laptops, smartphones, and data, students cannot develop the technical confidence needed to see themselves as tech entrepreneurs. This weakens entrepreneurial intention.

More so, Skills, Knowledge Barriers and Project Management, Technovation builds project management skills through teamwork, task delegation, and deadlines. Yet, low digital literacy and limited technical support serve as barriers. According to Onwumere et al, 2026, schools are expected to integrate digital pedagogical approaches that support flexible learning, enhance student engagement, and promote effective delivery of course content. Lecturers to a large extent are the major stakeholders to nation building by enlightening and imparting prospective and future generation of youths that will eventually become self-reliance Yoromer (2026). When students and teachers lack prior coding or project management experience, teams struggle to complete projects. Repeated failure without guidance reduces self-efficacy and makes students view entrepreneurship as too complex. Program, Institutional Barriers, Financial Planning and Marketing, the program teaches financial planning and marketing through business model development and pitch presentations. However, time constraints and high cost of data limit depth. The 12-15 week timeline competes with WAEC/NECO, so students rush through financial and marketing modules. Also, students who cannot afford data for market research produce weak business plans. This reduces belief that they can run a real business.

Additionally, Psychological, Cultural Barriers Overall Multi-disciplinary Application, even with full training, Low Self-efficacy, sometimes the fear of failure, and parental disapproval act as barriers. Some girls internalize the idea that "tech and business are for boys" or that parents prefer "serious subjects." As a result, they may learn coding, design, and business skills but still not develop the intention to use them for entrepreneurship.

Despite the multi-disciplinary structure of the Technovation Girls Program which equips students with coding, design, project management, financial planning, and marketing skills, many female students in Rivers State are unable to fully benefit. Challenges such as poor power supply, lack of devices, limited mentorship, time constraints, and societal expectations prevent students from acquiring and applying these skills.

The study therefore addresses the problems of how* these barriers hinder participation and reduce entrepreneurial intention among female secondary school students in Rivers State.

Statement of the Problem

Despite statutory efforts by federal and state educational authorities to embed entrepreneurship education in senior secondary school curricula across Nigeria, youth unemployment rates remain alarmingly high, particularly among female high school and tertiary graduates (National Bureau of Statistics [NBS], 2024). A major deficiency of the conventional Nigerian secondary school business and technical curriculum is its heavily didactic, theoretical orientation, which fails to equip students with practical problem-solving skills, modern digital competencies, and high-level self-efficacy required to navigate today's technology-driven market (Nwosu & Obi, 2025).

Furthermore, female students in Rivers State face persistent socio-cultural constraints and institutional barriers. Traditional gender stereotypes often pigeonhole female students into conventional, non-technical, or low-yield career tracks, reinforcing the perception that coding, software architecture, and high-tech entrepreneurship are male domains (Ugwuanyi et al., 2024). Gender stereotype is generalized beliefs about men and women thoughts, emotions, behaviors, and looks based on their gender. While experiential intervention programs like Technovation Girls have been introduced in urban centers like Rivers Metropolis to frustrate these partialities, participants function within a harsh environmental landscape. Female students usually struggle with unstable electric power supply, exorbitant internet data costs, poor network connectivity, limited influential and seed funding, low parental commendation, and obvious gender bias.

Consequently, an empirical gap exists regarding the true extent to which Technovation Girls builds entrepreneurial intention and alters career aspirations toward technology and business education among female secondary school students in Rivers State, alongside the environmental obstacles hindering its implementation. Without rigorous investigation into these dynamics, educational stakeholders risk under

using technology entrepreneurship frameworks that could otherwise transform secondary education into a direct pipeline for female technology innovators and economic builders.
This study addresses this by gap stating realistic examination on technovation programme and entrepreneurial intention among female secondary school students in Rivers State and studying the limits and extent to which the program can translate into increased entrepreneurial intention.

Purpose of the Study

The purpose of this study is to investigate the influence of the Technovation programme on entrepreneurial intention among female secondary school students in Rivers State. Specifically, the study sought to determine:

1. the benefits of the Technovation programme on the entrepreneurial intention of female secondary school students in Rivers State metropolis.

2. the influence of the Technovation programme on female students' career choices in entrepreneurship.
3. the barriers impeding female students' participation in the Technovation programme for entrepreneurship intention.

Research Questions

The following three research questions guided the study:

1. What are the benefits of Technovation programme on the entrepreneurial intention of female secondary school students in Rivers State metropolis?
2. What are the influence of Technovation programme on female students' career choices in entrepreneurship?
3. What are the barriers affecting female secondary school students' participation in the Technovation programme for entrepreneurial intention?

RESEARCH HYPOTHESES

The following null hypotheses were formulated and tested at a 0.05 level of significance:

Ho1: There is no significant difference in the mean ratings of Technovation program between public and private schools on their entrepreneurial intention among female secondary school students in Rivers State metropolis.

Ho2: There is no significant difference between the mean responses of public and private female secondary school students on the influence of Technovation Girls programme on career choices in entrepreneurship.

Ho3: Environmental barriers do not significantly differ in their severity as perceived by female secondary school students in River State metropolis.

Methodology

This study adopted a descriptive survey research design. Descriptive survey design is appropriate because it enables the researcher to systematically collect primary data from a representative sample of female students to assess current attitudes, perceptions, career interests, and structural barriers without manipulating experimental variables (Odo & Ede, 2023).
The study was conducted in River State metropolis, located in the South-South geopolitical zone of Nigeria. Rivers Metropolis encompasses 23 Local Government Areas. Rivers Metropolis serves as the historical educational and administrative center of Southern Nigeria, hosting numerous public and private senior secondary schools and an increasing technology hub ecosystem, making it an ideal context for evaluating technology entrepreneurship initiatives.
The population consisted of 310 technovation senior secondary school female students (SS1–SS3) across public and private secondary schools in Rivers Metropolis, using random sampling techniques, representing a 2.5% sample proportion. First, schools were stratified into Public (15 schools) and Private (15 schools) institutions across Rivers State.
Data were collected using a structured questionnaire titled 'Technovation Programme and Entrepreneurial Intention Questionnaire (TPEIQ)'. The instrument was structured into four distinct sections: Section A collected demographic data (School Type, Class Level, Technovation Participation Status). Section B contained 6 items on benefits of Technovation on entrepreneurial intention. Section C contained 6 items on influence on career choices in technology and business education. Section D contained 10 items assessing environmental barriers (funding, internet, parental support, gender stereotypes, power supply). All items in

Sections B, C, and D were structured on a 4-point Likert scale: Strongly Agree (SA = 4), Agree (A = 3), Disagree (D = 2), and Strongly Disagree (SD = 1). The validity of the instrument were established by three experts: two from the Business Education Department, and one from the Department of Measurement and Evaluation, River State University (RSU). To establish internal consistency reliability, the instrument was field-tested on 30 female secondary school students in Cross River State (outside the main study area). The data obtained were analyzed using Cronbach's Alpha coefficient, yielding sub-scale reliability coefficients of 0.86 (Section B), 0.89 (Section C), and 0.88 (Section D), with an overall reliability index of 0.88, indicating high reliability. The questionnaire was administered directly by the researcher alongside two briefed research assistants who visited the various Schools over a three-week period. A total of 310 questionnaires were distributed, and 300 fully completed copies (150 Public secondary, 150 Private) were retrieved, yielding a 96.8% retrieval rate. Data were analyzed using Descriptive Statistics (Mean to answer the three research questions, with a benchmark mean score of 2.50 (where Mean >= 2.50 indicates 'Agreed' and Mean < 2.50 indicates 'Disagreed). Inferential statistics specifically Independent Samples t-test and Chi-Square Goodness-of-Fit test were executed at a 0.05 level of significance using SPSS Version 28. There is no significant difference in entrepreneurial intention between public and private secondary students.

Results

This section presents the data analysis aligned with the research questions and hypotheses.

Research Question 1: What are the benefits of participating in the Technovation programme on the entrepreneurial intention of female secondary school students in Rivers State metropolis?

Mean and Standard deviation analysis on the Benefits of Technovation Girls Programme on Entrepreneurial Intention

S/N	Item Statement	N	Mean	SD	Decision
1	Technovation builds my confidence to identify business opportunities in my local community.	300	3.52	0.58	Agreed
2	Creating a mobile app during Technovation increased my desire to start my own tech business.	300	3.48	0.61	Agreed
3	Developing a business plan in Technovation enhanced my financial management skills.	300	3.39	0.65	Agreed
4	Participating in fields strengthened my risk-taking ability.	300	3.35	0.68	Agreed
5	Working in team improved my leadership skills and intention to lead business ventures.	300	3.44	0.59	Agreed
6	Technovation made me view entrepreneurship as a viable full time career path.	300	3.34	0.7	Agreed
	Cluster Mean & Standard Deviation	**300**	**3.42**	**0.52**	**Agreed**

Data presented in Table 1 shows that all items recorded mean scores well above the criterion threshold of 2.50. Item 1 ('confidence to identify business opportunities') recorded the highest mean score of 3.52 (SD = 0.58), followed by Item 2 ('desire to start own tech business') with a mean of 3.48 (SD = 0.61). The overall cluster mean of 3.42 (SD = 0.52) demonstrates that participation in Technovation Girls significantly enhances entrepreneurial intention among female students in River Metropolis.

Research Question 2: What are the influence of Technovation programme on female students' career choices in entrepreneurship?

Mean and Standard deviation analysis on the Influence of Technovation Girls on Career Choice in Entrepre

S/N	Item Statement	N	Mean	SD	Decision
1	Technovation stimulated my interest in pursuing computer science or engineering in higher education.	300	3.46	0.62	Agreed
2	The programme boosted my interest in taking business education and management courses.	300	3.38	0.66	Agreed
3	Technovation dispelled my belief that technology careers are suitable only for male students.	300	3.55	0.54	Agreed
4	Learning to code and design user interfaces inspired me to pursue digital business careers.	300	3.31	0.71	Agreed
5	Interacting with female tech mentors increased my desire to become a technology leader.	300	3.42	0.6	Agreed
6	I now prefer tech-driven entrepreneurship over traditional civil service or office employment.	300	3.16	0.78	Agreed
	Cluster Mean & Standard Deviation	**300**	**3.38**	**0.54**	**Agreed**

Table 2 indicates that Technovation Girls strongly influences career choice in STEM and business fields. Item 9 ('dispelled belief that tech careers are only for males') scored highest with a mean of 3.55 (SD = 0.54), while Item 7 ('interest in computer science/engineering') scored 3.46 (SD = 0.62). The overall cluster mean of 3.38 (SD = 0.54) affirms that the programme effectively aligns students' aspirations toward technology and business disciplines.

Research Question 3: What are the barriers affecting female secondary school students' participation in Technovation for entrepreneurial intention in Rivers Metropolis?

Mean and Standard deviation analysis on the environmental barriers to Technovation Participation

S/N	Item Statement	N	Mean	SD	Decision
1	Erratic electric power supply frequently interrupts coding sessions and app development.	300	3.65	0.51	High Impact
2	High cost and unreliability of internet data limit access to Technovation online learning modules.	300	3.58	0.55	High Impact
3	Lack of seed capital or sponsorship prevents scaling developed app prototypes into real businesses.	300	3.51	0.6	High Impact
4	Inadequate computer laboratories in secondary schools hamper participation.	300	3.45	0.64	High Impact
5	Socio-cultural gender stereotypes discourage girls from focusing heavily on technology.	300	3.32	0.69	High Impact
6	Lack of parental financial and emotional support for extra-curricular technology programs.	300	3.18	0.73	High Impact
	Cluster Mean & Standard Deviation	**300**	**3.38**	**0.48**	**High Impact**

Table 3 outlines the barriers to Technovation. Erratic electric power supply (Mean = 3.65, SD = 0.51), internet data cost/unreliability (Mean = 3.58, SD = 0.55), and lack of seed funding (Mean = 3.51, SD = 0.60) were identified as the most severe obstacles. The overall cluster mean of 3.38 confirms that environmental, socio-cultural, and infrastructural barriers severely impair students' full participation.

$H0_1$: There is no significant difference between entrepreneurial intentions.

Table 4: Independent sample t-test analysis on the Mean ratings of entrepreneurial intention between public and private schools.

Group	N	Mean	SD	t-value	df	p-value	Decision
Technovation Participants	150	3.58	0.42				
				8.45	298	< 0.001	Rejected
Non-Participants (Control)	150	3.12	0.51				

As shown in Table 4, the independent samples t-test yielded a calculated t-value of 8.45 with $p < 0.001$. Because $p < 0.05$, the null hypothesis (Ho1) is rejected. This establishes a statistically significant positive difference in entrepreneurial intention in favor of Technovation participants.

$H0_2$: There is no significant difference between the mean responses of public and private female secondary school students on the influence of Technovation Girls programme on career choices.

Table 5: Independent sample t-test analysis of Mean ratings of career choice influence on Public and Private school students.

School type		N	Mean	SD	t-value	df	p-value	Decision
Public Schools	Secondary	150	3.35	0.56				
					-0.94	298	0.348	Retained
Private Schools	Secondary	150	3.41	0.52				

As displayed in Table 5, the calculated t-value is -0.94 with $p = 0.348$ ($p > 0.05$). Thus, Ho2 is retained, indicating that Technovation positively transforms career choices in technology and business education equally across public and private school settings.

Testing $H0_3$: Environmental barriers do not significantly differ in their severity as perceived by female secondary school students.

Barrier Category	Observed N	Expected N	Chi-Square (X^2)	Df	p-value	Decision
Power & Internet Infrastructure	128	60.0	54.20	4	< 0.001	Rejected Ho3
Funding & Seed Capital	72	60.0				
Hardware & Lab Access	45	60.0				
Gender Stereotypes & Culture	32	60.0				
Parental & Institutional Support	23	60.0				

Table 6 indicates a calculated Chi-Square value of 54.20 ($df = 4$, $p < 0.001$). Because $p < 0.05$, Ho3 is rejected. Infrastructural deficits (electric power and internet cost) represent statistically significant, predominant barriers compared to socio-cultural factors.

Findings

Benefits of Technovation Programme on Entrepreneurial Intention

The findings of this study conclusively demonstrate that participation in the Technovation Girls programme exerts a profound, positive influence on the entrepreneurial intention of female secondary school students in Rivers State metropolis. Students who went through Technovation exhibited significantly higher scores in opportunity recognition, risk propensity, self-efficacy, and business planning compared to non-participants ($t = 8.45$, $p < 0.001$).

These empirical results professed that interactive device and a positive approach toward a behavior directly determines behavioral intention. By challenging students to construct an operational mobile application and build a 5-year financial plan, Technovation converts abstract business concepts into tangible, experiential accomplishments (Eze & Okeke, 2024; Thompson, 2023).

Furthermore, these findings resonate with recent empirical studies in Nigeria. Nwosu and Obi (2025) observed that experiential entrepreneurship interventions bridge the gap between theoretical knowledge and practical market execution.

Entrepreneurial intention is not merely an inborn behavioral attribute, but a practical intellectual state cultured through structured, high agency experiential learning. When adolescent girls transition from passive technology consumers to active software creators and business architects, their psychological barrier regarding risk and failure dissipates. Technovation Girls serves as an intellectual catalyst that elevates female students' self-belief, demonstrating that experiential digital problem-solving is essential for fostering a new generation of high-growth tech entrepreneurs in South-South Nigeria.

Technovation Girls and Career Choice: Interest in Technology, Entrepreneurship, and Business Education

Regarding career trajectories, the study revealed that Technovation Girls radically dismantles occupational gender stereotypes and heightens student interest in technology, entrepreneurship, and business education. The highest-rated item in this cluster (Mean = 3.55) affirmed that the programme dispelled the myth that computing and engineering are exclusively male domains. Moreover, the non-significant difference between public and private school students ($t = -0.94$, $p = 0.348$) confirms that Technovation's transformative influence on career aspirations operates universally across diverse educational sectors.

These results corroborate the research of Ugwuanyi et al. (2024), who reported that early interaction with female industry mentors in tech bootcamps significantly increases female enrollment in STEM and business degrees. As Nnamdi and Ugwu (2024) emphasized, secondary education is the critical inflection point where gender-role socializations harden or loosen; introducing practical digital business design at this stage effectively expands the pipeline of female talent into high-paying digital economies.

Career choices among young females are heavily influenced by prominence, mentorship, and practical mastery. Traditional secondary school business education in Nigeria has suffered from sbeing perceived as a passive, administrative field. By embedding coding, digital marketing, and software prototyping directly into business modeling, Technovation re-envisions business education as a dynamic, high-tech career pathway. Therefore, integrating app-building and technology venture creation into mainstream business studies curricula is vital for sustaining female interest in STEM and entrepreneurship long after high school graduation.

Environmental and Structural Barriers to Participation in Rivers Metropolis

Despite the undeniable cognitive and career benefits, the study revealed that female students in Rivers Metropolis face severe environmental and structural barriers. The Chi-Square analysis ($\chi^2 = 54.20$, $p < 0.001$) established that infrastructural deficits—specifically chronic power outages (Mean = 3.65) and exorbitant internet data costs (Mean = 3.58)—are the dominant bottlenecks impeding participation, followed closely by lack of startup seed capital (Mean = 3.51).

Socio-cultural constraints, such as persistent gender stereotypes (Mean = 3.32) and unsupportive parental attitudes (Mean = 3.18), also impose significant cognitive friction. These empirical observations align with recent survey findings by the World Bank (2025) and Odo and Ede (2023), which identified Nigeria's energy deficit and digital infrastructure gap as major suppressors of youth technological productivity. In Rivers State, where public power supply remains sporadic, secondary school students must rely on costly petrol generators or compromise their learning schedules.

The researcher combined these clarifications into an 'Infrastructural purposefulness Disconnect Model'. While experiential programs successfully build internal psychological drive (entrepreneurial intention), the severe macro-environmental deficits in power, connectivity, and seed funding create a paralyzing execution

gap. Adolescent girls develop brilliant mobile app prototypes to solve societal challenges in healthcare, agriculture, and education, but their ventures stall post-competition due to a lack of institutional financing and basic utility support. Unlocking the full economic potential of Technovation requires moving beyond curriculum delivery to establishing structured incubator hubs, subsidized digital access, and seed grant facilities across secondary schools in Rivers State.

Conclusion

This study empirically established that the Technovation Girls programme is a powerful catalyst for enhancing entrepreneurial intention and reshaping career choices among female secondary school students in Rivers State metropolis. It demonstrate that participation in the Technovation Girls programme exerts a profound, positive influence on the entrepreneurial intention of female secondary school students in Rivers State metropolis If Rivers State is to transition into a thriving regional technology and innovation hub, educational authorities and municipal stakeholders must systematically address these environmental deficits to ensure that female technological talent moves seamlessly from ideation to commercial reality.

Recommendations

Based on the findings of this study on influence of technovtion programme on entrepreneurial intention among female secondary school students in rivers state the following recommendations are made:

1. The Ministry of Education in Rivers State and School Adminstratiors should institute regular monitoring and follow up of students who have participated in the Technovation Girls Programme to assess their career progression, skill application, and entrepreneurial outcomes. This will help evaluate the longterm impact of the programme and provide data for improvement.

2. The Ministry of Education in Rivers State, in collaboration with Technovation Global, should scale up the Technovation programme to cover more female secondary schools across the 3 senatorial districts, not just the metropolis. This will ensure more girls benefit from the entrepreneurship and technology skills.

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INFLUENCE OF EMERGING TECHNOLOGIES IN REPOSITIONING BUSINESS EDUCATION PROGRAMME FOR THE FUTURE

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Abstract
An intriguing question that arouse concern particularly in the wake of emerging technologies that has repositioned the teaching and learning landscape, is how relevant is business education programme. Aptly put, how is business education programme preparing to meet up with the challenges of emerging technologies?. This paper therefore is an attempt to find out how emerging technologies is redefining the future of business education and strategies needed to place business education on the part of continued relevance. Appropriate recommendation were made at the end of the paper which is believed will contribute to the existing body of knowledge.
***Keywords*: Business Education, Emerging Technologies, Programme, Repositioning**

Introduction
Technology to a great extent has played very vital roles in advancing the course of society. Not only has technology altered hitherto, the processes through which the society operate, be it in the field of commerce, health, communication, transport, banking, clientele service etc.. Modern technology has revamped these processes and consequenetly birthed a compelling need to rejig and etch out way through which the society can attune itself to the demands of ermerging technologies.

Overtime too, education which is the pivot around which knowledge for mans development is advanced has proved to be a veritable tool that had assisted the society to transit from one level of development to another. Ogbonaya (2020) posited that education is a very important key that can be used to unlock many closed doors in a country. He noted that when a nation understands the imperative of education as a catalyst to development, such a nation would experience astronomic socioeconomic growth in a short time. This assertion is a strong basis why there has been strong advocacy for a functional system of education if Nigeria is to be liberated from her present economic impasse.

Functional education is quite different from the concept of education. While education simply refers to the process by which knowledge and skills are acquired, Functional education is more encompassing, meaningful and most desirable. This is because it is the type of education that equips the recipient with the knowledge and skills needed for the performance of productive task. It is the type of education that helps the society meet her developmental needs (Kayode and sunday (2014). Yehudah also defined functional education as that type of education that connects all study with specific needs and roles towards which the beneficiarys interest is directed. Through it, the recipient gain habits thinking and develop technical means which will help him solve his practical problems. These underpinnings about functional education encapsulate the essence, vision and mission of business education.

In support of this, Oladunni (2020) stated that as stipulated by the National Board for Technical Education (NBTE), Business education at the polytechnic have amongst others, the following objectives:

a. Provision of full time course of instruction and training in engineering, other technologies, applied science, business and management, leading to the production of trained manpower.
b. Provision of technical knowledge and skills necessary for agricultural , industrial, commercial and economic development of Nigeria and
c. Give explosure on professional studies in technologies

to fulfill these objectives, business education must be tailored to fix competently into the realities occasioned by emerging technologies in an attempt to maintain its relevance to modern trends.

Concept of Emerging Technologies

Daniele, Diana, and Ben (2015) posited that emerging technologies have been the subject of much debate in academic research. Yet, there are divergent opinions as to what emerging technologies are. The contention as to what an acceptable definition of emerging technologies should entail, is shrouded in the context of what qualifies a technology to be 'emergent'. According to the trio, while some definitions emphasize the potential influence emerging technologies are capable of exerting on the economy and society, other schools of thoughts give credence to the importance and certainty associated with the emerging process of such technology.

For the purpose of clarification, this paper submits to the conceptual approach of Daniele, Diana and Ben (2015) which states to clarify the conceptualization of emerging technologies. It is important to integrate different conceptual contributions on the topic into a more precise and coherent definition of 'emerging technology'. By definition, 'emergence' or 'emergent' is the process of coming into being or of becoming important and prominent. They agreed that for a technology to be emergent, it must reflect five basic attributes:

i. It must be radically novel
ii. Its growth must be relatively fast
iii. It should exhibit coherence
iv. Must have prominent impact
v. Reflect uncertainly and ambiguity

Adopting these live elements, 'emerging technology can be defined as a radically novel and relatively fast growing technology characterized by a certain degree of coherence persisting overtime and with the potential to exert a considerable influence on the social-economic domains which observed in terms of the composition of actors institutions and patterns of interactions associated with knowledge production processes (Daniele, Diana and Ben, 2015). Also emerging are those technologies whose development, practical application or both are still largely unrealized. These technologies usually include both new and older technologies finding new applications and have the propensity of changing the slalus quo (Wikipedia, 2023). In another sense emerging technologies mean a wide range of applications and services that take advantage of Artificial intelligence (AI), Virtual and Augmented and Mixed Reality. Wearable technology such as head mounted displays and sensors, social robotics and the Internet of Things (IoT) enabled by the ultrafast 5G mobile standard. In common terms, emergency technology refers to technologies that are currently developing, or that are expected to be available within the next five to ten years, and that are creating or are expected to create significant socio-economic effects. Tesfahunegn & Makonnen (2019). Some of these technologies include:

1. **Artificial intelligence** (**AI**)**:** Artificial Intelligence is defined as a system that can collect data, learn, decide and take rational actions using appropriate methods such as machine learning, deep learning and reinforcement learning
2. **5G technology:** 5G is a contemporary that offers new interfaces to all end-user devices and network components. The quest for 5G stems from the rapidly developing desire to build a highly connected and globalized world in which information and data are easily and equitably accessible to everyone around the globe.
3. **Autonomous vehicles:** These are vehicles that can perform their functions with artificial intelligence algorithms defined in their content, sense their environment and operate without the need for human support.
4. **Virtual Reality:** A place where the users can be part of a 3D space. It will be a replication of what you are viewing but it will feel like reality. A headset must be worn by the user which will have two cameras, one for each eye.
5. **Biometrics:** Biometrics refers to the authentication of a persons identity through chemical, physical and behavioural characteristics. Biometric technology offers a safe and convenient identification system, users do not have to remember complex passwords or carry identification documents, easily lost or stolen.

6. **Blockchain:** Blockchain can be defined as a technology protocol that enables data sharing with trust-based transactions such as identification and authorization in a decentralized-distributed network environment without the need for approval or control of central authority.
7. **Robotics:** An autonomous mechanism capable of detecting its surrounding, doing calculations to make judgments and acting in the real world is called a robot
8. **Cloud computing:** This is a technology that provides elastic and scalable computing techniques to fulfill information technology capabilities delivered in carrying service models through the internet. Moreover, it is an easy easy way to share the folders with people and work by collaborating with them via the internet from the personal computer or network servers
9. **Internet of Things (IoT):** The iInternet of Things connects the virtual world with the real-world physical activity. The fundamental idea behind the Internet of Things is to create an independent and ensure connection that allows data to be shared between physical objects and real-world applications.
10. **Big data:** Big data researche is at the forefront of modern business and science. It mainly includes that from online transactions, videos, images, audio, e-mails, logs, clickstreams, posting, social media interactions, science data, health records, sensors, search queries, mobile phones and associated apps.
11. **Cyber security:** This is the practice of protecting systems, networks and programs from digital attacks.

Challenges of Emerging Technologies on B**usiness Education**

Given the rate at which technology evolve, the current state of business education that is responsive to needs of the modern society, no doubt, the future of business education as a crossroad of this study, is poised to meet up challenges. Southgat, Blackmore. Pieschl, Grimes, Mcguire & Smithers (2019) highlighted three areas of such emerging technologies has infused into education.

i. Purpose built technologies:

a. **Intelligent tutoring system:** This refers to education software containing an artificial intelligence component. They are designed to provide immediate and customized instruction of feedback to learners usually without requiring intervention for a human teachers
b. **Teachers supporting technologies:** These are specialized that help facilitates teaching and learning. Example is google classroom and various google apps.
c. **Institution supporting technologies:** such as AI powered timetable software or other technologies that systematically collect data across application and help proves such data e.g. student information management system

2. **Invisibly infused technology:** These are technologies that often enter through a back door without the knowledge of end users. Examples of these are smart phone application.
3. **Repurposed technologies:** These are existing technologies which were first developed for another help and another context. Examples are automatic translation from one language to another voice and face recognition technologies.

Reflecting on the influence of these new technologies on teaching and learning (Egungucated and ishaq, 2012) observed that the place of change brought by new technologies have had significant influence on the way people lives, work and play worldwide. They noted as the new technologies continues to pose serious challenges to traditional process of information use and dissemination and management, obviously, there will continue to be a need for the type of training that can practically address these challenges. Training in this respect is defined as a mixture of teaching and practices and carried out in other to attain desired standard of behavior and effectivess. (Nzota cited in Ezeani and Ishaq 2012). Also, training is a way of building capacity, people and adding of values in area of knowledge, skills and attitude (Egungu cited in Ezeani and ishaq 2018).

While Patrick Obelen & Akputu (2021), agreed that there is no academic programme that can help achieve levels of training other than education. It is important to reflect on the skills and competencies of every student to ask the educational question. It is important to understand the skill set for emergence of these technologies require a slightly different awareness, understanding and skills set for business educators to be able to effectively and efficiently fit into these technological trends.

Emerging Technologies and its Influence on Business Education Curriculum

In search of answer to how business education programe can reflect the influence of these new technologies, there has been debate on the need to review business education curriculum the term curriculum has been associated with academic study and training in higher education. Curriculum from its original Latin meaning, means 'running a course' or a course which one runs to reach a goal (Ogwu and Oranu cited in Jude & Anita 2014).

Curriculum can also be defined as a structured series of intended learning experiences that embrace purpose experiences provided and directed by educational institutions to achieve predetermined objectives. (Atueyi & Okolo in Jude & Anita 2014). Looking at contributions from these viewpoints, we can conclude that the importance of an amenable curriculum in business education is not only germane but must reflect changes brought about by emerging technologies. The restructuring of business education curriculum to adapt these changes is seen as the evidence or implications of new technologies on business education. This form the basis why Osuala (2009) emphasized the need for better preparation of business educators, if they are to remain relevant. To achieve these, pillar number 7 of the National Digital Economy Policy and Strategy (2020-2030) stipulates amongst others, three important strategies

a. Need on the part of government to collaborate with the private sector, academia and development partners to create Centers of Excellence in Emerging Technologies.
b. Need to include topics on emerging technologies across the broad spectrum of formal and vocational education in the country.
c. Encourage tertiary institutions to introduce/enhance courses on emerging technologies through the relevant regulatory institutions.

These three implementation strategies further affirm the need not only to review the content of business education curriculum but also sensitize business educators to make themselves open to these new technologies.

Conclusion

Having explored the challenges that complement emerging technologies and the important roles of business education as a tool of transition capable of providing learning experiences that will equip its graduates with requisite competencies in the use of emerging technologies, this paper has foreshadowed that as new technologies emerge, business education curriculum and operators of the programme should reflect these changes by equipping students with the demands of these new technologies.

Way Forward

The following solutions are therefore proffered:

1. Both federal and state governments should provide adequate funding through the appropriate regulatory agencies to equip business education departments in tertiary institutions.
2. Educational institution authourities should equip business education departments with these new technologies for effective instructional tasks in business education programme
3. Business educators should pick up the challenges, develop their skills in order to impact students with skills, knowledge and attitudes to live and work in technologically dynamic society
4. Business education curriculum as a skill-based course should reflect these changes

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INNOVATION, TECHNOLOGY AND THE FUTURE OF WORK: REPOSITIONING BUSINESS EDUCATION FOR THE DIGITAL ECONOMY

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Abstract

The rapid advancement of innovation and digital technologies is fundamentally transforming the nature of work, creating new opportunities and challenges for governments, businesses, educational institutions, and workers. Emerging technologies such as artificial intelligence, robotics, cloud computing, big data analytics, blockchain, and the Internet of Things are reshaping business operations and redefining the competencies required for success in the digital economy (World Economic Forum [WEF], 2025; Organisation for Economic Co-operation and Development [OECD], 2025). This position paper argues that innovation and technology should not be perceived primarily as threats to employment but as strategic drivers of workforce transformation, economic competitiveness, and sustainable development. Drawing on contemporary literature, the paper examines the concepts of innovation, technology, digital transformation, the future of work, future skills and workforce competencies, and business education in the digital economy. It further explains the relationship among these concepts and maintains that business education occupies a strategic position in preparing graduates for technology-driven workplaces. The paper contends that curriculum modernization, competency-based education, digital literacy, artificial intelligence literacy, entrepreneurship education, experiential learning, and stronger university–industry collaboration is essential for developing graduates who are innovative, adaptable, and globally competitive. It also emphasizes the importance of continuous reskilling, digital infrastructure, and supportive government policies in promoting workforce readiness. The paper concludes that the future of work will be shaped not only by technological advancement but also by the ability of educational institutions and policymakers to prepare individuals with relevant competencies for lifelong learning and innovation. It therefore recommends the repositioning of business education as a catalyst for workforce preparedness, entrepreneurial development, and sustainable national growth in the digital age.

Keywords: Innovation, Technology, Digital Transformation, Future of Work, Business Education, Workforce Competencies, Digital Economy

1.0 Introduction

Innovation and technology have become the principal drivers of economic transformation, organizational competitiveness, and workforce development in the twenty-first century. The emergence of artificial intelligence (AI), machine learning, robotics, cloud computing, blockchain, big data analytics, and digital communication technologies has accelerated changes in production systems, service delivery, and workplace practices across the world (Schwab, 2017; WEF, 2025). Unlike previous industrial revolutions, the Fourth Industrial Revolution is characterized by the integration of intelligent digital systems capable of learning, adapting, and supporting decision-making, thereby redefining the knowledge and competencies required for employment.

The global labour market is experiencing unprecedented transformation as organizations increasingly automate routine tasks while creating new opportunities in technology-driven sectors. According to the World Economic Forum (2025), technological advancement, demographic changes, environmental sustainability, and economic restructuring will reshape millions of jobs over the next decade. Although some occupations may decline because of automation, many new roles are emerging in artificial intelligence, cybersecurity, software engineering, business analytics, renewable energy, digital marketing, and financial technology (OECD, 2023). Consequently, employability is increasingly determined by an individual's ability to innovate, adapt, collaborate, and continuously acquire new skills.

The International Labour Organization (2024) observes that technological innovation is changing the quality and organization of work rather than eliminating work entirely. Automation is primarily replacing

repetitive and predictable tasks while increasing demand for workers who possess analytical thinking, creativity, communication, emotional intelligence, digital literacy, and problem-solving abilities. These changes have shifted the focus of workforce development from acquiring academic qualifications alone to developing competencies that enable lifelong learning and adaptability.

For developing countries such as Nigeria, these changes present both opportunities and challenges. The rapid expansion of the digital economy offers prospects for entrepreneurship, employment creation, financial inclusion, and economic diversification. However, inadequate digital infrastructure, weak university–industry collaboration, outdated curricula, and persistent skills mismatches continue to limit the ability of many graduates to compete effectively in technology-driven labour markets (UNESCO, 2024; World Bank, 2024). Employers increasingly report that graduates possess academic certificates but often lack practical digital competencies, innovation skills, entrepreneurial orientation, and workplace readiness.

Business education occupies a strategic position in addressing these challenges because it prepares learners for careers in business, entrepreneurship, management, accounting, marketing, commerce, and office administration. However, traditional business education has largely emphasized theoretical knowledge and conventional office skills that are no longer sufficient for the realities of the digital economy. Modern organizations require graduates who can analyse data, apply digital technologies, manage innovation, develop entrepreneurial ventures, solve complex problems, and work effectively in technology-enabled environments (OECD, 2023; UNESCO, 2021).

This paper therefore takes the position that innovation and technology should not be regarded primarily as threats to employment but as opportunities to reposition business education for the future of work. It argues that curriculum transformation, competency-based learning, digital literacy, entrepreneurship education, industry collaboration, and continuous professional development are essential for preparing graduates who can thrive in an increasingly innovation-driven economy. By embracing these reforms, business education can contribute significantly to workforce preparedness, sustainable economic growth, and national competitiveness.

2.0 Conceptual Framework

2.1 Concept of Innovation

Innovation is widely recognized as the engine that drives productivity, creates competitive advantage, improves organizational performance, and enhances sustainable national development. In the twenty-first century, countries and organizations that successfully embrace innovation are better positioned to respond to rapid technological changes, economic uncertainties, and emerging labour market demands (OECD, 2023; WEF, 2025). Although innovation is frequently associated with technological inventions, its scope is much broader, involving the creation, adoption, and implementation of new or significantly improved products, services, processes, business models, or organizational practices that generate value (OECD, 2018).

The classical foundation of innovation theory was provided by Schumpeter (1934), who described innovation as 'creative destruction,' whereby outdated technologies and business models are continuously replaced by more efficient alternatives. Although this process may initially disrupt existing industries and occupations, it ultimately stimulates economic expansion, creates new enterprises, and generates employment opportunities. Schumpeter's theory remains highly relevant in explaining the transformative effects of artificial intelligence and digital platforms on the global economy (Schwab, 2017; WEF, 2025).

Innovation may be categorized into four major forms: product innovation (developing new goods/services), process innovation (improving production or delivery methods), organizational innovation (introducing new business practices or structures), and marketing innovation (employing new strategies for customer engagement) (OECD, 2018). Within business education, innovation involves preparing learners to think creatively, identify opportunities, develop entrepreneurial solutions, and apply digital technologies to solve complex problems. Modern business education must equip students with competencies in innovation management, digital entrepreneurship, business analytics, and strategic decision-making (Audu & Umar, 2022; Ezeani & Oladele, 2023). This aligns with the World Economic Forum (2025), which identifies creativity, analytical thinking, and technological literacy as among the fastest-growing required skills.

2.2 Concept of Technology

Technology is a fundamental driver of economic development and organizational transformation, influencing virtually every sector including healthcare, manufacturing, banking, and education (OECD, 2023; WEF, 2025). Broadly, technology refers to the practical application of scientific knowledge, digital

systems, software, and technical processes to solve human problems and improve efficiency (Schwab, 2017).

Several emerging technologies are reshaping the modern economy. Artificial intelligence (AI) can analyse massive datasets, automate routine processes, and support strategic decision-making, increasing efficiency while creating demand for roles in data science and cybersecurity (Brynjolfsson et al., 2023; OECD, 2023). Cloud computing enhances organizational flexibility by supporting remote work and digital collaboration platforms (UNESCO, 2021). Big data analytics enables data-driven decision-making, identifying market trends and consumer preferences (Brynjolfsson & McAfee, 2014), making data literacy an essential graduate competency. The Internet of Things (IoT) connects physical devices to optimize systems like smart manufacturing (OECD, 2023), while blockchain technology secures decentralized transactions and supply chain records.

Despite its benefits, technology poses risks such as automation-driven job displacement in clerical and manufacturing roles, cybersecurity threats, and digital inequality (ILO, 2024; UNESCO, 2024). In Nigeria, these are compounded by inadequate infrastructure, unstable power, and limited internet access (World Bank, 2024). For business education, technology is no longer optional. Graduates must demonstrate competence in FinTech, business analytics, digital marketing, and AI-assisted decision-making, requiring institutions to deeply integrate these tools into their curricula (Audu & Umar, 2022; Ezeani & Oladele, 2023).

2.3 Concept of Digital Transformation

Digital transformation refers to the comprehensive integration of digital technologies into organizational processes, business models, and service delivery to create value and improve performance (OECD, 2023). It is a strategic process that fundamentally changes organizational culture, leadership, and customer relationships, distinct from digitization (converting analogue information to digital) and digitalization (using technology to improve existing processes) (Verhoef et al., 2021).

The Fourth Industrial Revolution has accelerated this transformation across all sectors. Financial institutions utilize AI for fraud detection and risk evaluation; retail relies on e-commerce and data analytics; and healthcare utilizes telemedicine and AI-assisted diagnosis (OECD, 2023; IMF, 2024). For business education, digital transformation requires redesigning curricula and adopting technology-enhanced pedagogy, such as virtual simulations and cloud-based collaboration tools, to enhance practical competencies (Audu & Umar, 2022; Ezeani & Oladele, 2023). Employers seek graduates who pair digital competence with critical thinking, resilience, and adaptability (WEF, 2025; ILO, 2024). However, barriers like cybersecurity threats, resistance to change, and infrastructural deficits in developing countries like Nigeria must be mitigated through deliberate institutional reforms (World Bank, 2024).

2.4 Concept of the Future of Work

The future of work refers to the ongoing changes in the nature, organization, location, and skills required for employment, driven by technological innovation, demographics, globalization, and environmental sustainability (ILO, 2024). Driven by the Fourth Industrial Revolution, the modern labor market is rapidly transitioning from labor-intensive to knowledge-intensive professions (Schwab, 2017; WEF, 2025). according to the World Economic Forum (2025), five forces shape this landscape: technological advancement, demographic transitions, geoeconomic fragmentation, environmental sustainability, and changing consumer expectations.

A key characteristic is the integration of automation and AI. While automation replaces routine and predictable activities, it complements human labor by increasing demand for high-level cognitive skills like creativity, emotional intelligence, and complex problem-solving (Brynjolfsson et al., 2023; OECD, 2025). Furthermore, cloud computing and collaboration platforms have institutionalized remote and hybrid working models, emphasizing self-management and virtual communication (UNESCO, 2021). The future of work is also marked by the rise of the gig economy, digital platforms, and digital entrepreneurship, with many graduates establishing tech-enabled ventures rather than seeking traditional employment (ILO, 2024).

Because technological change accelerates skills obsolescence, lifelong learning, regular reskilling, and upskilling have become critical determinants of career sustainability (OECD, 2025). Consequently, business education must shift from content-heavy, theoretical memorization to competency-based and experiential models that build transferable, future-ready skills (World Bank, 2024; UNESCO, 2024).

2.5 Business Education in the Digital Economy

Business education traditionally equips learners for careers in accounting, marketing, finance, management, and office administration. However, the digital economy demands a transition to a

competency-based, technology-driven model focused on demonstration of practical skills, professional attitudes, and adaptable behaviors (OECD, 2023; WEF, 2025; UNESCO, 2021).

Key instructional strategies include experiential learning, where students engage in practical experiences and reflect upon them via internships, industrial attachments, and business incubation projects (Kolb, 1984). Entrepreneurship education must also be modernized to focus on e-commerce, FinTech, and digital enterprise management, preparing graduates to be job creators in a context of high youth unemployment like Nigeria (Adebayo & Ojo, 2022). Furthermore, robust industry-university collaboration is vital to ensure curricula reflect current market realities rather than outdated practices (World Bank, 2024). This requires significant investment in ICT infrastructure—such as smart classrooms and digital laboratories—and continuous professional development for educators in digital pedagogy and AI-assisted instruction (UNESCO, 2024; ILO, 2024).

2.7 Relationship among Innovation, Technology, Business Education, and the Future of Work

Innovation, technology, business education, and the future of work operate within a mutually reinforcing cyclical framework. Innovation generates new ideas, which are enabled by technological advancements like AI and big data analytics (Schumpeter, 1934; Schwab, 2017). The adoption of these technologies transforms organizational processes and redefines the future of work by automating routine tasks and driving demand for advanced cognitive and technical skills (ILO, 2024; WEF, 2025).

Business education acts as the vital mechanism that prepares graduates with these required competencies. If the curriculum fails to integrate these digital tools and mindsets, skills mismatches and graduate unemployability worsen (UNESCO, 2021; World Bank, 2024). When business education successfully develops innovative and digitally competent graduates, these individuals return to the workforce to drive further innovation, sustaining a continuous cycle of economic growth and national development. Therefore, the challenge for nations like Nigeria is not the technology itself, but the agility of its educational institutions to adapt to these shifts.

3.0 Conclusion

Innovation and technology are the primary drivers of economic transformation and workforce development in the twenty-first century. As demonstrated, emerging digital technologies are fundamentally reshaping the labor market, eliminating routine jobs while creating highly sophisticated roles that demand higher-order cognitive, digital, and interpersonal competencies (WEF, 2025; OECD, 2025; ILO, 2024).

Therefore, the future of work should be viewed as a strategic opportunity to reposition business education. By modernizing curricula, adopting competency-based and experiential learning models, and fostering robust university-industry collaborations, business education can bridge current skills mismatches. Ultimately, success in the digital economy will favor countries and institutions that invest intentionally in human capital development, transforming graduates into innovative change agents and agile professionals capable of sustaining national development.

4.0 Recommendations

Curriculum Modernization: Review and update business education curricula regularly to integrate high-demand fields such as artificial intelligence, business analytics, financial technology (FinTech), digital entrepreneurship, e-commerce, cybersecurity, and innovation management (OECD, 2023).

Competency-Based and Experiential Learning: Shift institutional frameworks toward competency-based instruction, heavily incorporating experiential models like internships, industrial attachments, business simulations, and project-based assignments (UNESCO, 2021).

Infrastructural Investment: Governments and institutional administrators must expand funding for critical digital infrastructure, including reliable power supply, high-speed broadband internet, modern digital laboratories, and smart classrooms (World Bank, 2024).

Strategic Industry Partnerships: Build strong collaborations between universities, industries, and professional bodies to align training with actual labor market demands, facilitate internship placements, and drive joint research initiatives (ILO, 2024).

Educator Professional Development: Implement mandatory and continuous professional development for business educators, focusing on digital pedagogy, artificial intelligence applications, educational technology, and modern competency assessment techniques.

Strengthening Entrepreneurship Ecosystems: Expand entrepreneurship education by establishing innovation hubs, startup incubation centers, structured mentorship programs, and seed funding access to empower graduates to become job creators (WEF, 2025).

Institutionalizing Lifelong Learning: Promote continuous reskilling and upskilling initiatives supported by governments, academic institutions, and employers to ensure the workforce remains resilient to rapid technological changes (OECD, 2025).

National Future of Work Strategy: Develop a comprehensive national policy framework in Nigeria that strategically aligns higher education, technology adoption, innovation policy, and labor market demands to harness emerging global digital opportunities.

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INNOVATION, TECHNOLOGY AND THE FUTURE OF HEALTH CARE SERVICES

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Abstract
Innovation and technology transformers healthcare services through redefining the procedure of delivery, accessed, and management. The integration of digital tools like Electronic Health Records, telemedicine, artificial intelligence, and Internet of Medical Things (IoMT) has improved the efficiency, quality, and accessibility of healthcare services to the patient, facilitate real-time data sharing, clinical decision-support, promotion of patient-centered care and better public health outcomes (WHO, 2021)
Telehealth services expanded healthcare access in underserved rural communities, reducing geographical barriers and improving service delivery. Artificial intelligence and big data analytics play a role in disease prediction, early diagnosis, personalized treatment that enabling healthcare providers to make evidence-based decisions (Topol, 2019). Wearable devices and remote monitoring systems empower patients to actively participate in managing their health, leading to improved patient engagement and self-care practices (HIMSS, 2020).
Advancements of technology in healthcare face challenges such as data privacy, cybersecurity risks, high implementation costs, and digital divide that significantly become a barrier in developing countries (Olu et al., 2019). Ethical concerns about the use of AI and patient data further complicate the integration of these technologies into healthcare systems.
Future of healthcare services will be more personalized, predictive, and technology-driven. Innovations like precision medicine, block chain technology, and smart healthcare systems that will continue to reshape the healthcare landscape, improving efficiency, transparency, and patient outcomes, healthcare organizations must invest in digital infrastructure, capacity building, and policy frameworks to fully harness the benefits of technological innovation
Keywords: Innovation, Technology, Healthcare Services, Telemedicine, Internet of Medical Things (IoMT)

Introduction
Innovation and technology are increasingly changing the way healthcare services are delivered, managed, and experienced. Developments in digital health, electronic health records, telemedicine, artificial intelligence, mobile health applications, and other technological tools have created new opportunities to improve the quality, efficiency, accessibility, and continuity of healthcare. The World Health Organization (WHO) recognizes digital health as an important component of modern health-system development and emphasizes its potential to support informed decision-making, improve health-system efficiency, promote equitable access to services, and strengthen the delivery of quality care (World Health Organization [WHO], 2021).
For many years, healthcare delivery depended largely on manual procedures, paper-based documentation, face-to-face consultations, and fragmented information systems. Although these approaches remain necessary in some settings, their limitations can affect the speed with which information is accessed, shared, and used for decision-making. The increasing adoption of digital technologies provides an opportunity to overcome some of these limitations by making health information more readily available and supporting more coordinated approaches to patient care. The transition towards digital health is therefore becoming an important feature of healthcare transformation globally.

One important development in this transformation is the use of Electronic Health Records (EHRs) and Electronic Medical Records (EMRs). Digital records can make it easier for healthcare professionals to store, retrieve, and use patient information, while also supporting the exchange of information between health facilities and healthcare providers. Evidence from Nigeria shows that the adoption of electronic medical records is influenced by factors such as perceived usefulness, awareness, relative advantage, organizational conditions, and the availability of appropriate infrastructure. Challenges involving electricity supply and internet connectivity can also affect the implementation and consistent use of electronic systems, particularly in settings with limited resources (Kose et al., 2020; Nigerian EMR adoption study, 2022).

Telemedicine is another important innovation that is changing the relationship between healthcare providers and patients. By using telecommunications and digital platforms, healthcare professionals can provide consultations and other services to patients who may be unable to reach healthcare facilities easily. The importance of telemedicine became particularly evident during the COVID-19 pandemic, when healthcare systems sought alternative approaches for maintaining access to care while reducing unnecessary physical contact. Dorsey and Topol (2020) described telemedicine as an increasingly important component of healthcare delivery and highlighted its potential to influence the organization and accessibility of healthcare services.

Artificial intelligence (AI) and machine learning are also becoming increasingly relevant to healthcare. These technologies can assist in analyzing large volumes of health information, identifying patterns, supporting diagnosis, improving clinical decision-making, and predicting potential health risks. Topol (2019) noted that artificial intelligence has the potential to influence healthcare at several levels, including clinical practice, health-system operations, and patient participation in managing health information. At the same time, the use of AI raises important concerns relating to privacy, security, bias, transparency, and accountability.

Other technologies, including mobile health applications, wearable devices, remote monitoring systems, and connected medical technologies, are also contributing to the movement towards more proactive and patient-centered healthcare. These technologies can support the continuous monitoring of patients, facilitate communication between healthcare providers and patients, and provide opportunities for early identification of health problems. However, their effectiveness depends not only on the availability of the technology but also on factors such as infrastructure, digital literacy, workforce capacity, affordability, data protection, and the readiness of healthcare organizations to incorporate new systems into routine practice.

In Nigeria, the potential benefits of healthcare innovation are particularly significant because the health system continues to face challenges related to access, infrastructure, health workforce capacity, information management, and differences in service availability between urban and rural communities. Nigeria has recognized the importance of information and communication technologies in strengthening its health system, with national health ICT and digital health strategies aimed at improving the use of technology, information management, interoperability, and healthcare delivery.

Despite these opportunities, the implementation of healthcare technology in Nigeria is not without challenges. Differences in electricity supply, internet connectivity, technical infrastructure, financial resources, digital skills, and institutional capacity can affect the successful adoption and continued use of digital health systems. Research conducted in Nigeria has demonstrated that the implementation of digital health interventions in rural areas can be supported by appropriate policies, partnerships, training, and technological infrastructure, but that the local context plays an important role in determining whether such interventions are successfully adopted and sustained (Ebenso et al., 2021).

The digital divide is another important concern. While some urban healthcare institutions may have better access to computers, internet services, electronic records, telemedicine platforms, and other digital technologies, healthcare facilities and communities in rural and underserved areas may have more limited access to these resources. Consequently, technological advancement does not automatically guarantee equal access to healthcare. Without deliberate efforts to address infrastructure, affordability, connectivity, and digital literacy, the benefits of healthcare innovation may be distributed unevenly across different populations.

Data privacy and security also require serious attention as healthcare becomes increasingly digital. Electronic systems involve the collection, storage, processing, and transmission of sensitive patient information. Weak information-security practices can expose health information to unauthorized access, loss, or misuse. In addition, the use of artificial intelligence requires appropriate ethical and governance

mechanisms because issues such as privacy, bias, transparency, accountability, and human rights can affect the safe and responsible use of these technologies (WHO, 2021).

Although considerable attention has been given internationally to healthcare innovation and technological transformation, there remains a need for more context-specific evidence concerning how these developments affect healthcare delivery in Nigeria. Existing Nigerian studies demonstrate both the potential of digital technologies and the practical difficulties associated with their implementation, particularly in environments where infrastructure and technical capacity are limited. More evidence is therefore needed to understand how innovation and technology can be effectively integrated into Nigerian healthcare institutions and how such integration can contribute to improved service delivery.

Therefore, this study focuses on the role of innovation and technology in shaping the future of healthcare services. It considers the potential benefits of technological advancement, the challenges associated with its adoption and implementation, and its implications for the quality, accessibility, efficiency, and sustainability of healthcare delivery. Understanding these issues is important for policymakers, healthcare managers, health professionals, technology developers, and other stakeholders who are responsible for planning and implementing healthcare innovations in Nigeria.

Background

Innovation and Technology in Healthcare

Innovation has become an important component of modern healthcare because of its potential to improve the quality, efficiency, accessibility, and safety of healthcare services. The development of digital technologies, information systems, artificial intelligence, mobile applications, and other technological solutions has changed the way healthcare professionals collect information, make decisions, communicate with patients, and deliver services. Digital technologies can also support more coordinated and patient-centered care by making relevant health information available when and where it is needed (Topol, 2019; World Health Organization [WHO], 2021).

Healthcare innovation refers to the development, introduction, and application of new ideas, approaches, processes, products, or technologies to improve healthcare delivery and health outcomes. Innovation may involve gradual improvements to existing practices or more substantial changes that transform the way healthcare services are organized and delivered. It is therefore broader than the introduction of new medical procedures. It can include changes in healthcare management, information systems, communication, service organization, and models of care.

The WHO recognizes digital health and innovation as important components of health-system transformation. Its global digital health strategy emphasizes the need to integrate technological, organizational, financial, and human resources to ensure that digital health initiatives contribute meaningfully to health and well-being and to universal health coverage (WHO, 2021). Innovation in healthcare therefore involves not only the acquisition of technology but also the development of appropriate systems, skills, policies, infrastructure, and organizational processes that allow such technologies to be used effectively.

Healthcare technology refers broadly to the application of scientific knowledge, digital tools, equipment, information systems, and communication technologies to support the prevention, diagnosis, treatment, monitoring, and management of health conditions. It encompasses both physical technologies, such as medical equipment and monitoring devices, and digital technologies, such as electronic health records, telemedicine platforms, mobile health applications, artificial intelligence systems, and health information systems.

Technological development has increasingly moved healthcare away from systems that depend entirely on paper records and face-to-face interactions toward more connected, information-driven models of care. Electronic health records, telemedicine, artificial intelligence, mobile health, wearable devices, and connected medical equipment can improve access to information, support clinical decision-making, facilitate communication, and strengthen healthcare management (WHO, 2021; Topol, 2019).

Healthcare Services

Healthcare services comprise the range of services provided to individuals and communities to prevent disease, promote health, diagnose illness, provide treatment, restore health, and support patients with long-term or life-limiting conditions. These services include preventive care, health promotion, diagnosis, treatment, rehabilitation, maternal and child health services, emergency care, and palliative care.

The effectiveness of healthcare services depends not only on the availability of healthcare workers and facilities but also on the ability of the health system to provide timely, safe, equitable, affordable, and

appropriate care. Digital technologies and other forms of innovation are increasingly being incorporated into healthcare services to improve access, strengthen information management, support clinical decisions, and improve continuity of care (WHO, 2021).

Healthcare delivery has consequently changed from a predominantly facility-based model toward more integrated and technology-supported approaches. Patients can increasingly interact with healthcare providers remotely, receive health information through mobile devices, monitor aspects of their health using wearable technologies, and have their information stored and accessed electronically. These changes have become particularly important in settings where geographical distance, shortage of healthcare professionals, limited infrastructure, or high transportation costs restrict access to conventional healthcare services.

Major Innovations in Healthcare

Innovation in healthcare encompasses a wide range of technologies and approaches. Among the most important are electronic health records, telemedicine and telehealth, artificial intelligence and machine learning, the Internet of Medical Things, robotics and automation, and big data and health analytics.

Electronic Health Records (EHRs)

Electronic Health Records (EHRs) are computerized systems used to record, store, retrieve, manage, and share patients' health information. Unlike paper records, EHRs can provide authorized healthcare professionals with rapid access to patient information across different stages of care. Depending on the system, the information may include demographic details, medical history, diagnoses, medications, allergies, laboratory findings, radiology results, treatment plans, and other relevant clinical information.

EHRs can improve continuity and coordination of care because healthcare professionals can access patient information without depending on the physical movement of paper files. Access to current information can also reduce unnecessary duplication, support clinical decision-making, and improve the efficiency of healthcare processes. Digital health systems are therefore regarded as important tools for strengthening health systems and improving the quality and use of health information (WHO, 2021).

EHRs are also valuable beyond individual patient care. Information generated through electronic systems can contribute to disease surveillance, health planning, research, monitoring of health-service utilization, and evaluation of healthcare interventions. When appropriately aggregated, protected, and analyzed, electronic health data can help health managers identify disease patterns and service needs.

Despite these advantages, the implementation of EHRs can be challenging, particularly in low- and middle-income settings. Common difficulties include inadequate infrastructure, unreliable electricity and internet connectivity, limited financial resources, insufficient technical expertise, resistance to organizational change, weak interoperability, and concerns regarding confidentiality, privacy, and cybersecurity. In African health systems, the sustainability and expansion of digital health initiatives can also be affected by weak governance, inadequate human-resource capacity, fragmented systems, and limited infrastructure (Olu et al., 2019).

Telemedicine and Remote Healthcare

Telemedicine involves the provision of clinical healthcare services at a distance through information and communication technologies. It allows healthcare professionals to communicate with patients, conduct consultations, provide follow-up care, and in appropriate circumstances support diagnosis and treatment without requiring the patient and provider to be physically present in the same location.

Telemedicine may use video conferencing, telephone communication, mobile applications, web-based platforms, and other communication technologies. It can be particularly useful for patients living in remote and underserved communities, where access to hospitals, specialists, and other healthcare professionals may be limited.

Telemedicine can reduce the need for some physical hospital visits and may help patients save transportation time and costs. It can also support follow-up consultations and improve access to specialist services. Dorsey and Topol (2020) observed that telemedicine had become an increasingly important component of healthcare delivery and had the potential to expand the reach of medical services.

Telehealth is a broader concept than telemedicine. While telemedicine focuses primarily on clinical services delivered remotely, telehealth may also include non-clinical activities such as health education, professional training, public health communication, administrative meetings, and other healthcare-related services delivered through telecommunications technologies.

The COVID-19 pandemic further demonstrated the usefulness of remote healthcare technologies because healthcare systems used telemedicine and other digital approaches to maintain some forms of care while

reducing unnecessary physical contact. The experience also highlighted the importance of digital infrastructure and appropriate regulatory arrangements for sustainable remote healthcare delivery.

However, telemedicine is not without limitations. Poor internet connectivity, unreliable electricity, limited digital literacy, inadequate access to appropriate devices, insufficient technical skills, regulatory uncertainties, and concerns about privacy and confidentiality can affect its effectiveness. These challenges are particularly relevant in developing countries, including Nigeria, where differences in infrastructure and digital capacity can limit the equitable use of telehealth services (Olu et al., 2019).

Artificial Intelligence and Machine Learning in Healthcare

Artificial Intelligence (AI) refers to computer-based systems capable of performing tasks that normally require aspects of human intelligence. These tasks may include recognizing patterns, interpreting information, supporting decision-making, understanding language, and making predictions. Machine Learning (ML) is a branch of AI in which computer systems learn patterns from data and use those patterns to make predictions or support decisions.

AI and ML are increasingly being applied in healthcare. Their applications include medical image interpretation, disease prediction, clinical decision support, personalized medicine, drug discovery, risk assessment, and health-service management. By processing large volumes of information, AI systems can identify patterns that may be difficult or time-consuming for humans to detect.

AI has particular potential in diagnosis and decision support. For example, machine-learning systems can be trained using large datasets to recognize patterns associated with specific diseases or clinical conditions. Predictive systems can also use historical patient information to estimate the likelihood of future health events, thereby supporting early intervention and preventive care.

Topol (2019) argues that AI has considerable potential to improve healthcare by supporting diagnosis, decision-making, and the processing of complex medical information. However, AI should be regarded as a tool that supports healthcare professionals rather than simply replacing human expertise. Effective use of AI requires appropriate clinical oversight, high-quality data, suitable infrastructure, and attention to ethical and professional responsibilities.

The use of AI also raises important concerns. These include patient privacy, cybersecurity, algorithmic bias, lack of transparency, poor-quality training data, accountability for automated decisions, and possible changes in healthcare employment. In developing countries, additional barriers may include inadequate technological infrastructure, insufficient digital skills, limited availability of high-quality health datasets, and the cost of developing and maintaining AI systems. These challenges emphasize the need for appropriate governance and responsible implementation of AI in healthcare.

Internet of Medical Things (IoMT)

The Internet of Medical Things (IoMT) refers to the network of connected medical devices, sensors, software applications, and healthcare information systems that communicate and exchange health-related information through digital networks. Examples include wearable monitoring devices, remote patient-monitoring equipment, smart medical devices, connected inhalers, glucose-monitoring systems, and other internet-enabled healthcare technologies.

IoMT enables health information to be collected continuously or at regular intervals and transmitted to healthcare professionals or information systems. This can support real-time monitoring and allow healthcare providers to identify changes in a patient's condition more quickly.

One important application of IoMT is remote patient monitoring. A patient with a chronic disease, for example, may use a connected device to record selected health measurements that can then be transmitted to healthcare professionals. Such systems have the potential to support earlier identification of deterioration and reduce the need for some unnecessary hospital visits.

Connected health technologies can also contribute to the development of more data-driven healthcare systems. The increasing availability of data from electronic records, connected devices, wearables, and other digital sources creates opportunities for more comprehensive health monitoring and analysis (WHO, 2021).

Nevertheless, IoMT introduces important risks. Because many devices continuously transmit sensitive health information, cybersecurity and privacy become major concerns. Other challenges include interoperability between devices and information systems, the cost of implementation and maintenance, unreliable connectivity, and shortages of personnel with the technical expertise required to manage connected healthcare technologies. These challenges are particularly important in resource-constrained health systems (Olu et al., 2019).

Robotics and Automation in Healthcare

Robotics and automation involve the use of robotic systems, computer-controlled technologies, and automated processes to perform or support clinical, administrative, and logistical activities within healthcare organizations. These technologies are designed to improve precision, efficiency, consistency, and safety while reducing the burden associated with repetitive tasks.

One important application of robotics is robot-assisted surgery. Robotic systems can assist surgeons in performing complex procedures by providing enhanced control and precision. In appropriate clinical circumstances, minimally invasive robotic procedures may contribute to reduced tissue damage and improved recovery. However, the clinical benefits depend on the specific procedure, technology, expertise of the healthcare team, and the circumstances of the patient.

Automation is also increasingly used in non-clinical areas of healthcare. Examples include patient registration, appointment scheduling, billing, pharmacy operations, laboratory processes, inventory management, and administrative reporting. Automating repetitive activities can reduce workload, improve consistency, and allow healthcare workers to devote more time to activities requiring professional judgement and direct patient interaction.

The adoption of robotics and automation, however, can be limited by high acquisition and maintenance costs, inadequate technical infrastructure, and shortages of trained personnel. There may also be concerns about changes in employment rolls and the appropriate balance between automated systems and human decision-making. For these reasons, implementation should consider not only technological capability but also the organizational, financial, ethical, and human implications.

Big Data and Health Analytics

Healthcare generates large amounts of information from different sources, including electronic health records, laboratory systems, medical imaging, pharmacy systems, health insurance records, wearable devices, disease-surveillance systems, and patient-generated data. When these datasets are large, complex, rapidly generated, and derived from multiple sources, they are often described as big data.

Health analytics involves the application of statistical methods, computational techniques, and other analytical approaches to transform health data into useful information for decision-making. It can be used to identify patterns, monitor health-service utilization, predict health risks, support disease surveillance, and improve resource allocation.

Big data analytics can support clinical decision-making by allowing healthcare organizations to identify trends and relationships within large datasets. Predictive analytics, for example, may help identify individuals or populations at increased risk of particular diseases, allowing health professionals to consider earlier preventive or therapeutic interventions.

At the population level, health analytics can contribute to disease surveillance and public health planning. Health authorities can use information from different sources to identify changes in disease patterns, monitor healthcare demand, evaluate interventions, and allocate resources more effectively.

However, the usefulness of big data depends heavily on the quality, completeness, security, and interoperability of the underlying information. Poor-quality data can produce unreliable conclusions, while incompatible information systems can make it difficult to combine datasets. Privacy and cybersecurity are also important because healthcare datasets contain sensitive personal information. In many developing countries, inadequate infrastructure, limited technical capacity, fragmented information systems, and insufficient resources remain important barriers to the effective use of health analytics (Olu et al., 2019).

Benefits of Technological Innovation in Healthcare

Improved Quality of Care

One of the major benefits of technological innovation is the potential to improve the quality and safety of healthcare. Digital systems can provide healthcare professionals with timely access to relevant information, support clinical decision-making, improve communication, and reduce some forms of error associated with incomplete or inaccessible information.

For example, electronic health records can make patient histories, medications, laboratory results, and previous diagnoses more readily available to authorized healthcare professionals. This can support more informed clinical decisions and improve continuity of care. Digital health technologies can therefore contribute to healthcare systems that are safer, more effective, timely, efficient, patient-centred, and equitable (WHO, 2021).

Increased Access to Healthcare

Technological innovation can expand access to healthcare, particularly for populations living in rural, remote, or underserved areas. Telemedicine and other forms of remote healthcare can connect patients with healthcare professionals without requiring every consultation to take place in a hospital or clinic.

Mobile health technologies can also deliver health information, reminders, health education, and selected health services to individuals through mobile devices. These approaches can help reduce geographical barriers and, in some circumstances, reduce the time and cost associated with travelling to healthcare facilities (Dorsey & Topol, 2020).

However, technological innovation does not automatically guarantee equal access. People without reliable electricity, internet connectivity, smartphones, digital skills, or the financial resources to use digital services may continue to face barriers. Therefore, digital health initiatives need to address the digital divide as part of their implementation strategy (Olu et al., 2019).

Cost Efficiency

Cost efficiency in healthcare refers to the ability of health systems to use available resources effectively while maintaining or improving the quality of services. Technology can contribute to cost efficiency by reducing unnecessary duplication, improving workflow, supporting better resource management, and reducing some administrative burdens.

Electronic health records can reduce dependence on physical paper storage and improve the availability of patient information. Better access to existing information may also reduce unnecessary repetition of tests and procedures in situations where previous results are available and clinically appropriate to use.

Automation can similarly reduce the time healthcare workers spend on repetitive administrative activities. When appropriately designed and implemented, automated processes can improve productivity and allow personnel to concentrate on tasks requiring professional judgement and direct patient care.

Patient Empowerment

Patient empowerment refers to the process through which individuals acquire greater knowledge, confidence, skills, and opportunities to participate actively in decisions concerning their health and healthcare.

Digital technologies can support patient empowerment by giving individuals access to health information and tools that help them monitor and manage their health. Mobile health applications, wearable devices, patient portals, and remote-monitoring technologies can allow patients to track symptoms, monitor selected health indicators, receive reminders, and communicate with healthcare professionals.

For individuals living with chronic conditions, these technologies can encourage greater participation in self-management. Patients may be able to monitor aspects of their health between clinical appointments and share relevant information with healthcare professionals. Digital health therefore has the potential to strengthen communication between patients and providers and promote more patient-centered care (WHO, 2021).

Faster Decision-Making

Technological innovation can improve the speed with which health information is collected, accessed, processed, and used. Timely information is particularly important in situations where delays in diagnosis or treatment may affect patient outcomes.

Electronic health records can provide authorized healthcare professionals with rapid access to relevant patient information, including medical history, previous diagnoses, medications, allergies, and laboratory findings. This can reduce delays associated with locating and transporting paper files.

Real-time monitoring technologies can also provide healthcare professionals with more immediate information about a patient's condition. Similarly, data analytics and artificial intelligence can assist in identifying patterns and risks within large datasets. When these technologies are supported by reliable infrastructure, appropriate data governance, and competent healthcare professionals, they can contribute to faster and more informed clinical and administrative decision-making (Topol, 2019; WHO, 2021).

Methodology

Research Design and Procedures

This section presents the research design and procedures used to examine innovation and technology and their implications for the future of healthcare services, with particular attention to digital transformation, health data management, and emerging healthcare technologies.

The study adopted a descriptive survey research design and used a simple random sampling technique to select respondents from Specialist Hospital Bauchi as the case study. A total of 184 respondents participated in the study. The descriptive survey design was considered appropriate because it enabled the researcher to obtain information directly from respondents concerning their opinions, experiences, and perceptions of the role of innovation and technology in healthcare delivery and the future direction of healthcare services.

Summary of Results

Table 1: Response Rate

Response Category	Frequency	Percentage (%)
Returned	184	100.0
Not Returned	0	0.0
Total	**184**	**100.0**

Interpretation:

Table 1 shows that all 184 questionnaires administered to the respondents were completed and returned, giving a 100% response rate. This indicates that there was no loss of questionnaires due to non-response and that all the responses obtained were available for the analysis.

Research Question One: What Are the Benefits of Innovation and Technology in Healthcare?

Table 2: Benefits of Innovation and Technology

Item	Statement	SA	A	D	SD	Mean
1	Technology improves the quality of patient care.	90	60	20	14	3.23
2	Technology improves access to healthcare services.	85	65	22	12	3.21

Interpretation:

The findings indicate that respondents generally had a positive view of the contribution of technology to healthcare delivery. The first statement recorded a mean score of 3.23, indicating that most respondents agreed that technology improves the quality of patient care. Similarly, the second statement recorded a mean score of 3.21, suggesting that respondents generally agreed that technology improves access to healthcare services.

Overall, the findings suggest that innovation and technology are perceived by the respondents as important tools for improving both the quality and accessibility of healthcare services.

Research Question Two: What Is the Future of Healthcare Services?

Table 3: Future of Healthcare Services

Item	Statement	SA	A	D	SD	Mean
1	Healthcare will become increasingly digital in the future.	85	70	18	11	3.24
2	Artificial intelligence will improve healthcare delivery.	88	65	20	11	3.25

Interpretation:

The results show that respondents generally believe that technology will play an increasingly important role in the future of healthcare. The first statement had a mean score of 3.24, indicating strong agreement that healthcare will become increasingly digital. The second statement recorded a mean of 3.25, showing that respondents also believe that artificial intelligence will contribute to improvements in healthcare delivery.

These findings suggest that healthcare workers recognize digital transformation and artificial intelligence as important components of the future healthcare system. The increasing use of digital technologies may support faster access to information, improved decision-making, better communication, and more efficient delivery of healthcare services.

Conclusion

The study employed a descriptive survey design to examine perceptions concerning innovation and technology and the future of healthcare services. The design provided an appropriate approach for obtaining information about respondents' experiences and views regarding digital transformation, health information management, and emerging healthcare technologies.

The findings indicate that innovation and technology are perceived as important contributors to improved healthcare delivery. Respondents generally agreed that technology can improve the quality of patient care and increase access to healthcare services. The findings also show a strong perception that healthcare will become increasingly digital and that artificial intelligence will play an important role in future healthcare delivery.

Overall, innovation and technology are transforming healthcare from predominantly traditional approaches toward systems that are more digital, efficient, accessible, and patient-centered. Technologies such as electronic health records, telemedicine, artificial intelligence, mobile health applications, and other digital tools have the potential to improve the way healthcare information is managed and used for decision-making.

However, the successful adoption of these technologies depends on overcoming several challenges. Inadequate funding, limited infrastructure, shortages of trained personnel, unreliable technological facilities, and other implementation barriers may restrict the full benefits of innovation in healthcare.

Therefore, sustained investment in digital infrastructure, healthcare-worker training, appropriate policies, and effective technology management is necessary to support the continued transformation of healthcare services. Addressing these challenges will help healthcare institutions maximize the benefits of innovation and prepare for a more technologically driven and patient-centered future.

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TECHNOLOGICAL INNOVATION SHAPING THE FUTURE OF WORK FOR ORGANIZATIONAL PRODUCTIVITY

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Abstract

Technological innovation is reshaping the future of work by changing how tasks are performed, how employees collaborate, and how organizations make decisions. This paper used literature-based design and examines the effects of technologies such as artificial intelligence, automation, cloud computing, and digital collaboration tools on organizational productivity. Using the conceptual review of relevant literature, the paper found that technological innovation faster processes, improved coordination, data-informed decisions, and the automation of routine work. It also examines challenges, including skills gaps, employee resistance, job displacement, cybersecurity risks, and the need to redesign work and management practices. The paper argues that technology alone does not guarantee higher productivity. Outcomes depend on how well organizations align new tools with employee capabilities, workplace culture, and business goals. The paper concludes that organizations are most likely to benefit when they invest in continuous learning, responsible technology governance, and human-centered job design. These measures can help translate innovation into sustainable productivity while supporting workers through ongoing changes in the workplace. The paper recommended among others that, careful planning before the introduction of technology, proper technology-adoption with the inclusion of clear goals, realistic budget, a timeline, measurable outcomes. Others are communication and involvement of employees in the adoption process, training and continuous learning on digital skills for employees and responsible management data privacy and ethical concerns.

Keywords: Technological Innovation, The Future of Work, Organizational Productivity.

Introduction

Technology is changing work in ways that are already visible in many organizations. Technological innovation refers to the development and application of new technologies that significantly change or improve products, services, or processes. It can involve the creation of entirely new technologies or the enhancement of existing ones, aiming to provide efficiency, convenience, and solutions to existing problems (Tidd, J., & Bessant, J. R., 2018). Think about how smartphones transformed our lives. They started as basic communication tools but have evolved to include features like cameras, internet browsing, and countless applications that help us navigate daily challenges. Technological innovation, therefore, is not just about creating new gadgets; it's about improving our quality of life and changing the way we interact with the world around us.

Artificial intelligence, automation, cloud computing, and digital communication tools can help employees complete routine tasks, share information, and coordinate across teams. These changes offer organizations new ways to improve productivity, but they also raise questions about how jobs and workplace skills will evolve. The effects are not always immediate. New tools may require changes to work processes, management practices, and employee training before their benefits become clear. Brynjolfsson et al. (2017) describe this as an implementation lag, the value of a technology often depends on complementary changes that help organizations put it to effective use. This suggests that buying or adopting new technology alone may not be enough to improve performance.

Technology can also change tasks within jobs rather than eliminate entire occupations. In its analysis of generative AI, the International Labour Organization found that job transformation is more likely than full automation for many occupations (Gmyrek et al., 2023). At the same time, workers may need new skills as tools reshape how tasks are done. The Organisation for Economic Co-operation and Development (OECD, 2023) notes that AI is likely to affect the organization of work and the skills employees need. The phrase

"the future of work" refers to the evolving nature of work shaped by technological advancements, socio-economic changes, and shifts in workforce demographics. It encompasses trends like remote work, automation, the gig economy, and the increasing importance of employee well-being and flexibility (Susskind, D., & Susskind, R., 2020). The future of work is not just a series of technological updates, but a transformation in how we connect with our jobs and each other. It means considering how people work best, whether that's from home or in a vibrant office. It's about adapting roles and responsibilities to meet the expectations of a new generation of workers who value balance, purpose, and collaboration. According Babb, C. (2020), Organizational productivity refers to the efficiency with which an organization converts its inputs (such as resources, time, and labor) into outputs (such as products or services). It's a measure of how well an organization utilizes its resources to achieve its goals and objectives. organizational productivity is the engine that powers a business. When an organization runs smoothly and efficiently, it can produce more with less effort. This means happier employees, satisfied customers, and better overall performance. When people work well together, leveraging each other's strengths and optimizing processes, they can create a thriving environment that fosters innovation and growth. For organizations, the central challenge is to introduce technology in ways that support both productivity and employees. This means considering how new tools fit existing work, providing opportunities for people to build relevant skills, and paying attention to how changes affect day-to-day working conditions. This study examines how technological innovation is shaping the future of work and influencing organizational productivity, with a focus on the conditions that help organizations translate new technologies into better performance.

The Meaning and Evolution of Technological Innovation in the Workplace

Technological innovation in the workplace refers to the introduction and practical use of new or significantly improved tools, systems, processes, or methods that change how employees perform their work. It is not simply about buying the latest computers or software. Innovation occurs when an organization successfully applies technology to improve the way work is organized, services are delivered, decisions are made, or value is created. The Organisation for Economic Co-operation and Development (OECD, 2018) explains that innovation must be implemented; an idea or invention only becomes an innovation when it is put into use or made available to users. In the workplace, this may involve introducing cloud-based systems, automated machinery, artificial intelligence (AI), digital communication platforms, or data analytics tools.

Technological innovation has always influenced work, although its form has changed over time. During the Industrial Revolution, inventions such as the steam engine and mechanized production equipment moved many workers from farms and small workshops into factories. This period increased the speed and scale of production but also changed job roles and working conditions. Employees were increasingly required to operate machines, follow standardized processes, and work within more structured organizations. In this sense, technological change has never only been about machines; it has also been about the redesign of jobs, skills, and relationships within organizations.

In the twentieth century, technological innovation became more closely associated with mass production, electrification, and later the introduction of computers. Early workplace technologies were mainly designed to reduce physical effort, improve accuracy, and increase production output. For example, assembly lines enabled organizations to produce goods faster and at lower cost. As computers became more widely available from the 1970s onward, organizations began using them for payroll, record keeping, inventory control, communication, and financial management. These developments changed office work by making information easier to store, process, and share.

The rapid spread of information and communication technologies in the 1990s and early 2000s marked another important stage in the evolution of workplace innovation. Internet access, email, enterprise software, mobile phones, and digital databases connected employees, customers, and suppliers in new ways. Work became less dependent on a single physical location because employees could communicate and exchange information across departments, cities, and countries. Organizations also began to rely more heavily on digital systems to coordinate tasks, monitor performance, and respond to customer needs.

However, the value of technology does not come automatically from its installation. Brynjolfsson and Hitt (2000) argue that the benefits of information technology are strongly connected to organizational change. This means that a company may invest heavily in software or digital equipment without gaining substantial productivity improvements if employees are not trained, work processes are not redesigned, or management practices remain outdated. In other words, technology is most effective when it is supported

by appropriate leadership, employee participation, skills development, and a workplace culture that is open to change.

The modern meaning of technological innovation has therefore expanded beyond physical equipment. The OECD (2018) identifies innovation as either a new or improved product or a new or improved business process. Workplace innovation is especially connected to business-process innovation because it affects activities such as production, administration, logistics, communication, marketing, human resource management, and service delivery. For instance, a company may introduce an online customer-service platform, automate invoice processing, use real-time sales data to guide decisions, or adopt collaborative software that allows teams to work together remotely. Each example changes not only the technology used but also the way employees organize and complete their tasks.

Today, workplace innovation is increasingly shaped by artificial intelligence, automation, cloud computing, big data, robotics, and digital platforms. Artificial intelligence can assist workers by analyzing large amounts of information, responding to customer inquiries, drafting routine documents, predicting demand, or identifying patterns that would be difficult to detect manually. Automation can reduce repetitive tasks, allowing employees to focus more on problem-solving, creativity, communication, and strategic work. Evidence from a field study of customer-support workers found that access to generative AI increased productivity, with particularly strong gains among less experienced workers (Brynjolfsson et al., 2023). This suggests that technology can complement human work rather than simply replace it.

Digital Transformation and Changing Work Practices

Digital transformation refers to the integration of digital technologies into an organization's activities, processes, and culture in ways that fundamentally change how it operates and delivers value (Brynjolfsson, E., & Hitt, L. M., 2000). It is more than replacing paper files with computers or using email instead of letters. True digital transformation involves changing the way employees communicate, make decisions, serve customers, manage information, and complete daily tasks. It often includes the use of cloud computing, artificial intelligence, mobile applications, digital platforms, data analytics, and automation. In the modern workplace, digital transformation has significantly changed traditional work practices. In the past, many employees were expected to work from a fixed location, follow a set schedule, and communicate mainly through face-to-face meetings, telephone calls, or printed documents. Today, digital tools allow work to take place across different locations and time zones. Employees can attend virtual meetings, share documents instantly, monitor projects online, and collaborate with colleagues without being in the same building. This flexibility has made remote and hybrid work more common in many organizations.

One major effect of digital transformation is the shift toward flexible work arrangements. Cloud-based systems such as online storage, video-conferencing platforms, and project-management applications enable employees to access work materials from almost anywhere. As a result, many organizations now combine office-based work with remote work. This approach can help employees manage their time more effectively and may reduce commuting costs and stress. At the same time, it requires employees to be disciplined, organized, and able to communicate clearly through digital channels. The COVID-19 pandemic accelerated this change. During periods of lockdown and restricted movement, many organizations had to quickly adopt digital tools to remain operational. Meetings moved online, customer services became more digital, and employees relied on messaging platforms and shared online workspaces. The International Labour Organization (ILO, 2022) observes that the pandemic accelerated the movement of work, services, and economic activities toward digital and virtual platforms. Although remote work existed before the pandemic, it became an essential practice for many organizations rather than a special arrangement.

Digital transformation has also changed communication in the workplace. Employees now use email, instant messaging, video calls, collaborative documents, and workplace platforms to communicate in real time. These tools can make communication faster and improve coordination among teams. For example, a project team can update a shared document at the same time, track deadlines through an online platform, and resolve questions through instant messaging. This reduces delays that may occur when employees depend only on physical meetings or paper-based systems.

Digital transformation also requires employees to develop new skills. Digital literacy is now important in almost every sector because workers need to use software, communicate online, protect sensitive information, and adapt to new technologies. Employees may also need to learn how to interpret data, work with automated systems, and use artificial intelligence responsibly. The OECD and Eurostat (2018) recognize that innovation increasingly depends on capabilities related to digital technologies,

software, data, and knowledge management. This means that continuous training is essential for organizations that want to remain productive and competitive.

Artificial Intelligence and Automation in Improving Productivity

Artificial intelligence (AI) and automation are becoming important tools for improving productivity in modern organizations. Productivity refers to how efficiently an organization uses its resources, including time, labour, money, and materials, to produce goods or deliver services. AI and automation can help employees complete tasks faster, reduce errors, improve decision-making, and allow organizations to respond more effectively to customer needs (Brynjolfsson, E., & Hitt, L. M., 2000). Although the two concepts are closely related, they are not exactly the same. Automation involves using technology to perform repetitive tasks with little human involvement, while AI enables computer systems to analyze information, recognize patterns, learn from data, and support decisions. Automation has been used in workplaces for many years. In manufacturing, machines have long been used to assemble products, package goods, and inspect quality. Today, automation is also common in offices, banks, hospitals, retail stores, and customer-service departments. For example, automated systems can process invoices, schedule meetings, send reminders, update employee records, and respond to simple customer questions. By handling routine tasks, automation reduces the amount of time employees spend on repetitive activities. This allows them to focus on work that requires creativity, communication, judgment, and problem-solving.

Artificial intelligence takes automation a step further because it can process large amounts of information and provide useful insights. AI systems can help organizations forecast sales, detect fraud, recommend products, analyze customer feedback, and predict equipment failure. In a hospital, AI may support doctors by identifying patterns in medical images. In banking, it can help identify unusual transactions that may indicate fraud. In retail, AI can analyze customer purchasing behaviour and help businesses manage inventory more effectively. These examples show that AI can improve productivity by helping employees make faster and more informed decisions. Research shows that AI can increase productivity when it is used appropriately. Brynjolfsson, Li, and Raymond (2023) studied the use of generative AI among customer-support workers and found that access to AI assistance increased productivity by an average of 15 percent. The improvement was especially strong among less experienced employees because the technology helped them learn from the approaches used by more experienced workers. This suggests that AI can help reduce skill gaps by giving employees quick access to useful information and guidance while they work. Despite these benefits, organizations must be careful when introducing AI and automation. Some employees may worry that their jobs will disappear, especially when technology takes over routine tasks.

In reality, AI is more likely to change many jobs than completely eliminate them. The International Labour Organization (ILO, 2025) explains that AI may augment human capabilities and improve productivity in many occupations, although some jobs and worker groups are more exposed to significant change. For this reason, organizations should invest in training and reskilling rather than simply focusing on reducing labour costs. Employees need digital skills to work effectively with AI systems.

Remote and Hybrid Work Technologies

Remote and hybrid work technologies are digital tools that allow employees to perform their duties, communicate, and collaborate without being in the same physical workplace every day. Remote work occurs when employees work entirely outside the traditional office, often from home or another location. Hybrid work combines remote work with time spent in a physical office. These work arrangements have become more common because technology now makes it possible for employees to access files, attend meetings, communicate with colleagues, and complete tasks from almost anywhere (Bloom, N., Liang, J., Roberts, J., & Ying, Z. J., 2015).

Before the widespread use of digital technology, most organizations depended heavily on face-to-face communication and physical office spaces. Employees needed to be present in the workplace to attend meetings, access documents, use office equipment, and receive instructions from managers. However, the development of the internet, cloud computing, mobile devices, and online communication platforms has changed this situation. Employees can now work through digital systems that connect them to their organizations regardless of location. Cloud computing is one of the most important technologies supporting remote and hybrid work. Cloud-based platforms allow employees to store, access, and edit files online instead of saving them only on a specific office computer (Wang, B., Liu, Y., Qian, J., & Parker, S. K., 2021). For example, workers can use shared online documents, digital storage systems, and project-management

platforms to collaborate with team members in real time. This improves flexibility because employees can access important work materials from different devices and locations. Cloud systems also reduce the risk of losing information when files are properly backed up and managed. Video-conferencing technology is another major tool for remote and hybrid work. Platforms such as Zoom, Microsoft Teams, Google Meet, and similar applications allow employees to hold meetings without travelling to the same location. Through video calls, workers can discuss projects, give presentations, conduct interviews, provide training, and maintain contact with clients. These technologies became especially important during the COVID-19 pandemic, when many organizations had to continue operating while physical movement was restricted. According to the International Labour Organization (ILO, 2022), the pandemic accelerated the shift of work, services, and livelihoods toward virtual and digital platforms.

In addition to video meetings, remote work depends on communication tools such as email, instant messaging, shared calendars, and team collaboration platforms. These technologies make it easier for employees to exchange information quickly, ask questions, assign tasks, and monitor deadlines. A project manager, for instance, can use an online platform to assign responsibilities, track progress, and identify tasks that are delayed. Employees can also communicate through group chats rather than waiting for formal meetings. This can improve coordination and reduce the time spent searching for information. Remote and hybrid work technologies can improve productivity when they are used effectively. Employees may save time and money by avoiding long daily commutes. They may also have greater control over their working environment and schedule, which can help some people concentrate better. Research by Bloom et al. (2015) found that employees who worked from home in a Chinese travel company showed higher performance and lower turnover than office-based employees. The study suggests that remote work can produce positive results when workers have suitable roles, appropriate technology, and clear performance expectations. Hybrid work can offer a balance between flexibility and physical interaction. Employees may work remotely when they need quiet time for individual tasks and come into the office for team meetings, brainstorming, training, or activities that require closer collaboration. This approach recognizes that not all work is best completed in the same way.

Employee Skills, Reskilling, and Digital Literacy

Technological innovation is changing the skills employees need in order to work effectively. As organizations adopt digital systems, automation, artificial intelligence, cloud computing, and data analytics, employees are expected to perform tasks in new ways. Skills that were sufficient in the past may no longer be enough in a workplace where information is shared digitally, routine tasks are automated, and decisions are increasingly supported by data. For this reason, employee skills, reskilling, and digital literacy have become important areas of focus for organizations that want to remain productive and competitive (International Labour Organization, 2026).

Employee skills refer to the knowledge, abilities, and personal qualities that allow workers to perform their jobs successfully. These include technical skills, communication skills, problem-solving ability, teamwork, creativity, and time management. In the digital workplace, employees also need the ability to use technology confidently and responsibly. For example, they may need to use online communication platforms, manage digital documents, analyze information, protect confidential data, and work with automated systems. The growing use of technology means that employees must be willing to learn continuously rather than depending only on the skills they gained at the beginning of their careers (OECD, 2019).

Digital literacy is a key skill in the modern workplace. It refers to the ability to use digital devices, software, and online platforms effectively, safely, and critically. Digital literacy is not limited to knowing how to operate a computer or send an email. It also includes the ability to search for reliable information, communicate professionally online, understand digital content, protect personal and organizational data, and recognize possible misinformation or cyber threats. An employee with strong digital literacy can adapt more easily when an organization introduces new tools or systems. For example, an employee in a traditional office may have previously kept records in paper files and communicated mainly through face-to-face meetings. In a digitally transformed workplace, the same employee may need to use cloud storage, video-conferencing applications, customer-management software, and digital reporting systems. If the employee lacks digital skills, the new technology may create stress and reduce productivity. However, with appropriate training and support, the employee can learn to use the tools effectively and contribute more confidently to the organization (World Bank, 2019).

Reskilling refers to the process of learning new skills that prepare employees for different roles or changing job requirements. It is particularly important when technology replaces certain tasks or changes the way a job is performed. For instance, a worker whose routine data-entry tasks are automated may need training in data analysis, customer support, quality control, or digital process management (World Bank. (2019). Reskilling helps employees remain relevant in the workplace and reduces the risk that technological change will lead to job loss or exclusion.

Upskilling is closely related to reskilling but has a slightly different meaning. Upskilling involves improving existing skills so that employees can perform their current roles at a higher level (World Bank. (2019). A customer-service employee, for example, may be trained to use an AI-supported system that helps answer customer questions more quickly. The employee remains in the same general role but gains new abilities that improve performance. Both reskilling and upskilling are necessary because workplaces are changing continuously. The International Labour Organization (ILO, 2026) notes that the growing use of AI is increasing demand for cognitive, socioemotional, digital, and AI-related skills. Employees are not only expected to understand technology; they must also develop human skills that technology cannot easily replace. These include empathy, creativity, ethical judgment, leadership, adaptability, and complex problem-solving. This shows that the future of work will require a combination of technological competence and human-centered abilities.

Organizations benefit when they invest in employee development. Workers who receive training are more likely to adapt to change, use technology effectively, and feel valued by their employers. Training can also improve employee confidence and reduce resistance to new systems. When employees understand why a new technology is being introduced and how it can support their work, they are more likely to accept it. On the other hand, organizations that introduce technology without training may experience frustration, low adoption rates, and reduced productivity. Digital training can take different forms. Organizations may provide workshops, online courses, mentoring, job rotation, coaching, or peer-learning opportunities. Some employees may need basic digital training, while others may require advanced skills in areas such as cybersecurity, programming, data analytics, or artificial intelligence. Training should therefore be based on the needs of both the organization and its employees. It should also be continuous because technology changes quickly (World Bank (2019).

Technology-Driven Changes in Job Roles and Employment Patterns

Technology has always influenced the type of work people do, but recent developments in artificial intelligence, automation, robotics, digital platforms, and data analytics are changing job roles at a faster pace (ILO, 2025). Many organizations now use technology to perform routine tasks, improve service delivery, reduce costs, and make better decisions. As a result, some jobs are being redesigned, new roles are emerging, and employees are expected to develop skills that were not previously required. These changes are affecting employment patterns across industries such as manufacturing, banking, health care, education, retail, transportation, and communication. According ILO (2025) a job role refers to the duties and responsibilities an employee performs within an organization. In the past, many jobs involved repetitive tasks that could be completed manually. For example, factory workers assembled products by hand, bank employees processed transactions manually, and office workers spent large amounts of time filing documents or entering information into records. Today, automated machines, software systems, and artificial intelligence can perform many of these tasks more quickly and accurately. This does not always mean that jobs disappear completely; rather, the nature of the job often changes.

Technology is also creating entirely new job roles. Organizations now employ data analysts, cybersecurity specialists, software developers, digital marketers, cloud-computing professionals, artificial intelligence specialists, and social media managers. These roles were either uncommon or did not exist in many organizations a few decades ago. The growth of e-commerce has also created employment opportunities in online customer service, digital logistics, online sales, and warehouse management. As businesses increasingly depend on digital systems, the demand for workers with technological knowledge continues to increase. Employment patterns are also changing because digital technology has made work more flexible. In the past, most employees were expected to work full-time from a fixed workplace. Today, many people work remotely, on a hybrid basis, as freelancers, or through digital platforms. For example, online platforms allow individuals to offer services such as graphic design, writing, delivery, transportation, consulting, and software development. This type of work can provide flexibility and create income opportunities for people who may not be able to follow traditional office schedules (ILO, 2022).

Cybersecurity, Privacy, and Ethical Concerns in Digital Workplaces

Digital technology has made workplaces more efficient, connected, and flexible. Employees can communicate through online platforms, access files from different locations, use artificial intelligence to complete tasks, and make decisions based on data. However, as organizations become more dependent on digital systems, they also face important concerns related to cybersecurity, privacy, and ethics. These issues affect employees, customers, managers, and the organization as a whole. For this reason, organizations must ensure that technology is used in a secure, fair, and responsible way. According to World Economic Forum (2025) Cybersecurity refers to the protection of digital systems, networks, devices, and information from unauthorized access, theft, damage, or disruption. In a digital workplace, organizations store important information such as employee records, customer details, financial data, passwords, and business plans on computers and online platforms. If this information is not properly protected, cybercriminals may gain access to it. Cyberattacks can lead to financial losses, damage to an organization's reputation, loss of customer trust, and interruptions to normal business activities.

Common cybersecurity threats include phishing, malware, ransomware, weak passwords, and unauthorized access. Phishing occurs when criminals send false emails or messages that appear to come from a trusted source in order to trick employees into revealing passwords or other sensitive information. Malware is harmful software that can damage systems or steal data. Ransomware is a type of malware that blocks access to an organization's files until money is paid to the attacker. These threats are especially serious in remote and hybrid workplaces because employees may use home internet connections or personal devices that are not as secure as office systems. Employees play an important role in cybersecurity because many security problems begin with human error. An employee may accidentally click on a suspicious link, use a weak password, or share confidential information with the wrong person. Therefore, organizations should provide regular cybersecurity training. Employees should learn how to identify suspicious emails, create strong passwords, use multi-factor authentication, and report possible security incidents quickly. The National Institute of Standards and Technology (NIST, 2024) emphasizes that cybersecurity risk management involves identifying risks, protecting systems, detecting threats, responding to incidents, and recovering from attacks.

Privacy is another major concern in digital workplaces. Privacy refers to an individual's right to control how personal information is collected, used, stored, and shared (World Economic Forum, 2025). Organizations often collect information about employees and customers for legitimate reasons. For example, human resource departments may collect employee contact details, attendance records, salary information, performance reports, and health-related information. Digital systems may also collect data about employees' online activity, working hours, location, or use of company devices. Although data can help organizations manage work more effectively, excessive monitoring can create serious privacy concerns. Some employers use software to track employees' computer activity, keystrokes, email messages, login times, or location. While monitoring may be used to protect company information or measure performance, it can make employees feel watched and distrusted. If employees are not informed about how their data is being collected and used, the organization may damage morale and create an unhealthy work environment. Organizations should therefore be transparent about employee monitoring and data collection. Employees should know what information is being collected, why it is needed, who can access it, and how long it will be stored. Data should only be collected when it is necessary for a clear business purpose. The NIST (2020) Privacy Framework encourages organizations to identify privacy risks and manage personal information in ways that support trust and accountability. Protecting privacy is not only a legal responsibility; it is also an ethical obligation.

Ethics refers to principles of right and wrong that guide behaviour and decision-making. In digital workplaces, ethical concerns often arise when organizations use artificial intelligence, employee-monitoring tools, data analytics, and automated decision-making systems (UNESCO, 2021). For example, an organization may use AI to screen job applicants, evaluate employee performance, or decide which customers receive particular services. If the AI system is trained on biased or incomplete data, it may produce unfair results. This could lead to discrimination based on gender, age, race, disability, or other personal characteristics. Ethical technology use requires fairness, transparency, accountability, and human oversight. Employees and customers should be able to understand how important decisions are made, especially when automated systems are involved. Organizations should not allow AI systems to make major decisions without human review. For example, if an automated system rejects a job applicant, a qualified human decision-maker should be able to review the result and identify whether the system made an unfair judgment. Another ethical concern is the balance between productivity and employee well-being. Digital

tools can improve efficiency, but they can also create pressure for employees to remain constantly available. Instant messaging, email, and remote-work platforms may make employees feel that they must respond at all hours. This can lead to stress, burnout, and poor work-life balance. Managers should set reasonable expectations about working hours and avoid using technology in ways that create unnecessary pressure.

Challenges Organizations Face When Adopting New Technologies

One of the main challenges is the high cost of adopting technology. Organizations may need to purchase software, hardware, licenses, internet services, cybersecurity systems, and technical support. They may also need to pay for employee training and system maintenance. Large organizations may have more financial resources to invest in advanced technology, but small and medium-sized enterprises may struggle to afford these costs. In addition, technology often requires regular updates, meaning that the organization must continue investing after the initial purchase.

Another challenge is employee resistance to change (Venkatesh, V. et al, 2003). Employees may be comfortable with existing work methods and may worry that new technology will make their jobs more difficult or replace them completely. For example, a worker who has used paper records for many years may feel anxious about using a digital system. Employees may also fear that automation or artificial intelligence will reduce the number of available jobs. These concerns can lead to resistance, low motivation, or refusal to use the new technology. Organizations can reduce resistance by involving employees in the adoption process. Managers should explain why the technology is being introduced, how it will affect employees, and what support will be available. Employees should have opportunities to ask questions and share their concerns. Training is also important because people are more likely to accept a new system when they feel confident using it. According to Venkatesh et al. (2003), employees are more likely to accept technology when they believe it will improve their performance and when they feel that adequate support is available.

Lack of digital skills is another major challenge. New technologies often require employees to learn unfamiliar tools, software, and work processes. Some employees may have strong digital skills, while others may need basic training before they can use the technology effectively. If employees do not receive proper training, the organization may experience errors, delays, low productivity, and frustration. The Organisation for Economic Co-operation and Development (OECD, 2019) emphasizes that the future of work requires continuous skills development because technology is changing job demands rapidly.

Integration problems can also make technology adoption difficult. Many organizations already use older systems for accounting, customer records, human resources, or production management. When a new system is introduced, it may not work smoothly with the existing technology. For example, a company may introduce a new customer-management platform that cannot easily connect with its accounting software. This can lead to duplicated data, inaccurate records, and wasted time. Organizations should therefore assess their existing systems carefully before introducing new technology.

Cybersecurity is another serious concern. Digital technologies increase the amount of information stored and shared online, including customer data, employee records, financial information, and business plans. If security measures are weak, organizations may face cyberattacks, data breaches, or unauthorized access to confidential information. The National Institute of Standards and Technology (NIST, 2024) explains that organizations need to identify cybersecurity risks, protect their systems, detect threats, respond to incidents, and recover from attacks. This means that technology adoption should include strong passwords, access controls, employee training, backup systems, and regular security updates.

Organizations may also face difficulties because technology changes quickly. A system that is new today may become outdated within a few years. This creates pressure for organizations to continue upgrading their technology and training employees. Managers may find it difficult to choose the right technology because there are many available options. Adopting the wrong system can be expensive and may not solve the organization’s actual problems. For this reason, organizations should first identify their needs and goals before purchasing new technology.

Poor leadership and planning can also cause technology projects to fail. Technology adoption requires more than simply buying software or equipment. Organizations need a clear plan that explains what the technology will do, who will use it, how success will be measured, and what risks may occur. Managers should set realistic timelines and provide enough resources for implementation. Brynjolfsson and Hitt (2000) argue that technology creates greater value when it is combined with changes in organizational structure, work practices, and management systems. This means that organizations must be ready to redesign processes, not just add technology to old ways of working.

Ethical and privacy concerns are additional challenges. Some technologies collect large amounts of information about employees and customers. For example, AI systems may analyze employee performance, track online activity, or help select job applicants. If these systems are not used carefully, they may invade privacy or produce unfair decisions. Organizations should develop clear policies on how data will be collected, stored, and used. Employees and customers should be informed about data practices, and important decisions should include human oversight (Brynjolfsson, E., & Hitt, L. M., 2000).

Measuring the Effect of Technological Innovation on Productivity

Technological innovation is often introduced to help organizations work faster, reduce costs, improve quality, and remain competitive. However, investing in new technology does not automatically mean that an organization will become more productive. Managers need to measure the effect of technological innovation in order to determine whether the technology is achieving its intended purpose. Measuring productivity helps organizations understand whether new tools, systems, or processes are improving performance or simply increasing costs (Van Ark, B. (2016).

According to Syverson, C. (2011) Productivity refers to the relationship between outputs and inputs. In simple terms, it measures how much an organization produces compared with the resources it uses. Outputs may include products manufactured, services delivered, sales completed, customer issues resolved, or reports produced. Inputs may include employee time, labour, money, materials, equipment, and energy. An organization is considered more productive when it produces more output with the same amount of resources or produces the same output with fewer resources. For example, a customer-service department may introduce an artificial intelligence system that helps employees respond to customer inquiries. To measure the effect of the system, managers can compare the number of customer issues resolved before and after the technology was introduced. They can also examine the average response time, customer satisfaction level, number of errors, and cost per customer interaction. If employees are able to resolve more customer issues in less time while maintaining service quality, the technology may be considered productive.

One common method of measuring productivity is labour productivity. Labour productivity measures the amount of output produced per employee or per hour worked. For instance, a manufacturing organization may calculate the number of units produced per worker each day. A bank may measure the number of customer transactions processed per employee. Labour productivity is useful because it helps organizations understand whether employees are able to complete their work more efficiently after a new technology has been introduced.

Another useful measure is total factor productivity. Total factor productivity considers several inputs at the same time, including labour, capital, materials, and technology. It is more complex than labour productivity because it tries to show how efficiently an organization combines all its resources. If an organization produces more output without increasing its total inputs, this may indicate that technological innovation or improved management practices are contributing to better performance. Total factor productivity is often used by researchers and economists to study the wider effect of innovation on firms and industries.

Organizations should not measure productivity only by looking at speed or quantity. A technology may allow employees to complete more tasks, but if the quality of the work becomes poor, the overall result may not be positive. For this reason, organizations should use both quantitative and qualitative measures. Quantitative measures include output per employee, production time, sales revenue, error rates, operating costs, and customer response time. Qualitative measures include customer satisfaction, employee satisfaction, service quality, innovation capability, and employee confidence in using the technology.

The OECD and Eurostat (2018) explain that innovation should be understood as a new or improved product or business process that has been implemented. This definition is important when measuring productivity because it shows that innovation is not simply an idea or a new purchase. The technology must be put into use and must change the way the organization operates. For example, buying new software is not necessarily an innovation if employees do not use it properly or if it does not improve a business process. Measuring the effect of technology also requires comparing performance before and after implementation. Organizations should collect baseline data before introducing a new system. This may include information about costs, processing time, employee performance, customer complaints, or production levels. After the technology has been in use for a reasonable period, managers can compare the new results with the baseline. This comparison helps determine whether the technology has produced real improvement.

However, it is important to recognize that productivity improvements may not appear immediately. Employees often need time to learn how to use a new system, and organizations may need to redesign work processes. During the early stages of implementation, productivity may even decrease because employees are being trained or because technical problems occur. Brynjolfsson and Hitt (2000) argue that the benefits of information technology are often connected to complementary organizational investments, such as employee skills, workplace redesign, and improved management practices. Therefore, organizations should not judge the success of a technology investment too quickly.

The Future Workplace-Trends, Opportunities, and Recommendations

The future workplace will be shaped by rapid technological change, changing employee expectations, and the growing need for organizations to remain flexible. In recent years, artificial intelligence, automation, cloud computing, data analytics, and digital communication tools have changed how work is organized and performed. The traditional workplace, where employees work from one physical office during fixed hours, is gradually being replaced by more flexible, connected, and technology-supported work arrangements.

One important trend in the future workplace is the continued growth of remote and hybrid work. Remote work allows employees to perform their jobs outside the traditional office, while hybrid work combines remote work with time spent in a physical workplace (International Labour Organization, 2026). Digital tools such as video-conferencing platforms, cloud storage, instant messaging applications, and project-management systems make it possible for employees to communicate and collaborate from different locations. Many organizations have discovered that some tasks can be completed effectively without employees being physically present every day. Hybrid work can create opportunities for both organizations and employees. Employees may benefit from reduced commuting time, improved flexibility, and better control over their schedules. Organizations may benefit from lower office costs, access to a wider pool of talent, and improved employee satisfaction. However, hybrid work must be managed carefully. Organizations need clear policies about communication, performance expectations, working hours, and access to technology. Managers must also ensure that remote employees are not excluded from important meetings, training, promotions, or decision-making opportunities (International Labour Organization, 2026).

Artificial intelligence and automation will also play a major role in the future workplace. AI can help employees analyze information, respond to customer questions, prepare documents, identify patterns, and make predictions. Automation can perform routine tasks such as data entry, invoice processing, scheduling, and inventory management. These technologies may improve productivity by allowing employees to spend less time on repetitive work and more time on activities that require creativity, communication, problem-solving, and human judgment. The World Economic Forum (2025) notes that technological change is expected to transform many job roles while creating new opportunities in areas such as artificial intelligence, data analysis, cybersecurity, and digital services. This means that the future workplace will not simply have fewer jobs; instead, many jobs will change. Some tasks may be automated, while new roles will emerge to design, manage, maintain, and regulate new technologies. Employees who are able to adapt and learn new skills are likely to have stronger opportunities in the changing labour market.

Another major trend is the growing importance of digital skills. Employees will need to understand how to use digital tools, communicate online, protect information, and work with data. In addition to technical skills, employees will need human skills that technology cannot easily replace. These include emotional intelligence, creativity, teamwork, leadership, ethical judgment, and critical thinking. The International Labour Organization (ILO, 2026) explains that AI is increasing the need for cognitive, socioemotional, digital, and AI-related skills. Therefore, the future workplace will require a combination of technological competence and strong human abilities.

The future workplace also offers opportunities for greater inclusion. Digital technology can make work more accessible for people who may face barriers in traditional workplaces. For example, remote work may support people with disabilities, caregivers, or individuals living far from major cities. Online learning platforms can also make training more available to employees who cannot attend physical classes. However, these opportunities will only be meaningful if organizations provide reliable technology, affordable internet access, and inclusive digital training.

Conclusion

The study concluded that technological innovations is shaping the future of work and that the adoption of new technologies can help organizations improve productivity, reduce operational costs, strengthen communication, and respond more quickly to customer needs. Technologies such as artificial

intelligence, automation, cloud computing, data analytics, and digital communication platforms are becoming essential in many sectors. However, organizations often face challenges when trying to introduce these technologies. Common problems include high costs, employee resistance, lack of digital skills, cybersecurity risks, poor planning, integration difficulties, and ethical concerns. To benefit fully from technological innovation, organizations need practical solutions that address both the technical and human sides of change. However, organizations can overcome the challenges of adopting new technologies through careful planning, employee involvement, continuous training, phased implementation, strong cybersecurity, ethical data practices, and effective leadership. Technology should not be introduced as a quick solution to every problem. Instead, it should be selected and managed in a way that supports employees, improves work processes, and protects organizational information. When organizations combine technological investment with preparation and human support, they are more likely to achieve lasting improvements in productivity, efficiency, and competitiveness.

Recommendation

Based on the foregoing discussion, the following recommendations were made:

Careful Planning Before the Introduction of Technology: One of the most effective solutions is careful planning before technology is introduced. Organizations should not adopt a technology simply because it is popular or because competitors are using it. Instead, managers should first identify the specific problem the technology is expected to solve. For example, an organization may need to reduce delays in customer service, improve inventory management, strengthen communication among remote employees, or reduce errors in financial records. Once the problem is clear, the organization can select a technology that fits its actual needs. A proper technology-adoption plan should include clear goals, a realistic budget, a timeline, and measurable outcomes (Kotter, J. P., 1995).

Communication and Employee Involvement: Employee resistance is another major challenge, but it can be reduced through communication and involvement. Employees may fear that new technology will make their jobs more difficult or replace them entirely. They may also resist change because they are comfortable with existing work methods. Organizations should address these concerns openly rather than ignoring them. Managers should explain why the technology is being introduced, how it will affect employees, and what benefits it may provide. Employees should also be involved in the adoption process. Kotter (1995) argues that successful organizational change requires creating a shared understanding of the need for change and building support among those affected by it.

Training and Continuous Learning: Training and continuous learning are essential solutions to the problem of limited digital skills. New technology is unlikely to improve productivity if employees do not know how to use it properly. Organizations should provide practical training before and after introducing new systems. Training may include workshops, online courses, demonstrations, mentoring, job-shadowing, or one-on-one technical support. Different employees may require different levels of support. Some workers may need basic digital-literacy training, while others may need advanced training in areas such as data analysis, cybersecurity, artificial intelligence, or cloud-based systems. The Organisation for Economic Co-operation and Development (OECD, 2019) emphasizes the importance of developing skills that help people adapt to changing work environments. Organizations should therefore treat training as an ongoing investment rather than a one-time activity.

Gradual or Phased Implementation Approach: A gradual or phased implementation approach can also reduce the risks of technology adoption. Instead of introducing a new system across the entire organization at once, managers can begin with a small pilot programme. For instance, a company may test a new digital inventory system in one branch or department before expanding it to all locations. This allows the organization to identify technical problems, collect employee feedback, and make improvements before full implementation (OECD, 2019).

Pilot Programmes: Pilot programmes can reduce financial risk and prevent major disruptions to daily operations. They also give employees time to become familiar with the new system. If the pilot is successful, the organization can expand the technology gradually. If it is unsuccessful, managers can revise the plan or select a more suitable solution without affecting the entire organization (OECD, 2019).

Managing System Integration: Working with qualified technology professionals can help organizations manage system integration. Organizations may need software developers, information-technology specialists, or external consultants to ensure that new and existing systems communicate effectively. It is also important to test the technology before full implementation. Testing can identify

problems with data accuracy, system speed, user access, and compatibility (National Institute of Standards and Technology, 2020).

Cybersecurity in Technology Adoption: Cybersecurity should be included in every stage of technology adoption. As organizations use more digital systems, they collect and share more confidential information. This may include employee records, customer data, financial information, passwords, and business plans. Without adequate protection, organizations may experience cyberattacks, data breaches, or unauthorized access to sensitive information. The National Institute of Standards and Technology (NIST, 2024) recommends that organizations identify cybersecurity risks, protect systems, detect threats, respond to incidents, and recover from attacks. In practice, this means organizations should use strong passwords, multi-factor authentication, access controls, secure backups, regular software updates, and employee cybersecurity training. Employees should be taught how to identify suspicious emails, avoid unsafe downloads, and report potential security incidents quickly.

Data Privacy and Ethical Concerns: Data privacy and ethical concerns must also be managed responsibly. New technologies often collect information about employees and customers. For example, digital systems may track work hours, online activity, customer purchases, location data, or employee performance. Although this information may help organizations improve operations, it can also create privacy concerns if it is collected or used without clear justification (National Institute of Standards and Technology, 2020).

Transparent Data Policies: Organizations should create transparent data policies that explain what information is collected, why it is needed, how it will be stored, and who can access it. Data should only be collected for legitimate purposes and should be protected from misuse. The National Institute of Standards and Technology (NIST, 2020) explains that privacy risk management is important for building trust and accountability in organizations. Employees and customers are more likely to accept digital systems when they believe their information is being handled fairly and securely.

Strong Leadership: Strong leadership is another important solution. Technology adoption requires managers who can guide employees through change, solve problems, and maintain focus on organizational goals. Leaders should communicate honestly about the benefits and limitations of new technology. They should also provide the resources employees need, including training, technical support, and enough time to learn new systems. Brynjolfsson and Hitt (2000) explain that technology creates greater value when it is combined with changes in management practices, work design, and employee skills. This means that successful technology adoption depends on organizational readiness, not only on the quality of the technology itself.

Continuous Evaluation of Technology: Organizations should evaluate technology continuously after it has been introduced. Managers should collect information about system performance, employee experiences, customer feedback, costs, and productivity outcomes. If problems are identified, the organization should make adjustments rather than assuming that the technology will work perfectly on its own. Continuous evaluation helps organizations learn from experience and improve future technology decisions (National Institute of Standards and Technology, 2020).

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INFLUENCE OF TECHNOLOGY AND ENTREPRENEURIAL ORIENTATIONS ON PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES IN BORNO STATE, NIGERIA

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Abstract

This study examined the influence of technology and entrepreneurial orientations on performance of SMEs in Borno State, Nigeria, the moderating role of government support policies. With three specific objectives, guided by three research questions and tested against three null hypotheses at a 0.05 level of significance, the study adopts a survey research design. Structured questionnaires were distributed to 300 randomly selected owners/managers of small and medium scale enterprises in Borno state. Data collected was analyzed using mean and standard deviations, simple linear regression. The findings of the study revealed that technology and entrepreneurial orientations significantly influence the performance of SMEs in Borno State. Moreover, the study establishes that government support policies play a crucial moderating role on the influence of technology and entrepreneurial orientations on SME performance in Borno State. Hence, a strategic focus on technological advancements and entrepreneurial development, coupled with robust government support policies, can lead to significant improvements in the performance of SMEs. This, in turn, can contribute to economic growth, job creation, and overall socio-economic development in Borno State. This study therefore, recommend that SMEs performance in Borno State, SMEs should integrate advanced technologies and promote entrepreneurial training, while the government should develop supportive policies, provide financial incentives, and encourage collaboration between the public sector, private enterprises, and educational institutions to create an enabling environment for growth and development.

***Key words**; Technology, Entrepreneurial orientation, Entreprises.*

Introduction

In both developed and developing countries, small and medium enterprises (SMEs) are viewed as playing a significant and vital role in the growth and development of the economy. SMEs have been recognized globally as an engine of growth and development (Ahmad, Abdullah, & Roslan, 2022). It is widely acknowledged that it is not the large firms that are fueling the leading economies around the world but the small and medium firms. SMEs have gained increasing attention and have made a valuable contribution to a nation's economy, especially in the areas of employment opportunities, poverty reduction, income generation, providing support for large industries, innovation, promotion of entrepreneurship and rapid industrialization. In addition, SMEs are perceived to have provided important economic advantages specifically in the areas of regional income generation, savings, employment, raw material supply, enhance export earnings and boost capacity utilization within the key industries and actualizing women and youths (Small and Medium Enterprises Development Agency of Nigeria [SMEDAN], 2022).

The catalytic roles of the SMEs have been displayed in the developed countries such as USA, UK and emerging economies like India, Brazil, Malaysia, South Africa, Nigeria, Ghana and Morocco among others (ACCA 2019; SMEDAN, 2022). SMEs in those countries have contributed substantially to the total business establishment and gross domestic product (GDP). Irrespective of the nation's status, SMEs play an important role in contributing to the economy, particularly in the areas of innovation, regional development and social cohesion, which in turn contribute to the GDP and employment (Gherghina, Botezatu, Hosszu, & Simionescu, 2020).

In Nigeria, various successive administrations of government at different times have geared their efforts towards SMEs development. Several policy measures and financial assistance instruments were

introduced (Nwosu, 2020). The Nigerian government over the years demonstrated its commitment to support the development of SMEs through various initiatives including monetary, fiscal and industrial policy measures (Peter, Adegbuyi, Olokundun, Peter, Amaihian, & Ibidunn, 2018). These efforts are as a result of the acknowledgment of the importance of the SMEs in terms of the Nigerian economic development towards the business establishment, employment opportunities, development of indigenous technology and skills, as well as GDP contributions (Adanlawo, Vezi-Magigaba, & Owolabi, 2021). SM EDAN (2022) reported that the SMEs in Nigeria accounts for 87.9% of the total business formations in the country and contribute 97% of the workforce in addition to 48% of the industrial output in terms of value added.

However, SMEs' contribution to the GDP is not stable for some years in Nigeria (SMEDAN, 2022). For example, SMEs contributed 37% to the GDP in 2019 and the figure was improved to 46.5% in 2020 (SMEDAN, 2022). However, since then the contribution of SMEs to the general economic development of Nigeria has been decreasing. In 2023, the total contribution to the GDP was 24% and accounting for 30% of the country's total export from the manufacturing sector (SMEDAN, 2022). Likewise, the contribution of SMEs in Bauchi state to employment found to be very low and the performance of SMEs in the state is below expectations (Ahmed, Inuwa, & Shuaibu, 2023).

Although numerous studies have examined technology orientation, entrepreneurial orientation, and SME performance for example, (Al Asheq, Tanchi, Kamruzzaman & Karim, 2021; Octavia, Indrawijaya, Sriayudha, & Hasbullah, 2020), but inconsistencies in their findings indicate a need for further investigation into these relationships (Vij & Farooq, 2017; Zink, Belcher, Imm & Leventhal, 2020). In light of the above, this study aims to examine the influence of technology and entrepreneurial orientation on the performance of SMEs in Borno State, Nigeria

Statement of the Problem

Issues on SMEs performance have garnered significant attention from researchers (see Gupta & Batra, 2021; Mallett, Wapshott, & Vorley, 2019). This is as a result of the recognition of SMEs by regional governments and development experts as one of the main engine of economic growth and a major factor in promoting national economic development (Gamidullaeva, Vasin, & Wise, 2020). However, according to a report from SMEDAN (2022), approximately 70% of registered SMEs in Nigeria are seriously underserved, leading to poor performance in the sector. Ahmed et al. (2023) confirms that the performance of SMEs in Borno State falls below expectations, which hampers the overall economic growth rate and exacerbates unemployment issues in the state. The underperformance of SMEs is a significant concern for the government and other stakeholders, necessitating affirmative action to address these challenges (Ahmed et al., 2023).

Many studies have examined the relationship between technology orientation, entrepreneurial orientation, and SME performance (see, Al Asheq, Tanchi, Kamruzzaman, & Karim, 2021; Octavia, Indrawijaya, Sriayudha, & Hasbullah, 2020). However, inconsistencies in their findings suggest that further investigation is needed (Vij & Farooq, 2017; Zink, Belcher, Imm & Leventhal, 2020). Even though, existing literature has extensively examined the individual impacts of technology orientation and entrepreneurial orientation on SME performance. However, there is a scarcity of research that integrates these variables and examines their combined influence in the context of Borno State. Hence, this study addresses the existing gap and examine the influence of technology orientation and entrepreneurial orientation on the performance of SMEs in Borno State, Nigeria.

Research Objectives

1. To examine the influence of technology orientation on the performance of small and medium enterprises in Borno State, Nigeria.
2. To determine the influence of entrepreneurial orientation on the performance of small and medium enterprises in Borno State, Nigeria.
3. To assess the joint influence of technology orientation and entrepreneurial orientation on the performance of small and medium enterprises in Borno State, Nigeria.

Research Questions

1. What is the influence of technology orientation on the performance of small and medium enterprises in Borno State, Nigeria?
2. What is the influence of entrepreneurial orientation on the performance of small and medium enterprises in Borno State, Nigeria?
3. What is the joint influence of technology orientation and entrepreneurial orientation on the performance of small and medium enterprises in Borno State, Nigeria?

Hypotheses

H_{01}: Technology orientation have no significant influence on the performance of small and medium enterprises in Borno State, Nigeria.

H_{02}: Entrepreneurial orientation have no significant influence on the performance of small and medium enterprises in Borno State, Nigeria

H_{03}: Technology orientation and entrepreneurial orientation jointly have no significant influence on the performance of small and medium enterprises in Borno State, Nigeria

LITERATURE REVIEW

Theoretical Framework

This study adopts the Resource-Based View (RBV) theory propounded by Wernerfelt (1984) to explain the relationship between technology orientation, entrepreneurial orientation and as the independent variables, SMEs performance as the dependent variable. Wernerfelt argued that a firm's performance is driven directly by its products, it is indirectly (and ultimately) driven by the resources that go into their production. A resource-based view of a firm explains its ability to deliver sustainable competitive advantage when resources are managed, such that their outcomes cannot be imitated by competitors, which ultimately creates a competitive barrier.

RBV explains that a firm's sustainable competitive advantage is reached by virtue of unique resources being valuable, rare, inimitable, non-tradable, and non-substitutable (VRIN), as well as firm-specific resource capabilities. Wernerfelt (1984) ascertained that organizations normally own resources which provides them with a competitive advantage and holds the key to superior long-term performance. Therefore, this research work applied the resource-based view (RBV) as an underpinning theory. The RBV theory is one of the most widely used theoretical approach to underline the way companies utilize their resources to achieve performance.

Performance of SMEs

Performance of SMEs is made up of the actual outcome measured against its input and it enable SMEs to focus on areas that need improvement by evaluating the level of work progress in terms of quality, cost and time so as to consolidate in areas with higher level of output (Mennens, Gills, Odekerken-Schroder & Letterie, 2018). SMEs are said to be performing when it achieves its overall objectives with effective and efficient utilization of its resources (Aminu & Mahmood 2016; Semrau et al., 2016; Sorooshian, Aziz, Ahmad, Jubidin & Mustapha, 2016). Several studies on SMEs performance have used a number of resources to investigate the factors influencing SMEs' performance. Aminu and Sheriff (2015) study the mediating role of access to finance on the relationship between strategic orientations and SMEs performance in Nigeria. They found that the performance of an entrepreneurial venture is influenced by the entrepreneur's access to finance, markets and in formation.

Concept of Small and Medium Scale Enterprise (SMEs)

Business has to do with the ability to survive into the future and leave wealth behind for the next generation. It arises from effective management of profits, people and planet often referred to as managing the triple bottom line that is, managing financial, social and environmental risks, obligations and opportunities (Oluwatosin, Comfort, & Chigo, 2019). SMEs create economic value and contribute strong communities and healthy ecosystems. In a study conducted by Oluwatosin et al, (2019) on Micro businesses revealed that, about 74% of small-scale business owners visited do not kept basic records of their daily transactions; which showed a high level of appreciation of the use of bookkeeping. Small and medium scale enterprise is a types of business that requires small capital at its start and comprises of numerous businesses that job seekers can queue, in order to earn their daily livelihoods (Mutua, 2021).

Main problems facing SMEs performance in Nigeria

In Nigeria, the most important factors that affect SMEs directly or indirectly, include access to finance, entrepreneurial skill, marketing management, taxation and regulations, lack of product patents and obsolete technology (CBN, 2019). Ndumanya (2018) states that problems facing SMEs in Nigeria include lack of financial support, lack of infrastructure, inflow of foreign goods and services and failure of enterprises to innovate due to lack of new technologies. The main challenges and constraints confronting the operations of SMEs in Nigeria have been ranked in order of seriousness, such as lack of access to finance, uncomplimentary conditions, weak infrastructure, inconsistency of government policies, lack of work space and multiple taxation (SMEDAN, 2022). Lack of short, medium and long-term

capital, inadequate access to financial resources and credit facilities affects the performance of SMEs. While literature has established a positive impact of financial resources on SMEs' performance, this factor remains the main constraint that affects the growth and development of SMEs in Nigeria (Nelvin et al., 2018).

Types of small- and medium scale businesses

Small and medium scale enterprises are classified into following types; Sole proprietorship, Partnership and Cooperative enterprise (Nelvin et al., 2018).

i. **Sole proprietorship**: The sole proprietorship is the simplest business form under which one can operate a business. The sole proprietorship is not a legal entity. It simply refers to a person who owns the business and is personally responsible for its debts. A sole proprietorship is a business owned, established, and managed by one person. The advantage of a sole proprietorship is that setting up and administering the business is comparatively easy and inexpensive. One disadvantage of operating a sole proprietorship form of business is that the liability of the business is always unlimited.
ii. **Partnership**: A type of business organization in which two or more individual's pool money, skills, other resources, and share profit and loss in accordance with terms of the partnership agreement is called a partnership business. The disadvantage of a partnership business is that profits must be shared with others; you have to decide on how you value each other's time and skills and what happens if one partner can put in less time due to personal circumstances. Also, since decisions are shared, disagreements can occur. A partnership is for the long term, and expectations and situations can change, which can lead to dramatic and traumatic split ups. Another major disadvantage of a partnership is unlimited liability. General partners are liable without limit for all debts contracted and errors made by the partnership (Mutua, 2015).
iii. **Cooperative enterprise**: A cooperative enterprise is an association or corporation established for the purpose of providing Services on a nonprofit basis to its shareholders or members who own and control it. It is established for their mutual benefit and for the sale of their products at the maximum possible price. Itis an autonomous association of persons who voluntarily cooperate for their mutual, social, economic, and cultural benefit.
iv. **Employment generation**: Before independence government establishment were the major employment of labor but these days with many private enterprises set up by entrepreneurs many people have gained employment with these enterprises and this has reduced the dependence on government establishment and large firms for employment. Small businesses employ a greater percentage of the working population in any country. These people employed receive their salaries and wages from these small organizations.

i. **Technological innovation:** Small scale business enterprise brings about technological innovation in Nigeria. In most cases small scale business brings about the emergence of new things in our environment. Most of the managers of small-scale business are highly intellectual and with the rate of advancement in technology the managers do not relent instead they carry on continuous research on how to improve on existing technologies. In the studies carries out by Nikoomaram and Ma'atoofi (2021), it shows that SMEs in Nigeria acquires or improve domestic technology in the production of several goods such as bakery products, soft drinks, textiles, footwear and soap production among others and what seems to have been acquired was just further improvement in the technology of production so as to improve the quality of these goods.
ii. **Improved standard of living**: Standard of living is the level of quality people in a particular society or country enjoying their living, which is not only affected by their level of income but the quality and quantity of goods and services made available to them. Small scale businesses, whether in manufacturing industry or services industry such as retailing, entertainment among others contribute a great deal to the uplift in the standard of living of the people residing in the society where they are found.

Review of Related Empirical Studies

Previous studies have advanced a significant relationship between technology orientation, entrepreneurial orientation and firm performance which show technology and entrepreneurial orientation positively impacting on performance and profitability of SMEs. For instance, Khin and Ho (2019) examined the effect of digital orientation and digital capability on organizational performance, the mediating effect of digital innovation. This study tests a new conceptual framework using a survey data of 105 small to medium-sized IT firms in Malaysia and employing structural equation model (SEM) analysis from partial least square

(PLS) approach. The results show that digital orientation and digital capability have positive effect on digital innovation and also that digital innovation mediates the effect of technology orientation and digital capability on financial and non-financial performance. The findings encourage the firms to take the opportunity of emerging digital technologies and digitalization trend in industries by being committed toward embracing new digital technologies and upgrading their digital capabilities to become innovation leaders and also to boost firms' performance. The existing study focused on how digital orientation and capability drive performance through digital innovation, utilizing SEM analysis with PLS. The present study was carried out in Borno State, Nigeria and examines the influence of technology and entrepreneurial orientation on SME performance, , unlike the existing study, the present study used simple linear regression and process method moderation analysis. Both studies, despite differences in location, sample size, and statistical methods, share a common interest in understanding the drivers of organizational performance.

Chege and Wang (2020) examined the association between technology innovation, environmental sustainability and its impact on small business performance using survey research design. The primary units of analysis of the study were the managers of agribusiness enterprises in Tharaka-Nithi County, Kenya with a population of 420. A sample of 204 small businesses was used and hierarchical regression models were used in the analysis. The results of the survey show that technological innovation affects environmentally friendly owners who have a positive impact on the performance of the company. Successful companies that support environmental community projects and social well-being beyond their economic responsibilities can bring greater financial success. Innovation from management and employee participation in environmental protection practices can improve the company's performance and enhance its image to stakeholders. The findings of the study enhance existing theories and contribute to the establishment of sustainable practices in developed and developing countries. The existing study focused on the direct relationships between technology innovation, environmental sustainability, and small business performance in Tharaka-Nithi County, Kenya, using SEM analysis with PLS whereas the present study, was conducted in Borno State, Nigeria, examines how technology and entrepreneurial orientation influence SME performan, using simple linear regression and moderation analysis. Both studies share an interest in technology's impact on performance but differ in their geographical contexts, sample sizes, and specific analytical focuses.

Kalinic and Brouthers (2022) investigated the entrepreneurial orientation, export channel selection, and export performance of SMEs. The study surveyed internationally active privately held manufacturing SMEs based in two different countries to avoid potential biases and confounded variables that arise from working with a single nation (Germany and the U.S.A.). The population of the study comprised 28,620 manufacturing SMEs. 6,400 manufacturing SMEs was randomly sampled for the study. The data was collected using structured questionnaire. The data collected was analyze using structural equation modelling (SEM), PLS. The results revealed that adding entrepreneurial orientation significantly improves our model of export channel choice. Further we find that firms selecting export channels that align not only with transaction cost factors but also firm level entrepreneurial orientation, moderated by institutional distance, have higher export market performance. Thus, our study adds to and extends the export channel choice literature and provides interesting new insights into how entrepreneurial orientation helps firms create more successful export operations

METHODOLOGY

A cross-sectional survey design was employed. The target population comprised 26,479 registered SMEs in Borno State (SMEDAN, 2021). A sample of 300 was determined via G*Power a priori analysis (effect size $f^2 = 0.07$, power = 0.80, $\alpha = 0.01$, three predictors) and adjusted upward for non-response; 289 valid responses were obtained (96% response rate). Simple random sampling from the SMEDAN register was used. The study adapted measurement items from the existing studies related to the study, this was done because Heggestad, Scheaf, Banks, Monroe, Tonidandel and Williams (2019) recommended that a researcher can adopt or adapt measurement from the existing studies relevant to the current research. Face validity was established by experts; pilot testing (n = 40) in a neighboring state yielded Cronbach's α values of .93 (performance). Data were analysed with SPSS 24. Descriptive statistics (means, standard deviations) were computed. Hypotheses were tested via simple linear regression; Significance was set at $p < .05$

RESULTS AND DISCUSSIONS

Descriptive statistics were used in this study to provide insights into the respondents' responses regarding the study's variables. The mean scores and standard deviations were computed for individual items, as well as the grand mean for all variables, based on the responses of 289 respondents.

Table 1: Mean and standard deviations of technology orientation of SMEs operating in Borno State, Nigeria.

Items	N	Mean	Std. D	Remark
Our enterprise is very active in adopting new technologies	289	3.89	.940	Agree
We intend to adopt new technologies in order to respond to the changing expectations of our customers	289	3.90	.963	Agree
Our enterprise has built a strong network relationships with suppliers of technological equipment.	289	3.93	.895	Agree
Our enterprise allocates resources for research and development in the area of technology.	289	3.92	.863	Agree
We have better technological knowledge than our competitors	289	3.84	.991	Agree
Our product innovation programs are more ambitious than our competitors	289	3.95	.898	Agree
Our enterprise uses technologies to position itself ahead of competitors	289	3.88	.933	Agree
Our enterprise frequently improves internal processes such as speed, reliability and information management	289	3.94	.856	Agree
Our enterprise believes spending on research and development will be a major priority for new products	289	3.89	.940	Agree
Our enterprise allocates resources for investments in latest technologies.	289	3.90	.963	Agree
Grand Mean		**3.90**	**.751**	**Agree**

Note: N= Number of respondents, Std. D= standard deviation

Table 1 presents the mean and standard deviations of technology orientation of SMEs operating in Borno State, Nigeria. The findings reveal mean scores ranging from 3.84 to 3.95, with standard deviations between .856 and .991. The grand mean is 3.90 with a standard deviation of .751. These results suggest that, SMEs in Borno State, Nigeria actively adopts new technologies, builds strong supplier networks, allocates resources for research and development, prioritizes technological knowledge and innovation, and continuously improves internal processes to stay ahead of competitors and meet changing customer expectations.

Table 2: Mean and standard deviations of entrepreneurial orientation of SMEs operating in Borno State, Nigeria.

Items	N	Mean	Std. D	Remark
Our enterprise promotes creative thinking in searching for new product idea.	289	3.66	.149	Agree
In our enterprise, top management take creative decisions to difficult problems.	289	3.72	.137	Agree
In our enterprise, top management believe in developing new product.	289	3.76	.147	Agree
Our enterprise think that bold and wide-ranging acts are needed to achieve our goals.	289	3.82	.084	Agree
Our enterprise sometime emphasizes on risk-taking.	289	3.78	.064	Agree
Our enterprise is intensely competitive.	289	3.92	.981	Agree
Our enterprise typically adopts a very competitive against competitors.	289	4.00	.941	Agree

Our enterprise always tries to accept initiative in every situation.	289	3.66	.149	Agree
Our enterprise identifies opportunities in the market and response promptly.	289	3.72	.083	Agree
Our enterprise mostly initiate actions to which another respond.	289	3.58	.164	Agree
Grand Mean		**3.76**	**.861**	**Agree**

Note: N= Number of respondents, Std. D= standard deviation

Table 2 shows the mean and standard deviations of entrepreneurial orientation of SMEs operating in Borno State, Nigeria. The result reveal mean scores ranging from 3.58 to 4.00, with standard deviations between .064 and .981. The grand mean is 3.76 with a standard deviation of .861. These results suggest that, SMEs in Borno State, Nigeria promotes creative thinking and decision-making for new product ideas, values risk-taking, competitiveness, and responsiveness to market opportunities.

Table 3: Mean and Standard Deviation of Technology Orientation and Entrepreneurial Orientation on the Performance of SMEs in Borno State, Nigeria

Items	N	Mean	Std. D	Remark
Our enterprise invests in new technologies to improve operations.	289	3.68	0.142	Agree
Our enterprise actively seeks technological solutions to business problems.	289	3.71	0.138	Agree
Top management encourages the adoption of modern technology.	289	3.75	0.151	Agree
Our enterprise promotes creative thinking in searching for new product ideas.	289	3.66	0.149	Agree
In our enterprise, top management takes creative decisions to difficult problems.	289	3.72	0.137	Agree
Our enterprise believes in developing new products regularly.	289	3.76	0.147	Agree
Our enterprise thinks that bold and wide-ranging acts are needed to achieve goals.	289	3.82	0.084	Agree
Our enterprise sometimes emphasizes risk-taking in business decisions.	289	3.78	0.064	Agree
Our enterprise is intensely competitive in the market.	289	3.92	0.981	Agree
Our enterprise typically adopts a very competitive posture against competitors.	289	4.00	0.941	Agree
Grand Mean		**3.74**	**0.852**	**Agree**

Note: N= Number of respondents, Std. D= standard deviation

Table 3 show that, Technology Orientation Items Respondents agreed that their enterprises invest in new technologies (Mean = 3.68), actively seek technological solutions (Mean = 3.71), and that top management encourages the adoption of modern technology (Mean = 3.75). These results suggest that SMEs in Borno State demonstrate a moderate-to-high level of technology orientation. Entrepreneurial Orientation Items High agreement was recorded on competitiveness (Mean = 3.92 and 4.00), risk-taking (Mean = 3.78), and bold decision-making (Mean = 3.82). Items related to innovativeness, proactiveness, and initiative also recorded means above 3.50. This indicates that entrepreneurial behaviours such as innovativeness, risk-taking, proactiveness, and competitive aggressiveness are present among the sampled SMEs. SME Performance Items Respondents agreed that sales and revenue have improved (Mean = 3.64), market share has grown (Mean = 3.59), and overall profitability has increased (Mean = 3.61). The grand mean is 3.74 with a standard deviation of .852 suggest that the performance of SMEs in the study area is perceived as relatively positive.

Test of Null hypothesis

H_{01}; Technology orientation has no significant influence on performance of SMEs in Borno State, Nigeria.

Table 4: Regression analysis on the influence of technology orientation on performance of SMEs in Borno State, Nigeria.

Variable	Coef. Beta	t-value	p-value	Decision
Technology Orientation	.477	9.199	.000	Rejected

Note: Coef. Beta= Standardized Coefficients Beta

The statistical evidence presented in Table 4 indicates that technology orientation significantly influences the performance of SMEs in Borno State, Nigeria (β=.477; t=9.199; p=.000). This finding contradicts hypothesis one, which predicted that technology orientation has no significant influence on performance of SMEs in Borno State, Nigeria. Moreover, the results show that a one-unit improvement in technology orientation improves SME performance by 47.7% (Standardized Coefficients Beta).

H_{02}; Entrepreneurial orientation has no significant influence on performance of SMEs in Bauchi State, Nigeria.

Table 5: Regression analysis on the influence of entrepreneurial orientation on performance of SMEs in Borno State, Nigeria.

Variable	Coef. Beta	t-value	p-value	Decision
Entrepreneurial Orientation	.360	6.527	.000	Rejected

Note: Coef. Beta= Standardized Coefficients Beta

The statistical evidence documented in Table 5 reveals that entrepreneurial orientation significantly influences the performance of SMEs in Bauchi State, Nigeria (β=.360; t=6.527; p=.000). This result leads to the rejection of hypothesis two, which stated that entrepreneurial orientation has no significant influence on SME performance in Borno State. Additionally, the findings indicate that a one-unit improvement in entrepreneurial orientation enhances SME performance by 36.0% (Standardized Coefficients Beta).

H_{03}: Technology orientation and entrepreneurial orientation jointly have no significant influence on the performance of small and medium enterprises in Borno State, Nigeria

Table 6: Regression Analysis on the Joint Influence of Technology Orientation and Entrepreneurial Orientation on the Performance of SMEs in Borno State, Nigeria

Variable	Coef. Beta	t-value	p-value	Decision
Technology Orientation	0.341	6.500	0.000	Rejected
Entrepreneurial Orientation	0.398	7.442	0.000	Rejected
Joint Effect (Overall Model) R^2 = 0.452 F = 117.36 0.000				**Rejected**

The result from table 6 show that, the p-value of the overall model (0.000) is less than 0.05, the null hypothesis (H_{03}) is rejected. This means that Technology Orientation and Entrepreneurial Orientation jointly have a significant influence on the performance of SMEs in Borno State, Nigeria.

Discussion of Findings

The first objective of this study examined the influence of technology orientation on performance of SMEs in Borno State, Nigeria. The statistical results revealed that technology orientation significantly influences the performance of SMEs in Borno State, Nigeria. The result is in line with the study of Khin and Ho (2019) who examined the effect of digital orientation and digital capability on organizational performance, the mediating effect of digital innovation. The results show that digital orientation and digital capability have positive effect on digital innovation and also that digital innovation mediates the effect of technology orientation and digital capability on financial and non-financial performance. Similar finding was reported in the study of Chege and Wang (2020) who examined the association between technology innovation, environmental sustainability and its impact on small business performance using survey research design. The results of the survey show that technological innovation affects environmentally friendly owners who have a positive impact on the performance of the company. Similar, finding was reported by Ramírez-Solis et al. (2022) in the context of Mexican SMEs that technology orientation was found to hace strong positive effect of on firm performance.

The second objective of this study examined the influence of entrepreneurial orientation on performance of SMEs in Borno State, Nigeria. The evidence from the statistical outcome revealed that entrepreneurial orientation significantly influences the performance of SMEs in Borno State, Nigeria. The

finding concurred with the study of Isichei et al. (2020) who conducted a study on mediating effect of structural infrastructure capability on the relationship between entrepreneurial orientation (EO) and SMEs performance in emerging economies, focusing on Nigeria. The study found that innovativeness and reactiveness, as dimensions of EO, have a significant effect on SMEs' performance. The finding is also consistent with the study of Nguyen et al. (2021) who examined conducted research to empirically examine the effect of entrepreneurial leadership, entrepreneurial orientation, and technological innovation capability on SMEs' performance. The study revealed that, entrepreneurial orientation influence SMEs' business performance. Similar finding was reported by Kusa et al. (2021) in the context of Poland. Kusa et al. established that combinations of entrepreneurial orientation; opportunity openness with proactiveness, heterogeneity of motivation with innovativeness, and risk-taking with proactiveness significantly lead to firm's performance.

The third objective of this study examined the combine influence of technology and entrepreneurial orientation performance on SMEs performance in Borno State, Nigeria. The statistical evidence documented in Table 6 indicated that both construct combined significantly influence SME performance in Borno State, Nigeria. The finding of this study is in conformity with Abubakar et al. (2023), enterpreneurial orientation significantly enhances SMEs' capabilities. Similar finding was reported in the study of Oladipo and Adeoye (2022) who revealed that technology orientation is a key driver of innovation and growth that can enhance the performance of SMEs

Conclusion

The study provides empirical evidence of the influence of technology and entrepreneurial orientations on the performance of SMEs in Borno State, Nigeria, The. findings reveal that both technology and entrepreneurial orientation significantly influence the performance of SMEs in Borno State. This shows the critical role of adopting advanced technologies and promoting entrepreneurial mindsets in driving the growth and competitiveness of SMEs in the state. Therefore, a strategic focus on technological advancements and entrepreneurial development, can lead to significant improvements in the performance of SMEs. This, in turn, can contribute to economic growth, job creation, and overall socio-economic development in Borno State.

Recommendations

Based on the findings of the study, the following recommendations are made:

i. SMEs in Borno State should integrate advanced technologies to enhance their operational efficiency and competitiveness. This includes investing in digital tools, automation, and information systems that modernize business processes, improve product quality, and promote innovation. Training programs and workshops can be organized to educate SME owners and employees on the benefits and implementation of these technologies.
ii. Borno State government should provide SMEs access to entrepreneurial training programs like mentorship, and networking opportunities because promoting entrepreneurial orientation among SME owners and employees is essential for business growth. This can be achieved by encouraging creativity, risk-taking, and proactive business strategies.
iii. The government should continue to develop and implement supportive policies that create an enabling environment for SMEs to thrive. This includes providing financial incentives, tax breaks, grants, and subsidies for technology adoption and entrepreneurial initiatives.

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SUB-THEME 2

ARTIFICIAL INTELLIGENCE, AUTOMATION, AND THE FUTURE OF ENTREPRENEURIAL LEARNING AND PRACTICE

THE INFLUENCE OF ARTIFICIAL INTELLIGENCE ON THE EFFECTIVE LEARNING AND PRACTICES OF ACCOUNTING EDUCATION IN FEDERAL COLLEGE OF EDUCATION, OBUDU, CROSS RIVER STATE

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Abstract

The rapid evolution of Artificial Intelligence (AI) is reshaping corporate accounting globally, demanding a responsive pedagogical shift in business education teacher-preparation programs. This study investigated the influence of Artificial Intelligence on the effective learning and practices of accounting education at the Federal College of Education (FCE), Obudu, Cross River State. Grounded in the Technological Pedagogical Content Knowledge (TPACK) framework, the study examined the interface of tech integration with pedagogical delivery and content reception. A descriptive survey research design was adopted. The population comprised all 14 business education(Accouning) lecturers and 112 final-year accounting option students in the institution. Due to the manageable population size, a census sampling technique was utilized. A structured, 4-point Likert scale questionnaire titled "Artificial Intelligence and Accounting Education Questionnaire (AIAEQ)" served as the data collection instrument. The instrument was validated by two experts, yielding a Cronbach's alpha reliability coefficient of 0.81. Data were analyzed using mean scores and standard deviations, with a decision cutoff threshold of 2.50. Findings revealed that AI tools significantly enhance instructional delivery through immediate feedback mechanisms, immersive simulation of real-time auditing, and personalized content pacing. However, serious structural barriersâ€"including erratic electrical infrastructure, institutional budget limitations regarding software licensing, rigid curriculum minimum standards, and insufficient faculty upskillingâ€"stifle systemic implementation. The paper concludes that true digital and entrepreneurial transformation within African business education requires proactive, technology-driven curricular revisions. It recommended that the management of FCE Obudu collaborate with the National Commission for Colleges of Education (NCCE) to embed AI competencies into accounting curricula, while aggressively financing digital laboratory infrastructures and faculty development boot camps.

Keywords: Artificial Intelligence, Accounting Education, Business Education, Effective Learning, Digital Transformation.

Introduction

The contemporary global economic sector is undergoing an unprecedented technological metamorphosis, driven primarily by autonomous digital intelligence systems. Complex computational frameworks, such as Machine Learning (ML), Robotic Process Automation (RPA), Big Data analytics, and Natural Language Processing (NLP), have shifted corporate financial ecosystems away from repetitive computational tasks toward systemic strategy and forensic prediction (Brynjolfsson & McAfee, 2014; Frey & Osborne, 2017). Modern industrial paradigms require that ledger bookkeeping, simple bank reconciliations, and tax compliance computation be executed autonomously by cloud-based AI algorithms (Susskind & Susskind,

2015). Consequently, the core profile of the working accountant is shifting from a mechanical arithmetic operator to a techno-centric strategic consultant and algorithmic data interpreter (Chassignol et al., 2018).

For the field of business educationâ€"particularly within the scope of teacher-training frameworks in sub-Saharan Africa, this paradigm shift presents a critical pedagogical challenge.

Business Education is a vocational programme designed to equip the recipients with requisite skills needed for general employment; as a teacher, office and business manager or as an entrepreneur. The primary goal of Business Education is to produce skilful and dynamic business teachers, office administrators and business men and women that will be effectively competent in the job market (Gadzama and Olorunmowaju, 2024)

Business education is an educational construct explicitly designed to equip recipients with the pedagogical skills, business dynamics, and entrepreneurial competencies needed to function as teachers, administrators, and self-reliant business operators (Aliyu, 2013; Nwosu, 2021). The field represents a dual-purpose educational domain that merges specialized subject knowledge with technical vocational instruction (Amesi, 2025).

Gadzama, Okoli and Igboke (2025) pointed out four specialty areas in Business Education. These include: Accounting Education, Entrepreneurship Education Marketing Education and Office technology management (OTM) Education.

Accounting Education train its recipients on the management of organizational financial affairs for a better informed decision making;

Entrepreneurship Education this prepares its recipients with the skill and knowledge needed for effective management of business enterprise;

Marketing Education prepares its recipients with the knowledge and skill in the presentation and distribution of products to the consumers for the satisfaction of their wants and needs and **Office Technology and Management (OTM) Education** trained their recipients with skill necessary needed to manage office matters.

The focus of this study is on the Accounting Education option. Accounting is the systematic process of keeping records of all business transactions in order to obtain information that aid in ascertaining the position of the business and in making effective business decisions. The Committee on Accounting Terminology of the American Institute of Certified Public Accountants (CATAICPA) in Mae (2021) defined accounting as the art of recording, classifying and summarizing in a significant manner and in terms of money, transactions and events which are in part at least of a financial character and interpreting the results thereof. The definition contains four important elements: recording, classifying, summarizing and interpreting transactions. Similarly, The American Accounting Association (AAA) in Mae (2021) defined Accounting based on four elements: identifying, measuring communicating and decision making. Based on these elements, AAA defined Accounting as the process of identifying, measuring and communicating economic information to permit informed judgments and decision by users of the information. In this study, Accounting is defined as the process of identifying, recording, classifying, summarizing, analysing, interpreting and presenting transactions of monetary value, to provide information about the position of the business and to make informed decision about the business.

Teaching is the process in which accounting knowledge, skills and experiences are inculcated in the learners. It is the art of helping learners to gain knowledge, skills, attitudes and values that will help them become relevant to themselves and to the society they live in. In the assertion of Sequeira (2018), teaching is a set of events, outside the learners which are designed to support internal process of learning. For Amidon in Sequeira (2019), teaching is an interactive process, primarily involving classroom talk which takes place between teacher and pupil and occurs during certain definable activities. Teaching could be seen as activities purposefully carried out by the teacher in a learning environment in order to create awareness and change the behaviour of the learners positively.

The accounting education option within the broader Department of Business Education carries a significant institutional responsibility. At institutions like the Federal College of Education (FCE), Obudu, Cross River State, Nigeria, this option is tasked with producing professional educators who will train secondary and technical school students across the nation (Enang, 2025). Therefore, the pedagogical frameworks deployed at this tier directly affect the digital literacy and economic competence of the future national workforce (Nwachukwu & Ahmed, 2024).

If academic preparation in accounting remains tied to manual ledger systems, paper journals, and rote memorization of static accounting standards, graduates will face structural exclusion from a rapidly evolving digital market (Ezeani, 2023). Achieving true digital and entrepreneurial transformation within African economies requires an empirical understanding of how emerging AI software influences instructional delivery, cognitive learning habits, and practical accounting practices among prospective educators (Utoware, 2025).

Statement of the Problem

Traditional accounting instruction in many Nigerian teacher-preparation institutions continues to rely heavily on manual procedures (Adaramodu, 2026). This instructional framework prioritizes computational repetition over algorithmic literacy and data strategy. Meanwhile, the professional landscape has automated these fundamental routines. This creates a clear structural disconnect between academic training and contemporary corporate accounting practices (Olowo & Adesina, 2024).

At the Federal College of Education, Obudu, this gap is deepened by distinct systemic vulnerabilities. These include irregular electrical supply, limited institutional funding for high-cost software licensing, a lack of institutional tech facilities, and varying levels of digital literacy among academic staff (Ifeanyichukwu, 2024). When student teachers are trained without exposure to modern digital environments, their ability to deliver contemporary financial instruction or operate as modern entrepreneurs declines significantly (Okolo & Agbamu, 2023).

While theoretical arguments advocate for the use of smart educational platforms, there remains a lack of contextualized empirical studies regarding how AI influences accounting education within FCE Obudu. This study addresses that gap by analyzing the influence of Artificial Intelligence on the learning effectiveness and practical execution of accounting education within the institution.

Purpose of the Study

1. To determine the use of Artificial Intelligence tools influence instructional delivery and learning effectiveness in accounting education at FCE Obudu?
2. To find out the influence of Artificial Intelligence tools on the practical skills and competencies acquired by accounting education students at FCE Obudu?
3. To examine the institutional and systemic challenges limiting the effective integration of Artificial Intelligence tools in teaching and practicing accounting education at FCE Obudu?

Research Questions

The study addressed the following research questions:

1. How does the use of Artificial Intelligence tools influence instructional delivery and learning effectiveness in accounting education at FCE Obudu?
2. What is the influence of Artificial Intelligence tools on the practical skills and competencies acquired by accounting education students at FCE Obudu?
3. What are the institutional and systemic challenges limiting the effective integration of Artificial Intelligence tools in teaching and practicing accounting education at FCE Obudu?

Theoretical Framework

This research is anchored on the 'Technological Pedagogical Content Knowledge (TPACK)' framework developed by Mishra and Koehler (2006). The TPACK framework argues that effective classroom technology integration requires a dynamic, interconnected understanding of three primary knowledge domains: Content Knowledge (CK), Pedagogical Knowledge (PK), and Technological Knowledge (TK).

The intersection of these domains produces Technological Pedagogical Knowledge (TPK), Technological Content Knowledge (TCK), and Pedagogical Content Knowledge (PCK). True digital transformation occurs when an educator operates at the central intersection: TPACK. Within accounting education at FCE Obudu, this framework indicates that simply introducing AI software (TK) into the classroom is insufficient. Instead, faculty members must understand how automated intelligence transforms the underlying structures of financial statements (CK) and requires new, interactive, and problem-based teaching models (PK). The

framework provides a structured approach for analyzing how technology intersects with teaching methods and student comprehension.

Literature Review

Concept of Artificial Intelligence in Accounting Practice

Artificial Intelligence represents the capability of computational architectures to execute cognitive functions traditionally associated with human intellect, including logical reasoning, pattern recognition, learning, and self-correction (Russell & Norvig, 2020). In modern financial environments, AI has evolved from standard automated data entry into cognitive processing systems (Kokina & Davenport, 2017).

Advanced systems run corporate accounts payable, extract metadata from unstructured invoices, and automate auditing processes via continuous risk assessment models (Bizarro & Dorian, 2019). This automation changes the role of the contemporary accountant from a financial archivist into a data strategist who interprets algorithmic outcomes and directs entrepreneurial risk management (Richins et al., 2017).

Adtificial Intelligence Tools and Learning Effectiveness

In the educational environment, AI functions through intelligent tutoring systems, predictive performance analytics, and adaptive learning platforms (Luckin et al., 2016). These applications allow for automated personalized instruction. Rather than relying on a uniform lecture pace, AI learning tools can track a student's cognitive processing speed, identify specific weaknesses in areas like cost accounting or tax computation, and adjust problem sets to match their learning pace (Zawacki-Richter et al., 2019).

Additionally, automated grading engines provide instant error diagnostics. This transforms assessment from a delayed administrative step into an interactive, formative learning tool (Holmes et al., 2019).

Empirical Review of Digital Integration in Nigerian Business Education

Prior studies highlight the complex dynamics of integrating technology into Nigerian tertiary classrooms. Research indicates that while business educators recognize the value of modern instructional tools, systemic resource limitations frequently hinder implementation (Amesi, 2025). Studies show that limited access to up-to-date accounting software packages often prevents student teachers from gaining necessary practical competencies (Enang, 2025).

Furthermore, research confirms that rigid minimum standards from oversight bodies like the NCCE slow down the adoption of newer technologies, leaving curricula misaligned with current industry requirements (Nwachukwu & Ahmed, 2024; Olowo & Adesina, 2024). This study addresses these issues by providing an empirical evaluation of AI integration at FCE Obudu.

Methodology

This study employed a descriptive survey research design to collect detailed information regarding the variables under review. The study was conducted at the Department of Business Education, Federal College of Education, Obudu, Cross River State. The study population comprised all 12 business education (Accounting) lecturers and 112 final-year business education students specializing in the accounting option during the academic session. Given the targeted, manageable size of the population, a census sampling technique was applied, meaning the entire population was included in the data collection process.

The research instrument used was a structured questionnaire titled "Artificial Intelligence and Accounting Education Questionnaire (AIAEQ)," developed by the researcher. The instrument was organized into thematic sections corresponding to the research questions, with statements evaluated on a 4-point Likert scale: Strongly Agree (SA = 4), Agree (A = 3), Disagree (D = 2), and Strongly Disagree (SD = 1).

To ensure validity, the instrument was reviewed by two senior experts in the field of Business Education measurements. Instrument reliability was established by administering it to a distinct pilot group of business education participants at a neighboring institution; data analysis yielded a Cronbachâ€™s alpha coefficient of 0.81, indicating appropriate consistency for field research.

The researcher administered the questionnaires physically within the institution, achieving a 100% return rate through active monitoring. The collected data were processed using descriptive statistics, specifically mean scores and standard deviations. In line with standard statistical procedures for 4-point scales, a mean benchmark score of 2.50 was set as the decision threshold: items scoring 2.50 or above were accepted, while those scoring below 2.50 were rejected.

Results and Discussion

Research Question 1: How does the use of Artificial Intelligence tools influence instructional delivery and learning effectiveness in accounting education at FCE Obudu?

Table 1: Mean Ratings of Respondents on AI and Learning Effectiveness

S/NO	Item Questions	Mean	SD	Remarks
1	AI-powered adaptive software improves student comprehension of complex ledger adjustments through personalized pacing.	3.12,	0.68	Accepted
2	Automated real-time feedback loops allow students to identify and correct balance sheet errors immediately.	3.45,	0.52	Accepted
3	AI-driven instructional simulations make abstract cost-accounting models clearer and easier to understand.	2.89,	0.74	Accepted
4	Regular use of smart interactive platforms increases student engagement and participation during accounting lectures.	2.94	0.81	Accepted
	Grand Mean	**3.10**	**0.69**	**Accepted**

The data shows that respondents agree that Artificial Intelligence tools positively influence learning effectiveness, as indicated by the cluster mean of 3.10. Item 2 achieved the highest score (Mean: 3.45), indicating that automated real-time feedback loops help students understand error propagation within financial statements more effectively than traditional, delayed grading methods (Holmes et al., 2019; Zawacki-Richter et al., 2019).

Research Question 2: What is the influence of Artificial Intelligence tools on the practical skills and competencies acquired by accounting education students at FCE Obudu?

Table 2: Mean Ratings of Respondents on Practical Skills Acquisition

S/No	Item Questions	Mean	SD	Remarks
5	Exposure to automated accounting programs helps students develop stronger data interpretation and financial analysis skills	3.26,	0.59	Accepted
6	Learning within an AI-assisted environment shifts student focus from manual calculations to broader strategic problem-solving.	3.18,	0.62	Accepted
7	Digital accounting simulations improve students' ability to handle complex tax and auditing procedures effectively.	2.74,	0.79	Accepted
8	Hands-on experience with modern cloud tools increases graduates' confidence for entering the contemporary corporate market.	3.32	0.62	Accepted
	Grand Mean	**3.12**	**0.6**	**Accepted**

The results show that respondents agree that exposure to AI tools enhances practical accounting competencies, with a cluster mean of 3.13. Item 8 received a high mean rating (Mean: 3.32), showing that students feel more prepared for the modern workforce when their training incorporates contemporary digital tools (Bizarro & Dorian, 2019; Richins et al., 2017).

Research Question 3: What are the institutional and systemic challenges limiting the effective integration of Artificial Intelligence tools in teaching and practicing accounting education at FCE Obudu?
Table 3: Mean Ratings of Respondents on Barriers to AI Integration

S/No	Item Questions	Mean	SD	Remarks
9	Frequent electrical outages disrupt the consistent use of digital accounting tools and lab platforms.	3.68,	0.41	Accepted
10	High licensing fees for advanced educational software limit institutional access and procurement.	3.41,	0.55	Accepted
11	The current national minimum standard curriculum remains focused on manual bookkeeping practices.	3.22,	0.67	Accepted
12	A lack of formal training and technical up skilling limits faculty integration of advanced digital tools.	3.15	0.70	Accepted
	Grand Mean	3.37,	0.58	**Accepted**

The analysis reveals that systemic challenges are a major barrier to technological adoption, as shown by the high cluster mean of 3.37. Item 9 scored the highest (Mean: 3.68), identifying unstable electrical infrastructure as a critical operational bottleneck (Adaramodu, 2026; Ifeanyichukwu, 2024).

Conclusion

The integration of Artificial Intelligence into accounting education represents an essential evolution for contemporary business instruction. Evidence from this study indicates that utilizing automated tools and adaptive platforms significantly improves students' analytical focus and instructional engagement. However, full integration at the Federal College of Education, Obudu, is hindered by serious structural challenges, including unstable electrical power, funding constraints, rigid national curriculum frameworks, and a lack of specialized faculty training.

Recommendations

1. Curricular Re-engineering: The National Commission for Colleges of Education (NCCE), in partnership with the Association of Business Educators of Nigeria (ABEN), should update the national minimum standards curriculum to emphasize cloud accounting, data analytics, and algorithmic financial workflows over manual bookkeeping methods.
2. Infrastructure Enhancement: The administration of FCE Obudu should develop a dedicated, solar-powered business education laboratory equipped with modern accounting software licenses and reliable internet access to minimize disruptions from power outages.
3. Faculty Development Programs: The institution should organize continuous professional training workshops and technology boot camps to help business education lecturers integrate advanced digital tools into their teaching methodologies.
4. Strategic Industry Partnerships: The Department of Business Education should establish collaborative relationships with technology providers and professional accounting organizations to secure subsidized software access, professional training materials, and practical internship positions for students.

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INFLUENCE OF FINANCIAL ACCOUNTING PRACTICES AND DIGITAL MICRO-ENTREPRENEURIAL SKILLS ON STUDENTS' CAREER READINESS IN EDUCATIONAL TERTIARY INSTITUTIONS, LAGOS STATE, NIGERIA

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Abstract

This study examined the influence of Financial Accounting Practices and Digital Micro-Entrepreneurial Skills on Career Readiness among students in Tertiary Educational Institutions, Lagos State, Nigeria*. The objectives of the study were to examine the extent to which financial accounting practices influence students' career readiness, determine the effect of digital micro-entrepreneurial skills on career readiness, and assess the combined influence of both variables on students' career readiness. A descriptive survey research design was adopted for the study. The population consisted of students and lecturers in selected* Tertiary Educational Institutions, Lagos State, Nigeria*, while a sample size of 200 respondents was used. Data were collected using a structured questionnaire titled Financial Accounting Practices, Digital Micro-Entrepreneurial Skills and Career Readiness Questionnaire (FAPDMESCRQ) on a five-point Likert scale. Data collected were analyzed using descriptive statistics and ANOVA analysis at 0.05 level of significance. Findings revealed that financial accounting practices significantly influence students' career readiness. It was also found that digital micro-entrepreneurial skills have a significant positive effect on career readiness. Furthermore, both variables jointly have a significant combined effect on students' career readiness. The study concluded that integrating accounting knowledge with digital entrepreneurial skills enhances students' employability and preparedness for work. It was recommended that institutions strengthen practical accounting training and digital entrepreneurship education to improve students' career outcomes.*
Keywords: *Financial Accounting Practices, Digital Micro-Entrepreneurial Skills, Career Readiness, Employability, Entrepreneurship Education.*
Words count*: 200 words.*

Introduction

The most important tool for economic transformation and national growth is still education. Since education gives people the knowledge, skills, values, and competences needed to make significant contributions to society, no country can surpass the quality and relevance of its educational system. The development of critical thinking, problem-solving skills, creativity, and adaptability all necessary in a world economy that is changing quickly are also prioritized in contemporary educational philosophy in addition to the dissemination of knowledge (Ashikuzzaman, 2023; Silvance, 2023). The ability of education to generate graduates who are technologically savvy, prepared for the workforce, and able to generate economic value is becoming a more important metric in the twenty-first century. Despite modest gains in labor statistics, youth unemployment is still a major socioeconomic issue on a global scale. With over 402 million individuals

looking for work globally, the International Labour Organization (ILO, 2024) predicted that global unemployment would slightly decrease to 4.9% in 2024 from 5.0% in 2023. Nevertheless, the unemployment rate is anticipated to stay largely stable in 2025. This pattern highlights a systemic discrepancy between the demands of the labor market and educational results. The necessity for employability-oriented educational systems and entrepreneurship-driven solutions has increased as a result of the formal sectors' incapacity to handle the increasing number of graduates.

Technical proficiency, digital literacy, an entrepreneurial mentality, flexibility, communication abilities, and ethical responsibility are all components of career readiness that go beyond academic qualification. According to the World Bank (2022), employability in developing nations is becoming more and more dependent on a combination of digital, cognitive, and socioemotional abilities. Digital micro-entrepreneurial skills and integrated financial accounting procedures are highly important for college students, especially those in Lagos State, Nigeria's commercial center. With a high concentration of SMEs, financial service companies, fintech startups, and digital enterprises, Lagos offers qualified graduates both job and entrepreneurship chances. Despite the strategic significance of these competences, there is currently no empirical data on the combined effects of digital micro-entrepreneurial skills and it is against this backdrop that this study examines the relationship between financial accounting practices, digital micro-entrepreneurial skills, and students' career readiness in Colleges of Education in Lagos State, Nigeria.

Research Objective

The main objective of the study was to examine the influence of financial accounting practices and digital micro-entrepreneurial skills on students' career readiness in Tertiary Educational Institutions, Lagos State, Nigeria.

Research Hypotheses

H_{01}: Financial accounting practices have no significant influence on the career readiness of students in Tertiary Educational Institutions, Lagos State, Nigeria

H_{02}: Digital micro-entrepreneurial skills have no significant impact on the career readiness of business education students in Tertiary Educational Institutions, Lagos State, Nigeria

H_{03}: There is no significant combined influence of financial accounting practices and digital micro-entrepreneurial skills on students' career readiness in Tertiary Educational Institutions, Lagos State, Nigeria.

Related Literature

Theoretical frame

The theoretical framework for this study is based upon the Human Capital Theory, originally propounded by Gary Becker (1964) and further developed by Theodore Schultz (1961), is anchored on the premise that investments in education, training, and skill acquisition enhance an individual's productive capacity and economic value. The theory conceptualizes individuals as assets whose value can be increased through deliberate investment in knowledge, competencies, and abilities. Such investments, although costly in terms of time and resources, yield returns in the form of higher productivity, improved employability, and increased earnings over time. A central assumption of the theory is that education is not merely a social good but also an economic investment that contributes to both individual and national development. Human capital accumulation occurs through formal education, vocational training, on-the-job learning, and continuous skill development. Individuals who possess higher levels of relevant skills and knowledge are better positioned to compete in the labour market and adapt to evolving workplace demands.

In the context of this study, financial accounting practices and digital macro-entrepreneurial skills are conceptualized as critical components of human capital for business education students. Proficiency in accounting equips students with the technical ability to record, analyze, and interpret financial information, while digital entrepreneurial skills enable them to leverage technology for business creation and management. The integration of these competencies enhances students' overall productivity and market relevance. Therefore, career readiness can be viewed as a direct outcome of investments in these forms of human capital. Students who acquire strong accounting knowledge alongside digital entrepreneurial capabilities are more likely to secure employment opportunities or successfully engage in self-employment. This underscores the importance of aligning educational curricula with industry-relevant skills to maximize the returns on human capital investment.

Conceptual Review

Financial Accounting Practices

Financial accounting practices refer to the systematic processes involved in recording, classifying, summarizing, and reporting financial transactions to facilitate informed decision-making and ensure accountability. These practices form the foundation of financial information systems in both public and private sector organizations. Traditionally, accounting education focused heavily on manual bookkeeping procedures, preparation of financial statements, and adherence to established accounting principles. However, the evolving nature of the global business environment has significantly transformed the scope and application of financial accounting. In recent years, accounting education has undergone substantial transformation driven by digitalization, globalization, and changing labour market expectations. The integration of technology into accounting systems has led to the automation of routine tasks such as data entry, ledger posting, and financial reporting. As a result, the role of accountants is shifting from mere record-keeping to more analytical, advisory, and decision-support functions. Pargmann, Schumann, and Finsterwalder (2023) observed that technological advancements such as automation, artificial intelligence, and data analytics are reshaping accounting tasks, thereby requiring graduates to possess not only technical accounting knowledge but also analytical and problem-solving competencies. This development implies that traditional bookkeeping skills alone are no longer sufficient for effective workplace performance.

Digital Macro-Entrepreneurial Skills

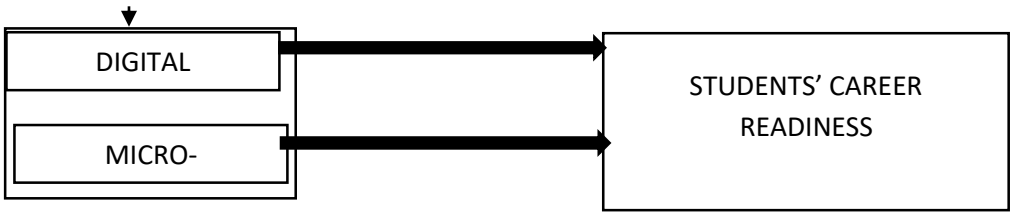
Digital macro-entrepreneurial skills refer to the ability to strategically utilize digital technologies for innovation, business creation, and enterprise growth within a broader economic context. These skills encompass digital literacy, online communication, data utilization, digital marketing, e-commerce management, and the application of financial technologies (FinTech) in business operations. In today's digitally driven economy, the capacity to leverage technology effectively has become a critical determinant of entrepreneurial success and career advancement. The rapid expansion of digital platforms and the increasing reliance on technology in business operations have made digital competence an essential requirement for graduates across all disciplines, particularly in business and accounting fields. Digital transformation has created new opportunities for entrepreneurship, enabling individuals to establish and manage businesses with minimal physical infrastructure. Consequently, students must be equipped with the skills needed to navigate and exploit digital ecosystems.

Students' Career Readiness

Students' career readiness refers to the extent to which individuals possess the knowledge, skills, competencies, and attitudes necessary to successfully transition from academic environments into employment or self-employment. It encompasses a combination of technical expertise, soft skills, digital competence, and practical experience that enable graduates to function effectively in the workplace. Career readiness has become increasingly important in the context of a rapidly changing labour market characterized by technological advancements, globalization, and evolving job roles. Employers now seek graduates who are not only knowledgeable in their fields but also adaptable, innovative, and capable of applying their skills in real-world situations.

According to Jackson (2021), career readiness is significantly enhanced when academic programmes integrate technical knowledge with soft skills and digital competencies. Such integration ensures that students develop a holistic skill set that includes communication, teamwork, problem-solving, and technological proficiency. Students who possess these attributes are better equipped to navigate complex work environments and respond effectively to organizational demands. In a related study, Okolie, Igwe, and Elom (2020) found that employability skills play a crucial role in graduates' transition into the labour market in Nigeria. Their findings indicate that students' readiness for work largely depends on how effectively educational institutions incorporate practical training, digital literacy, and entrepreneurial competencies into their curricula. This highlights the importance of aligning educational outcomes with industry expectations.

Conceptual Model



Source: ***Authors' computation, 2026.***

Interpretation of the model

This model explains the relationship between digital accounting practices, micro-entrepreneurial skills and the students' career readiness.

Empirical Review

Odumade and Imoh (2025) investigated the relationship between financial literacy, skill acquisition and entrepreneurship intention among undergraduates in public universities in Ogun state. A descriptive research design of survey type was used, with a sample of 1,190 undergraduates using simple random sampling technique from Tai Solarin University of Education (TASUED) and Olabisi Onabanjo University (OOU). Data were collected using three standardized research instruments: the Financial Literacy Questionnaire (FLQ), Skill Acquisition Questionnaire (SAQ), and Entrepreneurship Intention Questionnaire (EIQ) with reliability coefficients of .947, .912, and .938, respectively. Findings from the revealed a significant relationship between financial literacy and entrepreneurship intention ($r = .654$, $p < 0.05$), a significant relationship between skill acquisition and entrepreneurship intention ($r = .739$, $p < 0.05$), and the combined effect of financial literacy and skill acquisition significantly predicted entrepreneurship intention ($F(2, 1179) = 772.399$, $p < 0.05$).

Chukwu *et al.,* (2025) sought to determine the soft skills that can be integrated into accounting practices for effective job performance of Business Education graduates in Benue State. Three research questions and three null hypotheses were formulated for this study. The researchers adopted a descriptive survey design. Area of the study was in Benue State. The population of the study comprised of 380 of Business Educators. There was no sample sine the population was manageable. The instrument used for data collection was a structured questionnaire designed to elicit responses based on the study research questions. The instrument was validated by three experts, two in Business Education and one in Measurement and Evaluation. Reliability of the instrument was obtained using Pearsons Product Moment Correlation Coefficient. The overall reliability index for the instrument was .89. The data collection was analyzed using Mean and standard deviation for the research questions, while t-test was used to test the hypotheses at .05 level of significance. The results obtained indicated that the graduates were of the opinion that soft skills such as creativity, critical thinking and problem-solving skills can be integrating into the accounting practices for effective job performance of Business Education graduates in this knowledge-based economy.

Adeniyi (2025) examined the influence of digital accounting skills on the accountpreneurial intentions of business education students in Nigerian universities. The research specifically sought to: assess the extent to which students possess digital accounting skills, evaluate their level of accountpreneurial intention, identify factors limiting entrepreneurial development, and determine the relationship between digital accounting skills and accountpreneurial intentions. A descriptive survey design was adopted, involving 129 undergraduate business education students across selected Nigerian universities. Data were collected using structured questionnaires and analysed through descriptive statistics and Pearson correlation. Findings revealed that students demonstrated moderate competence in digital accounting skills, with strengths in data visualisation and communication of financial insights, while ERP systems, cloud applications, AI/automation awareness, and cybersecurity practices were notably weak. Similarly, accountpreneurial intentions were generally low, except for items reflecting independence from salaried employment and the use of technology to reach clients. Major limiting factors included lack of funding, inadequate infrastructure, insufficient practical exposure, and limited mentorship opportunities. Correlation analysis showed mostly weak and non-significant relationships between digital accounting skills and accountpreneurial intentions, except for the communication of financial insights, which exhibited a positive and significant relationship.

Hasan *et al*., (2024) investigated the influence of entrepreneurship education on the entrepreneurial readiness of generation Z students, which is moderated by digital business literacy and financial literacy. This research was conducted using a quantitative approach and involved 700 students in Makassar City, Indonesia. The data analysis technique used is partial least squares structural equation modeling (PLS-SEM) analysis. Research findings showed that entrepreneurship education plays an important role in the entrepreneurial readiness of generation Z students, which is strengthened by digital business literacy and financial literacy.

Appraisal of Literature

Several empirical studies have examined the role of financial literacy, accounting practices and entrepreneurial skills in enhancing students' career readiness and entrepreneurial outcomes. For instance, Odumade and Imoh (2025) investigated the relationship between financial literacy, skill acquisition and entrepreneurship intention among 1,190 undergraduates from Tai Solarin University of Education and Olabisi Onabanjo University in Ogun State using a descriptive survey design. The findings revealed a significant relationship between financial literacy and entrepreneurship intention ($r = .654$, $p < 0.05$) as well as between skill acquisition and entrepreneurship intention ($r = .739$, $p < 0.05$), while their combined effect significantly predicted entrepreneurship intention. Similarly, Chukwu et al. (2025) found that integrating soft skills such as creativity, critical thinking and problem-solving into accounting practices improves job performance among business education graduates in Benue State. In the same vein, Adeniyi (2025) reported that although students possessed moderate digital accounting skills, most relationships between these skills and accountpreneurial intentions were weak except for communication of financial insights, which showed a significant positive relationship. Furthermore, Hasan et al. (2024) established that entrepreneurship education significantly enhances entrepreneurial readiness among Generation Z students, particularly when supported by digital business literacy and financial literacy. Likewise, Ijiola and Nwogwugwu (2023) found that entrepreneurship centres significantly promote youth empowerment and employment generation in Lagos State, while Abraham and Iweyah (2023) reported a strong relationship between accounting education practices and job performance of accounting graduates in tertiary institutions in Rivers State. Earlier, Kyari (2020) also found that entrepreneurship education significantly improves the financial performance of graduate entrepreneurs. Collectively, these studies highlight the importance of financial literacy, accounting practices, and entrepreneurial competencies in enhancing students' employability and entrepreneurial readiness. However, limited studies have specifically examined the combined influence of financial accounting practices and digital micro-entrepreneurial skills on students' career readiness in Colleges of Education in Lagos State, Nigeria.

Research Design

The study adopted a descriptive survey research design because it enables the collection of opinions, perceptions, and experiences from a representative group of respondents. The design was found appropriate for identifying the influence of financial accounting practices and digital micro-entrepreneurial skills on students' career readiness Tertiary Educational Institutions, Lagos State, Nigeria

Population of the Study

The population of the study comprised all students and lecturers in Lagos State University of education and Federal College of Education, Akoka, Lagos State, Nigeria offering courses related to Business Education, Accounting Education. These students and lecturers were considered appropriate for the study because they are exposed to financial accounting practices and entrepreneurial training that could influence their career readiness. The total number of students in Third year of NCE was 183, while in 400 level in Lagos State University of education was 200 and the number of lecturers was 20. This implied that the total number of population for this study was 403.

Sample Size and Sampling Technique

A sample of respondents was selected from the population using a simple random sampling technique to ensure that every students and lecturers had an equal chance of being selected for the study. The sampling technique was adopted to obtain a representative sample that reflects the characteristics of the entire population of students in the College of Education and university within the state. The sample size was determined using Yamane's (1967) formula for a finite population:

n = sample size, N = population size (403), and e = level of precision (0.05)

n= 200 sample size was used for this study

Results
Test of Hypotheses
Hypothesis One
H_{01}: Financial accounting practices have no significant influence on the career readiness of students in Tertiary Educational Institutions, Lagos State, Nigeria

Dependent Variable: Career readiness
Sample Size (n): 200 Respondents
Table 4.1: Model Summary Regression Estimation Result for Hypothesis One

Model Summary

Model	R	R Square	Adjusted R Square
1	.652[a]	. 425	. 420

a. Predictors: (Constant), Financial accounting practices
Source: Author's computation (2026) using SPSS 25
Table 1: ANOVA Result for Hypothesis One

ANOVA[a]

Model		F	Sig.
1	Regression	145.32	.000[b]
	Residual		
	Total		

a. Dependent Variable: Career Readiness
b. Predictors: (Constant), Financial accounting practices

Coefficients[a]

Model		Standardized Coefficients Std. Error	t Beta	Sig.
	CAREER READINESS	.652	12.06	.000

Source: Author's computation (2026) using SPSS 25
Interpretation
The regression analysis was conducted to examine the influence of financial accounting practices on students' career readiness in Tertiary Educational Institutions, Lagos State, Nigeria. The Model Summary results show a moderate positive relationship between the two variables, with a correlation coefficient (R = 0.652). This indicates that financial accounting practices are positively associated with students' career readiness. The R Square value of 0.425 shows that financial accounting practices explain 42.5% of the variation in students' career readiness, which demonstrates a strong explanatory power in educational research. This implies that a considerable proportion of students' readiness for employment or self-employment is influenced by their exposure to financial accounting practices.
The Adjusted R Square value of 0.420 further confirms the reliability of the model, indicating that the result remains stable even after adjusting for sample size and possible estimation errors. The standard error of estimate suggests that the predicted values of career readiness are reasonably close to the observed values, indicating that the model provides a good fit for the data.
Hypothesis Two
H_{02}: Digital micro-entrepreneurial skills have no significant impact on the career readiness of business education students in Tertiary Educational Institutions, Lagos State, Nigeria
Dependent Variable: Career Readiness

Sample Size (n): 200 Respondents

Table 4.2: Model Summary Regression Estimation Result for Hypothesis Two

Model Summary

Model	R	R Square	Adjusted R Square
1	.701[a]	. 491	. 486

a. Predictors: (Constant), Financial accounting practices

Source: Author's computation (2026) using SPSS 25

Table 2: ANOVA Result for Hypothesis Two

ANOVA[a]

Model		F	Sig.
1	Regression	189.45	.000[b]
	Residual		
	Total		

a. Dependent Variable: Career Readiness

b. Predictors: (Constant), Financial accounting practices

Coefficients[a]

Model		Standardized Coefficients	t	Sig.
		Beta		
	CAREER READINESS	.701	13.76	.000

Source: Author's computation (2026) using SPSS 25

Table 3: Coefficients Result for Hypothesis Two

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.023	.276		7.318	.000
	ETHNICITY	.535	.064	.514	8.317	.000

a. Dependent Variable: PRODUCTIVITY

Source: Author's computation (2025) using SPSS 25

Interpretation

The regression analysis was carried out to determine the relationship between digital micro-entrepreneurial skills and students' career readiness. The Model Summary results reveal a strong positive relationship between the two variables, with a correlation coefficient (R = 0.701). This suggests that an increase in digital micro-entrepreneurial skills is associated with an increase in students' career readiness. The R Square value of 0.491 indicates that digital micro-entrepreneurial skills account for 49.1% of the variation in students' career readiness, demonstrating a relatively high explanatory power. This shows that nearly half of the variation in students' readiness for employment or entrepreneurship can be explained by their level of digital skills. The Adjusted R Square value of 0.486 further supports the stability and reliability of the model, confirming that the predictive strength remains strong even after adjusting for sampling variations. The standard error of estimate indicates a good level of accuracy between observed and predicted values, suggesting that the model fits the data well

Hypothesis Three

H_{03}: There is no significant combined influence of financial accounting practices and digital micro-entrepreneurial skills on students' career readiness in Tertiary Educational Institutions, Lagos State, Nigeria.

Dependent Variable: Career Readiness

Sample Size (n): 200 Respondents

Table 4: Model Summary Regression Estimation Result for Hypothesis Three

Model Summary

Model	R	R Square	Adjusted R Square
1	.782[a]	.611	.605

a. Predictors: (Constant), FINANCIAL ACCOUNTING PRACTICES , DIGITAL SKILLS

Source: Author's computation (2026) using SPSS 25

Table 4.3: ANOVA Result for Hypothesis Three

ANOVA[a]

Model		F	Sig.
1	Regression	154.28	.000[b]

Source: Author's computation (2026) using SPSS 25

Table 5: Coefficients Result for Hypothesis Three

Coefficients[a]

Model			Coefficients	t	Sig.
1	Financial Practices	Accounting	.412	8.45	.000
	Digital Skills		. 489	9.62	.000

a. Dependent Variable: CAREER READINESS

Interpretation

The regression analysis was conducted to examine the combined effect of financial accounting practices and digital micro-entrepreneurial skills on students' career readiness. The Model Summary results indicate a strong positive relationship between the independent variables and career readiness, with a correlation coefficient (R = 0.782). This suggests that the joint contribution of financial accounting practices and digital micro-entrepreneurial skills has a strong association with students' career readiness. The R Square value of 0.611 reveals that both variables jointly explain 61.1% of the variation in students' career readiness. This demonstrates a high explanatory power, indicating that more than half of the differences in students' career readiness can be attributed to their exposure to financial accounting practices and digital micro-entrepreneurial skills.

The Adjusted R Square value of 0.605 confirms the robustness of the model, showing that the predictive strength remains strong even after adjusting for possible sampling errors. The standard error of estimate further indicates that the model provides a good fit, as the predicted values are closely aligned with the observed values of career readiness.

Discussion of Findings

The results revealed that financial accounting practices have a positive and statistically significant effect on students' career readiness. This means that as students are more exposed to financial accounting principles, practical accounting tasks, and digital accounting tools, their level of preparedness for the

workplace tends to increase. The explanatory power of the model suggests that financial accounting practices account for a considerable proportion of the variation in career readiness, indicating that accounting competence plays a major role in shaping students' transition from school to the labour market. This finding aligns with Abraham and Iweyah (2023), who reported that accounting education practices such as financial management, financial reporting, and cost analysis significantly improve job performance among graduates in public tertiary institutions. Similarly, Yusuf and Adeyemi (2022) found that integrating digital accounting tools into accounting education enhances students' professional competence and adaptability to workplace demands. In the same vein, Kyari (2020) concluded that entrepreneurship education significantly improves the financial performance and employability of graduate entrepreneurs, emphasizing that practical financial knowledge strengthens career development outcomes. These studies confirm that financial accounting practices are not merely theoretical concepts but practical tools that significantly enhance students' employability, confidence, and readiness for real-world financial responsibilities. The findings from the regression analysis further demonstrated that digital micro-entrepreneurial skills have a statistically significant and positive influence on students' career readiness. The model summary indicated a strong relationship between digital micro-entrepreneurial skills and career readiness, suggesting that students who possess higher levels of digital competence are more prepared for both employment and entrepreneurial opportunities.

The R Square value shows that digital micro-entrepreneurial skills explain a substantial proportion of the variation in students' career readiness, highlighting the importance of digital literacy, online business tools, and financial technology usage in shaping students' transition into the labour market. The ANOVA result further confirmed that the model is statistically significant, meaning that the relationship between digital micro-entrepreneurial skills and career readiness is not due to chance but reflects a real and meaningful association within the data. This finding is consistent with Joshua and Apuru (2024), who reported that digital skills acquisition significantly improves employability prospects among accounting students in Nigeria. Similarly, Awoniyi and Owolabi (2025) found that digital literacy enhances entrepreneurial capability by enabling students to effectively use online platforms and digital financial tools for business development. Hasan et al. (2024) also confirmed that digital business literacy strengthens entrepreneurial readiness among Generation Z students, particularly when combined with financial literacy. These studies collectively support the present finding that digital micro-entrepreneurial skills are essential for enhancing students' career readiness in a modern, technology-driven economy.

The regression results further revealed that financial accounting practices and digital micro-entrepreneurial skills have a strong and statistically significant combined effect on students' career readiness. The model summary indicated a strong positive relationship between the combined predictors and career readiness, suggesting that when students possess both strong accounting knowledge and digital entrepreneurial competence, their level of preparedness for employment and self-employment increases significantly. The R Square value shows that both variables jointly explain a substantial proportion of the variation in career readiness, indicating that the integration of financial accounting practices and digital micro-entrepreneurial skills provides a more comprehensive explanation of students' readiness than either variable alone. The ANOVA result further confirmed that the combined model is statistically significant, meaning that the joint influence of both variables is not accidental but reflects a true relationship in the population.

This finding aligns with Odumade and Imoh (2025), who reported that the combined effect of financial literacy and skill acquisition significantly predicts entrepreneurship intention among undergraduates. Similarly, Chukwu et al. (2025) emphasized that integrating practical and soft skills such as creativity, problem-solving, and critical thinking into accounting education enhances graduate employability and job performance. In addition, Ijiola and Nwogwugwu (2023) found that entrepreneurship development structures significantly improve youth employment and empowerment outcomes in Nigeria. These studies collectively reinforce the present finding that combining financial accounting practices with digital micro-entrepreneurial skills produces a stronger and more impactful effect on students' career readiness than either factor operating independently.

Summary of Findings

This study examined the influence of financial accounting practices and digital micro-entrepreneurial skills on students' career readiness in Colleges of Education, Lagos State, using responses from students and lecturers. The major findings are summarised as follows:

1. The regression analysis revealed that financial accounting practices have a positive and statistically significant effect on students' career readiness. The results showed a strong relationship between financial accounting practices and career readiness, indicating that exposure to accounting principles, practical training, and digital accounting tools enhances students' preparedness for workplace responsibilities. The coefficient and model significance confirmed that financial accounting practices significantly influence career readiness. This finding implies that students who possess strong accounting knowledge and practical exposure are more likely to demonstrate higher levels of employability and confidence in workplace tasks.
2. The regression analysis also revealed that digital micro-entrepreneurial skills have a positive and statistically significant effect on students' career readiness. The results indicated a strong relationship between digital entrepreneurial skills and career readiness, showing that students who are proficient in digital tools, online business platforms, and financial technologies are better prepared for employment and entrepreneurial opportunities. The model was statistically significant, confirming that digital micro-entrepreneurial skills contribute meaningfully to students' readiness for the labour market. This suggests that digital competence plays a key role in enhancing students' adaptability and entrepreneurial potential in a technology-driven economy.
3. The regression results further revealed that financial accounting practices and digital micro-entrepreneurial skills have a strong and statistically significant combined effect on students' career readiness. The findings showed that the two variables jointly explain a substantial proportion of the variation in career readiness, indicating that students who possess both accounting competence and digital entrepreneurial skills are more prepared for employment and self-employment. The model was statistically significant, confirming that the combined influence of both variables is greater than their individual effects. This finding suggests that integrating accounting education with digital entrepreneurial training produces a more comprehensive development of students' career readiness.

Conclusion

This study examined the influence of financial accounting practices and digital micro-entrepreneurial skills on students' career readiness in Tertiary Educational Institutions, Lagos State, Nigeria. The findings revealed that both financial accounting practices and digital micro-entrepreneurial skills significantly enhance students' readiness for employment and entrepreneurship. The study further established that financial accounting practices equip students with essential technical and practical knowledge required for workplace performance, while digital micro-entrepreneurial skills provide them with the ability to operate effectively in a technology-driven business environment. The combined effect of both variables was found to be stronger than their individual effects, indicating that students' career readiness is best achieved through an integration of accounting competence and digital entrepreneurial skills.

Overall, the study concludes that career readiness among students is not dependent on a single skill area but on a combination of financial literacy, practical accounting experience, and digital entrepreneurial competence. Therefore, institutions must adopt a more integrated curriculum approach to effectively prepare students for the demands of the modern labour market.

Recommendations

Based on the findings, the following recommendations are proposed:

1. Tertiary Educational Institutions, Lagos State, Nigeria should strengthen the teaching of financial accounting practices by ensuring that students are exposed to more practical and real-life accounting tasks, including the use of modern accounting software.
2. Institutions should integrate digital micro-entrepreneurial training into the curriculum to equip students with skills in digital marketing, online business management, and financial technology usage.
3. Lecturers should adopt practical and ICT-based teaching methods to bridge the gap between theoretical knowledge and real-world application in both accounting and entrepreneurship courses.
4. Educational institutions should establish entrepreneurship and digital innovation centres where students can gain hands-on experience in business creation and management.
5. Government and educational stakeholders should support curriculum reforms that combine financial accounting education with digital entrepreneurial skill development to improve graduate employability.

Contribution to knowledge

This study contributes to knowledge by providing empirical evidence on the combined influence of financial accounting practices and digital micro-entrepreneurial skills on students' career readiness in Tertiary Educational Institutions, Lagos State, Nigeria. Theoretically, the study supports human capital theory by demonstrating that investment in both technical (accounting) and digital entrepreneurial skills enhances students' productivity and employability outcomes.

Methodologically, the study contributes by using a quantitative approach to examine both individual and combined effects of financial and digital competencies on career readiness, thereby providing a more comprehensive understanding of employability development. Practically, the study offers insights for curriculum developers, educators, and policymakers by showing that career readiness is best achieved through an integrated approach that combines accounting knowledge with digital entrepreneurial skills.

Suggestions for Further Studies

To build on the findings of this study, the following suggestions are made for future research.

1. This study was limited to Tertiary Educational Institutions, Lagos State, Nigeria; therefore, future studies should consider expanding the scope to include universities and polytechnics across different geopolitical zones in Nigeria to improve generalizability.
2. Future research should also examine additional variables that may influence career readiness, such as soft skills, communication skills, creativity, and emotional intelligence, to provide a more holistic understanding of employability.
3. In addition, further studies could explore the moderating role of factors such as teaching methods, institutional resources, and ICT infrastructure on the relationship between financial accounting practices, digital micro-entrepreneurial skills, and career readiness.
4. Finally, future researchers may consider adopting mixed-method approaches to capture both quantitative and qualitative perspectives on how students develop career readiness in higher education institutions.

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ARTIFICIAL INTELLIGENCE, AUTOMATION, AND THE FUTURE OF BUSINESS AND ENTREPRENEURSHIP LEARNING AND PRACTICE IN OYO STATE

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Abstract
This study investigates the impact of Artificial Intelligence (AI) and automation on the learning and practice of business and entrepreneurship within Oyo State, Nigeria. The study was guided by four research questions. Utilizing a mixed-methods empirical approach, data were gathered from 380 small and medium-sized enterprise (SME) owners, tech startup founders, and business educators across randomly selected from major major businesses and enterprise hubs, including Ibadan, Ogbomoso, and Oyo town. The instrument for Data collection was a self structured questionnaire developed by the researchers and validated by three research experts. It was subjected to pilot testing and 0.82 coefficient was obtained. Data were analysed using mean and standard deviation. The empirical findings reveal a significant positive correlation between the adoption of AI-driven tools (such as automated customer service, digital bookkeeping, and predictive analytics) and firm performance. However, a stark misalignment persists between the static business and entrepreneurial curriculum taught in higher education institutions and the rapidly evolving tech-driven realities of the marketplace. Infrastructure deficits, primarily irregular power supply and high data costs, remain critical barriers to comprehensive automation. The study provides actionable frameworks for policymakers, educators, and entrepreneurs to bridge the digital skills gap and foster a resilient economic ecosystem in Oyo State.
Keywords: Artificial Intelligence, Automation, Business and Entrepreneurship Education, SMEs, Digital Transformation.

Introduction
The present global business landscape is undergoing a paradigm shift driven by the Fourth Industrial Revolution (4IR). Technologies such as Artificial Intelligence (AI), machine learning, and robotic process automation (RPA) are changing how goods are produced, services are delivered, and value is created (Olaniyi ETAL, 2025). In developing economies, particularly sub-Saharan Africa, these technologies offer both a disruptive threat and a leapfrogging opportunity.

In Nigeria, Oyo State stands out as a critical economic and academic hub. Home to the University of Ibadan, Ladoke Akintola University of Technology (LAUTECH), Leadcity University, Emmanuel Alayande University of Education, and a burgeoning tech ecosystem in Ibadan, the state is uniquely positioned to lead digital entrepreneurship. However, local Micro, Small, and Medium Enterprises (MSMEs) and educational structures face distinct structural challenges that influence how these global technologies are adopted locally

Statement of the Problems

Many literature and findings have advanced benefits for the application of AI and automation in business and entrepreneurship practice. Despite the theoretical benefits of AI and automation, empirical evidence regarding their actual integration into business and entrepreneurship learning and practice in regional African contexts like Oyo State remains scarce. Many small-scale entrepreneurs still rely on manual processes, constrained by poor digital literacy and infrastructure deficits.

Notwithstanding the growing body of literature on AI adoption in business and human endeavours, three important gaps are identified. Firstly, common empirical studies are dominated in high-income economies or large enterprises (Davenport et al., 2020), leaving the MSMEs context in sub-Saharan Africa largely understudied. The few ones studied in Nigeria are either sector-specific or qualitative (Eli-Chukwu, 2019;

Olatunde-Aiyedun, 2024), limiting generalisability to the mixed-sector MSMEs landscape. Secondly, previous studies tend to examine AI and automation adoption as separate phenomena rather than testing the predictive relationship between specific adoption dimensions with respect to business and entrepreneurship learning and practice. Third, existing studies are predominantly single-theory accounts (typically TAM alone), whereas the adoption paradox observed in emerging markets — strong associations coexisting with low adoption — requires a multi-theoretical lens. Therefore, this study addresses these gaps by providing multi-sectoral empirical evidence from MSMEs and tertiary institutions in Oyo State. It also apply two-theory conceptual models aimed at linking theoretical constructs to AI adoption and automation dimensions. The study also explains the influence of curricula misalignment on AI and automation adoption in business and entrepreneurship learning and practice.

Concurrently, business and entrepreneurship education in local tertiary institutions often relies on outdated curricula that emphasize traditional retail and physical management rather than digital-first business models, algorithmic marketing, and data-driven decision-making. This disconnect creates a gap between graduating students and the technical realities of modern entrepreneurship hence the reason for this research.

Research Objectives

The major objective of this study is to find out the relationship between Artificial Intelligence, automation and future of business and entrepreneurship learning and practice in Oyo State. Specifically, the study sought:

i. To assess the current level of AI and automation tool adoption among entrepreneurs in Oyo State.
ii. To evaluate the impact of AI and automation on business and entrepreneurship learning and practice in Oyo State.
iii. To examine the alignment between current tertiary business and entrepreneurship education curriculum in Oyo State and contemporary digital business practices.
iv. To identify the primary structural barriers hindering AI and automation adoption among local businesses.

Research Questions

The following research questions guided the study

i. What is the current level of AI and automation tool adoption among entrepreneurs in Oyo State?.
ii. How has AI and automation impacted business and entrepreneurship learning and practice in Oyo State.?.
iii. What is the alignment between current tertiary business and entrepreneurship education curricula in Oyo State and contemporary digital business practices.
iv. What are the primary structural barriers hindering AI and automation adoption among local businesses.

Literature Review and Theoretical Framework

The concept of Artificial Intelligence (AI) entails systems capable of executing tasks requiring human intelligence, including decision-making, learning, and problem-solving. Strohmeier and Oladejo etal (2025) conceptualized AI as a transformative instrument capable of improving organisational and business processes by automating operations, analysing datasets, and producing predictive insights, enabling a shift from reactive to proactive business and human resources management. Gwagwa et al. (2022) examine how socio-cultural values influence responsible AI deployment in Africa, while Hmoud and Laszlo (2019) define AI as sophisticated algorithms replicating human reasoning to resolve business challenges.

Recent literature emphasizes that while AI tools (such as automated chat interfaces, cloud bookkeeping like QuickBooks/Wave, and automated Meta/Google ad placements) lower operational costs, their adoption in Nigeria is uneven. Studies by Onyeiwu (2021) point out that digital infrastructure gaps limit the optimization of automated logistics.

AI and Digital automation has fundamentally transformed how business operations are executed and how entrepreneurship is learned, shifting the focus from manual, repetitive tasks to strategic innovation and data-driven execution.

In the area of business and entrepreneurship learning, Inalegwu, Kwaghbo, Nayela, and Elujekwute, (2024); and Oluwafemi etal (2025) submitted that AI and automation have democratized access to knowledge through online platforms, global case studies, and open-access materials which allow aspiring entrepreneurs and business practitioners to learn modern business concepts from anywhere without relying

on traditional institutions. It has also provided AI-Driven and practical skill acquisition. This is because learners now use artificial intelligence tools, predictive simulators, and automated workflows to practice decision-making, market research, and data analysis in real time. This has resulted in shift in curricula where business and entrepreneurship education should increasingly focused on digital literacy, AI governance, and process management rather than just traditional administrative workflows.

In the areas of business and entrepreneurship practice, AI and automation have the impacts of treamlining the business and entrepreneurship operations particularly through process automation which handles routine jobs like inventory tracking, customer relationship management (CRM), and payroll thereby reducing human error and raising productivity by up to 30% (Adeyemo, 2024). Similarly , Kumar, Raj and Mehta (2023) are of the opinion that AI and automation have lowered barriers to entry into business and entrepreneurship practices. For instance, it is evidence that cloud computing and automated e-commerce tools allow small teams to launch and scale businesses rapidly with minimal upfront capital. It has also assisted in decision-making and autonomy, this is because systems are moving past simple data analysis to autonomous execution, where AI and automation routes are capable of predefining the workflows and predictive analytics to forecast market shifts (Alabi, 2024).

In terms of learning and alignment with curriculum, business schools across Africa and Nigeria are criticized for a lack of hands-on technical training, producing graduates who are conceptually aware of digital tools but functionally illiterate in utilizing them for predictive analytics or workflow automation (Olaniyi etal 2025; Apulu & Latham, 2020).

Despite the usefulness of AI and automation in business and entrepreneurship learning and practice, its adoption is faced with challenges such as skills gap and training needs because many businesses and entrepreneurs' organizations struggle as a result of workers' lack specific digital literacy to manage advanced automation tools Abidemi, 2024). Coupled with this is the issue of high costs and infrastructure, Badiger, Anicxon, and Raj (2026) lamented that upfront software investments and unstable local utilities or internet connectivity remain significant hurdles for small businesses in developing regions to adopt AI and automation. Another challenge is in the areas of oversight and trust, Kabir, Rahman, Al Mobin, Rana and Khan (2025), submitted that applying AI and automated systems to execute tasks creates new demands for governance, data privacy compliance, and human accountability which are lacking in Nigeria.

This study is grounded in two primary theoretical models namely, Technology Acceptance Model (TAM) and Schumpeterian Theory of Innovation.

The Technology Acceptance Model (TAM) was formulated by Davis (1989) and posits that Perceived Usefulness (PU) and Perceived Ease of Use (PEU) dictate an individual’s intention to adopt a new technology. In Oyo State, local business operators and entrepreneurs' perceptions of AI and automation tools are heavily mediated by cost, digital literacy, and immediate utility.

Schumpeterian Theory of Innovation propounded by Joseph Schumpeter explains how technological innovations like AI dismantle old market structures to create new, more efficient business models. Local practices must evolve, or risk obsolescence.

Research Methodology

This study adopted a convergent parallel mixed-methods design, collecting quantitative survey data and qualitative literature review simultaneously. MSMEs owners, registered tech startups, and business and entrepreneurship lecturers in Oyo State are the target population. Using Yamane’s formula, a sample size of 380 respondents was selected for the quantitative survey using stratified random sampling across three zones: Ibadan (Zone A), Ogbomoso (Zone B), and Oyo/Ogbomoso environs (Zone C). The instrument for data collection was a self-structured questionnaire which was administered on tech hub founders, entreprenuers/business operators and academic heads of departments. Data collected were analysed using mean and standard deviation.The decision benchmarks for interpreting mean scores were:

Mean Range	Decision: Research Question 1	Decision: Research Questions 2 to 4
3.50–4.00	Very High Level	Any mean above 2.5 is agreed
2.50–3.49	High Level	
1.50–2.49	Very Low Level	
1.00–1.49	Not at all	

Results and Discussion

Research Question 1: What is the current level of AI and automation tool adoption among entrepreneurs in Oyo State?

Table 1 Mean ratings and Standard Deviation of the current level of AI and automation tool adoption among entrepreneurs in Oyo State.

Item	AI and Automation Tools	**Mean**	**SD**	**Decision**
1	Blockchain	1.62	0.72	Very Low
2	Use of digital Customer Relationship Management.	1.84	0.65	Very Low
3	E-commerce store set-up and payment integration	1.83	0.69	Very Low
4	Automated accounting	1.60	0.61	Very Low
5	AI content generation	1.71	0.68	Very Low
Overall	**Grand Mean and Standard Deviation**	**1.72**	**0.67**	**Very Low**

Source: Field Work, 2026

Table 1 shows that all the items had mean scores ranging from 1.84 to 1.60 which is below the 2.50 benchmark. The grand mean of 1.72 (SD = 0.67) falls within the 1.50–2.49 range, indicating that the level of AI and automation was very low.

Research Question 2: How has AI and automation impacted business and entrepreneurship learning and practice in Oyo state?.

Table 2: Mean ratings and Standard Deviation of how AI and automation impacted business and entrepreneurship learning and practice in Oyo state

S/N	**Items**	**Mean**	**SD**	**Decision**
1	Operational efficiency	3.55	0.36	Agreed
2	Revenue growth	3.60	0.49	Agreed
3	Democratized access to knowledge	3.61	0.67	Agreed
4	Improved preparation of professional business and marketing presentations.	3.60	0.40	Agreed
5	Good ability to store and organise digital files.	3.53	0.56	Agreed
6	Easy entry into business and entrepreneurship practices	3.52	0.59	Agreed
7	AI driven and practical skill acquisition	3.48	0.59	Agreed
8	Improved inventory tracking	3.50	0.68	Agreed
9	Effective customer services	3.68	0.83	Agreed
10	Rapid Prototyping- Idea testing	3.55	0.59	Agreed
	Grand Mean	**3.56**	**0.56**	Agreed

Source: Field Work, 2026

The findings in the table 2, which are empirical, confirm the positive impact of AI and automation on business and entrepreneurship learning and practice in Oyo state. The respondents gave a grand mean of 3.56 and a standard deviation of 0.56 which is greater than 2.50 cut-off point and therefore a final decision of Agreed regarding the impact of AI and automation on business and entrepreneurship learning and practice.

Research Question 3: What is the alignment between current tertiary business and entrepreneurship education curriculum in Oyo State and contemporary digital business practices?

Table 3: Mean ratings and Standard Deviation of alignment between current tertiary business and entrepreneurship education curricula in Oyo State and contemporary digital business practices

S/N	Questionnaire Items	Mean	SD	Decision
1.	Present curriculum in business and entrepreneurship has improved graduates ability to create a professional online business.	2.33	0.57	Disagreed
2.	Existing entrepreneurship learning modules have equiped students with practical automation competencies	2.34	1.11	Disagreed
3.	Existing entrepreneurship learning modules have equiped students with practical artificial intelligence competencies	2.35	0.65	Disagreed
4.	Existing business and entrepreneurship curriculum have equiped students with skills in AI and automation driven inventory management competencies	2.40	0.65	Disagreed
5.	Present curriculum in business and entrepreneurship can improve graduates ability to adopt automated accounting.	2.45	0.61	Disagreed
6.	AI and automation training embedded in business and entrepreneurship curriculum has improved the ability of graduates to search for relevant job opportunities online.	3.42	0.90	Agreed
7.	Present curriculum in business and entrepreneurship can improve graduates ability to cope with modern business practices	2.36	0.58	Disagreed
8.	Existing curriculum in business and entrepreneurship education have improved graduates ability to promote the adoption of AI and automation in business and entrepreneurship practices	2.38	0.75	Disagreed
9.	Present curriculum in business and entrepreneurship education can improve graduates ability to participate in AI and automation driven business communities.	1.30	0.68	Disagreed
10.	Present curriculum in business and entrepreneurship education can improve graduates ability to adopt AI and automation driven customers relationships management	1.47	0.72	Disagreed
	Grand Mean	**2.28**	**0.72**	**Disagreed**

Source: Field Work, 2026

As evidenced in the table 3, there is a misalignment between the present curriculum in business and entrepreneurship education and the acquisition of AI and automation skills needed for their adoption in business and entrepreneurship practice. This is reflected in a grand mean of 2.28 and a standard deviation of 0.72 and an overall decision of 'Disgreed' which means respondents perceived a situation of misalignment between the present business and entrepreneurship education curriculum and AI and automation adoption in business and entrepreneurship practice.

Research Question 4: What are the primary structural barriers hindering AI adoption among local businesses?

Mean ratings and Standard Deviation of the primary structural barriers hindering AI and automation adoption among local businesses

S/N	Items	Mean	SD	Decision
1	Power Instability	3.77	0.53	Agreed
2	High cost of mobile data and software licensing	3.73	0.55	Agreed
3	Shortage of technical knowledge / Skilled Talent	3.53	0.60	Agreed
4	Inadequate internet connectivity	3.57	0.72	Agreed
5	Resource constraints	3.61	0.74	Agreed
6	Resistance to Change / Prefer Cash & Manual	2.25	0.78	Disagreed
7	Weak regulatory environment	3.52	0.60	Agreed
8	Low AI and automation literacy in education	3.58	0.65	Agreed
9	Poor data quality	3.63	0.77	Agreed
10	Security and privacy vulnerabilities issues	3.43	1.05	Agreed
		3.46	**0.70**	Agreed

Source: Field Work, 2026

The findings in table 4 indicate that the items listed except item 6 'Resistance to Change / Prefer Cash & Manual' are the barriers to effective adoption of AI and automation in business and entrepreneurship learning and practice. The grand mean of 3.46, overall decision on Agreed and a standard deviation of 0.70, indicated that respondents found all the barriers listed as clogs in the wheel of AI and automation adoption amongst businesses and entrepreneurs in the study area.

Discussion of Findings

The findings in table 1 indicated that AI and Automation Adoption measured by blockchain application, frequency and depth of use of digital CRM, E-commerce store set-up and payment integration, automated accounting, and AI content generation, and tools is very low (Grand Mean= 1.72). This is in agreement with earlier submissions of Onyewu (2021) and Federal Ministry of Communications, Innovation & Digital Economy (2024) that despite all initiatives at the national level aimed at improving the skills of Nigerian business and entrepreneurship operators and professionals, the localised effects in states such as Oyo remain inadequately understood. This may be due to the fact that most operators are yet to adopt AI and automation into their business and entrepreneurship practices.

The findings in table 2 indicated that AI and automation adoption in business and entrepreneurship learning and practice is capable of providing significant positive impact on business and entrepreneurship practices in the area of operational efficiency and revenue growth, easy entry into business and entrepreneurship practices, effective preparation of professional business and marketing presentations, inventory tracking and customer services while in business and entrepreneurship learning, it is capable of providing significant positive impacts in the areas of democratized access to knowledge, providing students with good ability to store and organise digital files AI driven and practical skill acquisition, and Idea testing as confirmed with Grand Mean= 3.56. These findings are in line with the earlier submissions of Elujekwute, (2024); and Oluwafemi (2025) that democratisation of access to learning and knowledge, acquisition of AI and automation skills competencies and easy access to learning materials are the impacts of AI and automation on business and entrepreneurship learning while also supporting the claims of Adeyemo (2024), Kumar, etal (2023) and Alabi (2024) who all opined that AI and automation can enhance business profitability and revenue growth, improve inventory tracking and efficiency in decision making and business operations. No wonder majority of those who have adopted AI and automation in their business and entrepreneurship practices agreed that it has cut their costs and increased their profits.

Further more, the findings in research question 3 as shown in Table 3 indicated a sharp misalignment between the existing business and entrepreneurship education curriculum and effective adoption of AI and automation in business and entrepreneurship learning and practices as indicated in Grand Mean= 2.28. This is because the respondents are of the opinion that the curriculum could not offer competencies in the creation of professional online business, application of automated accounting software, ability to cope with modern business practices to mention but few. These findings agreed with the opinions of Olaniyi etal 2025; Apulu and Latham, 2020 who maintained that the present curriculum in business and entrepreneurship learning in higher institutions have been criticized for a lack of hands-on technical training leading to the production of graduates who are conceptually aware of digital tools robotic process automation but functionally illiterate in utilizing them for predictive analytics or workflow automation. The situation is worrisome because the researchers also observed that the curriculum is regulated by national bodies, making rapid updates difficult. Students are being taught how to write a traditional business plan on paper, but are not taught how to train an AI model to analyze local market pricing trends, apply AI and automation tools or set up automated WhatsApp automation funnels for customer retention. This has resulted in deficiency in intermediate digital literacy.

Finally the study confirmed in table 4 that barriers such as power instability, high cost of mobile data and software licensing, poor technical knowledge / Skilled Talent, to mention but few are the primary resistants to the adoption of AI and automation in business and entrepreneurship learning and practice. These findings agreed with the opinions of Olatunde-Aiyedun (2024) that infrastructure and awareness barriers to AI and automation integration in Nigerian business and entrepreneurship institutions, and Gwagwa etal (2022) who observed that socio-cultural dynamics significantly influenced technology adoption trajectories across African contexts.

It should be noted that the respondents disagreed that resistance to change / Prefer cash and manual is a barrier to AI and automation in business and entrepreneurship learning and practices. This to the researchers is that majority of the populace are now finding it easy to have cash transactions through online

banking platforms no wonder, Oluwafemi (2022) reported that businesses and entrepreneurs are well aware of e-banking and cashless transactions.

Conclusion

This study empirically validates that while AI and automation significantly boost MSMEs operational performance in Oyo State, their adoption is heavily stifled by foundational structural problems. Furthermore, business and entrepreneurship learning models remain stagnant, creating an widening skill mismatch. For Oyo State to maintain its competitive edge as a prime commercial center in Southwestern Nigeria, a deliberate pivot towards an automated, data-informed business paradigm is vital.

Recommendations

1. Curriculum Overhaul: The Oyo State Ministry of Education, in partnership with tertiary institutions (UI, LAUTECH, Lead City, Emmanuel Alayande University of Education, etc.), should integrate practical modules on digital automation, low-code/no-code AI tools, and data analytics into the mandatory entrepreneurship courses (GST modules).
2. Subsidized Digital Infrastructure: The state government should as a matter of urgency partner with telecommunication companies to establish low-cost digital zones or tech hubs inside major trading hubs and student communities, lowering the financial barrier of high internet costs.
3. MSMEs Micro-Credentialing: Business associations like NACCIMA and NASME in Oyo State should launch localized micro-workshops focused on teaching practical, mobile-friendly AI automation tools (e.g., automated inventory tracking and localized WhatsApp business bots) to non-technical market traders.
4. Because of its operational efficiency and revenue growth opportunities, business operators and entrepreneurs should be encouraged to adopt AU and automation in their business and entrepreneurship practices.

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THE ROLE OF ARTIFICAL INTELLIGENCE (AI) IN CREATIVITY AND INNOVATIVE FOR EFFECTIVE MARKETING.

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Abstract

Artificial intelligence (AI) is reshaping creativity and innovation in digital marketing in areas of product/ service design, packaging, and channels. This paper conceptualized the synergy of AI imagination and human creativity and enumerate how AI boast creativity and innovation in different sectors of the economy with greater emphasis in digital marketing education. It also established that digital marketing is veritable for effective brands positioning and businesses use technology for marketing in different digital platforms. The paper equally highlighted some impediments to effective AI and digital marketing. In order to overcome the challenges, the paper suggested key performance indicators in digital marketing through AI creativity and innovation. In conclusion, the paper indicated that AI has potential for preparing marketers and creats room for innovative mechanisms for achieving marketing goals of organisations and individuals. It recommended that creativity and innovation enhanced by different forms of AI results to quality goods and services through customer satisfaction and greater profit to organisation.

Key words: Creativity, Innovation, Artificial Intelligence, Platforms and digital marketing.

Introduction:

Creativity and innovation are fundamentals to marketing, allowing brand to develop innovative campaigns and messaging that resonate with the rise of AI, traditional marketing approaches are being reshaped, unlocking new levels of creativity and innovation. (Wind and pagan, 2025).

Creativity is when people use their imagination to create new ideas, solve problems and think not possibilities that no one else has thought of before (Indeed Career Guide, 2025). The nature of creativity is limited only by one's ability to think outside the norm (Eneremadu, 2025). The nature of creativity means that an idea's is unique and original to the creative thinker. Creativity is not a genetic trait, but something that a person's develops as they continue to learn and grow and use their imagination for various forms of expression. Creativity has no inherent value unless a person manifest it into really creativity sparks innovation.

Innovation is the process of taking creative ideas and exploiting their benefit for commercial and financial success. (Udo 2024).Innovation is creating new ways of doing thing in all area of life. Koneke (2023) noted that an innovation is the creation of an innovation since the innovation of creative ideas, it is innately connected to creativity and both work in tandem with one another. Supporting the view (2024) agreed that innovation can be physical object and a concept to improve or create a new method, procedure and processes innovate to solve a problem or make society functionally more convenient with the application of creativity, innovation and Artificial Intelligence AI.

Studies have revealed that creativity and innovation are crucial because they allow the world to grow, develop and change over time. Innovation cannot happen without creativity and creativity insubstantial if it is not applied for quality goods and services.Okoro (2025) noted that creativity and innovation are integral to the progression and advancement of human civilization as people think of new ways to express their ideas and cultivate those ideas into innovations that make society safer, healthier and more accessible. Creativity and innovation have benefitted society through the invention of Artificial Intelligence.

AI has made humans to create, innovate and excel in all works of life. AI is the ability of a system to use available information, learn from it, make decisions and adapt to new situation (Obi 2021). AI has transformed our world today including marketing. Today, the single users, medium scale business to full bowl tech giants have integrated various formals of AI capabilities to keep up with the demands of our fast placed world.

AI is technology that enables computers and machines to simulate human learning, comprehension, problem solving, decision making, creativity and anatomy (Cole and Eda, 2025).

AI enhanced marketing, creativity and innovation transformation fro0m annual generation to a collaborative human synergy. AI acts as an agile creative partner analyzing massive data sets to predict consumer behavior rapidly Moto typing variations and allowing human marketing to focus on emotional resonance and boundary pushing strategic messaging.

The integration of these forces creates a new landscape for marketing teams supporting human creativity ideation and brainstorming rapid prototyping and pattern recognition, driving innovation in areas of hyper-personalization at scale (allow brands to innovate how they interact with customers by dynamically tailoring messages.

Definitions of Concepts

Creativity

Creativity is the ability to imagine something new, to solve problems in unexpected ways and to connect ideas that no one else would.

Innovation is what happens when you take that creative idea and turn it into something real. For instance building an app that optimizes delivery routes and actually helps many individuals to save time every day. Creativity is the spark while innovation is fire that turns that spark into action. Therefore without innovation, these ideas never became solutions. According to Mc Kingsley (2025), firms that successfully combine creativity and innovation generate up to 67% more revenue than that of their competitors.

AI reshape the way to create, think or do something before Adobe (2025) shows that 77% of professionals believe AI do not replace creativity rather it enhances it by providing new tools, perspective and ways to create. These has forester the economy of doing things. Chan (2025) noted that we can combine creativity, innovation and AI to improve doing things in the world in the way of:

- Idea flash sessions by getting firms together for 15 minutes, to toss around fast ideas for a specific problem, pick one and list it with the help of AI.
- Take a walk: literally, switching up you environment can boost creativity by up to a 60%.
- Data-augmented creativity: Use AI powered analytics tools to spot patterns and trends, then let your imagination take over.
- Fast ideas validation: Test your creative concept quickly using digital validation platforms. Find out what is working and what needs world before scaling.
  Interaction story-telling: Bring your ideas to life either tools like synthesia, ChatGPT or Canva. Build bold visual stories that reflect your voice for creative blocks: Feeling sick? Use AI tools to suggest fresh unexpected perspective that get you think again. The future of creativity is hybrid, collaborative and AI enhanced.

Artificial Intelligence

This is emerging as a powerful lever for rethinking our style and process creation and innovation, thereby unlocking newer opportunities for business and government organizations (Bercon, 2026) AI acts as a genuine creative partners, capable of rapidly generating multiple sceneries, identify novel connections between different sources of information, suggesting avenues of thought that we might not have initially considered. This empowers individuals and teams to overcome cognitive brass and more broadly explore their creative potential especially in digital marketing.

Digital Marketing

Digital marketing is also called online marketing. It is the marketing and promotion of goods and services through the internet.

Digital marketing is online marketing of brands to connect with actual and potential customers using the internet and other forms of digital communication (Nyagadza, 2022).

James and Perez, (2026) defined digital marketing as the use of website,apps, mobile devices, social media, search engine and other digital means to promote goods and services. This includes not only email,

social media and web based advertising but also text and multimedia messages as a marketing channels. Shalauddin (2022) noted that digital marketing helps one connect with mobile customers. It allows business to target specific targets audience and measure performance in real time. Marketers rely on data analytics to optimize campaigns (James et al, 2026). Rapid platform changes and digital contents has been enhanced with the use of AI in creative and innovative technique. Messages that matches consumers taste and preference are made available with AI designing and tailoring the communications.

The Synergy of AI Imagination and Human Creativity

Creativity in marketing has long been driven by human experience, story-telling and intuition. AI is proving to a stronger ally, enhancing human creativity and innovation rather than replacing it. Wind and Pagani (2025) noted three main functions AI in marketing creativity and innovation;

I. An instrumental resource: AI acts as an additional tool in the marketer's creative toolkit, much like a paintbrush for an artist. Technologists such as generative AI, machine learning and large Language Models (LLMs) provide new ways to craft personalize marketing campaigns, engaging content, and analyze trends.
II. A catalyst for idea exploration: AI helps marketers break creative barriers by generating novel ideas, simulating sceneries and analyzing consumer behavior at an impresidential scale. AI powered tools like DALL-E and ChatGPT inspire marketers by suggesting unconventional approaches and visual possibilities that might not be immediately obvious.
III. A tool to deconstruct the creative process. AI enables marketers to reverse-engineer their creative workflow providing insights into what resonates most with audience. By analyzing past campaigns, AI can identify patterns of success, offering data driven recommendations to refine messages and improve engagement.

How AI Boosts Creativity and Innovation in different sectors of the Economy

1. Public sector: Modernizing citizen services: AI enables public administration to improve the citizen's experience by harnessing vast qualities of data to optimize decision making, resource management and the efficiency of internal processes. AI does this through;
    - Predictive analysis to anticipate social needs and adjust public policies in real time.
    - Optimization of online services with more intuitive and accessible administration procedures (Bercon,2026)
    - Automation of respective processes, freezing up time for public servants and enabling them to focus on highest value-added tax.

With these advancement by the help of AI, government administrative are becoming more responsive, efficient and people-oriented, contributing to a substantial digital transformation of the public sectors and satisfaction of its citizens (Udodigwu et al 2025).

2. Financial and marketing: smarter and more personalized services campaign. AI is digitally transforming the finance and marketing industry, paving the way for more agile, proactive, and customer-centric services.it redefines how products are designed, risks are accessed and user-experience are enriched by;
    - Creation of tailored campaigns and offers by preparing products coverage tailored to specific customize need/want.
    - Predictive risk analysis and fraud detection by analyzing crucial prospects history and identify unusual behaviors or inconsistencies in claims in real time.
    - Development of interactive experience with saving stimulates, insurance decision making tools and virtual assistants facilitating customers support.
3. Manufacturing industry: More agile and innovate products in AI optimizes production processes and fosters innovation by facilitating product design and adaptation in the following ways;
    - Predictive equip and maintenance, preventing breakdown and reducing production down line.
    - Optimization of design and prototyping, quickly testing different configurations to accelerate innovation and creativity.
    - Development of innovate materials and processes leveraging AI to explore new technical and ecological possibilities.

4. Education and training: Accessible pedagogy for all. AI is also revolutionary education by making learning methods more interactive and inclusive;
    - Generation of customized educational content, tailored to learned specific needs.
    - Simulation and experimentation of new educational approaches to test their effectiveness before large scale implementation.
    - Personalization support such as Google virtual assistant capable of adapting the learning pace of each student. These has helped education institutions to be dynamic in training.
5. Health and Research: Innovation and personalized medicine: AI plays an essential role in diagnosis, prediction analysis of medicinal data, documentation management and development of new therapeutic and educational approaches;
    - Medical stimulation and modelling for training professionals preparing medical intervention and organizing specialized care.
    - Customization of awareness-raising materials to tailor prevention messages to the specific needs of different population group.
    - Optimization of medical protocol design by rapidly exploring new therapeutic approaches and innovative data driven solutions.

How AI has enhanced Creativity and Innovation in Today Marketing

AI has transformed marketing by acting as a collaborative partner. It has accelerates creative ideation, scales content production, AI frees humans to focus on high level strategy, allowing v=brands to deliver hyper-personalized experiences and new way of doping campaign. With AI, campaigns are new highly tailored to experiences and content are now dynamic in real time and based on the individuals users preferences and context. Bpggert and Almanze, (2026) mwvboardofinnovation.com

Challenges of Artificial Intelligence on Creativity and Innovations for Effective Digital Marketing

The integration of AI into creative and innovation workflows has sparked ongoing debate on;

I. Intellectual property: the use of human created data to train AI models raises legal and ethical questions about authorships, copyright and ownership infringement(Hunter et.al 2022)
II. Bias and Horn Organization: Because AI relies on existing data, there is risk that it outputs can become repetitive or reflect historical biases(Bercon 2025)
III. The human element: True innovation requires purpose empathy and crucial judgment traits that AI facilitates but cannot formulate entirely on it.

AI has fundamentality to transformed marketing activities driving important changes across multiple dimensions of marketing field. This evolution cuts across everything from products idea generation, marketing research, marketing innovation and marketing data analysis.

AI tools have emerged as essential strategic partners in the marketing scope, offering a range of capabilities that enhances the planning of marketing campaigns and generation of creative content with increased efficiency and speed (Mustafa, MO haram and Tawalbeh, 2025). However, hesitating to adopt AI may pose great challenges for marketing practitioners and business. This survival of business depends on the acceptance and adoption of these wonder technologies.

AI has been progressively tremendously in impacting various sectors of the economy with significant interest in marketing operations. As competitions intensifies due to innovation, the capacity to generate competition original and petinant digital marketing that aligns with products and showcases their competitive advantages has become essential. This study examines the various ways in which AI contribution to boosting creativity and innovation in digital marketing.

AI according to Mostafa et al, (2025) generates new control, including text, images, videos, animating data. This capability provides marketers, enabling them to automate, stimulate innovation, and improve the quality and diversity of digital marketing and financial and human resources ( ).

Incorporating AI into marketing can facilitate the rapid innovation and creativity of personalized digital contents that resonate with the preference of the imaged customers. By leveraging data analysis, AI can uncover consumer behavior patterns allowing business to customize text that align with their expectations. AI acts as a creative and innovative partner to marketing teams, generating a variety of ideas and concept as noted by Mariami, Perez-Vega and writz (2022).

AI automates routine risk, such as drafting social media post creative writing copy or creative visual adverter's designs, marketers can divert their efforts towards more effective markets strategies. In

supporting the view kshetn,Dwivedi, Daverport and Panteli (2024) noted that AI technology is not only simplifies the digital creation process but also enhances the creative capabilities of marketing team innovatively-AI encompasses various techniques including natural language processing, machine language to generate voice, text, media content and images. AI applications in marketing are diverse, ranging from automated social media posts and innovative personalized email creation to creating engaging adverters (Deveau, Goriffin and Reis, 2023).

As AI to dopition by business and marketers grows, it is important to develop ethical guidelines to uphold consumer trust and ensure the integrity of the marketing sector as a whole (Shaik, 2023).

Creative Digital Technologies / Channels for effective Marketing

Digital marketing channels have evolved since the 1990's and continue with innovative AI (James and Perez, 2026). This development of digital marketing though AI changed the way brands and businesses use technology for marketing and that as digital platforms became increasing use digital devices instead of visiting physical shops. Some of the digital channels are;

I. Video Marketing: Many of internet uses turn to site such as YouTube video before preparing products or purchasing goods and services. This helps the viewers to learn how to do something in a new way. Innovative marketers can use any of several videos marketing platforms, including Facebook videos, TIKTOK, to run video marketing campaign.

II. Affiliate Market: Companies and individuals ''influencers'' promote other company's products and get a commission every time a sale is made or a fresh lead is added to their list. Affiliate marketing recruits influencers or affiliates to promote a business's product to their followers (Adobe 2025). When a customer's makes a purchase though that affiliate, the affiliate earns either a percentage commission or a flat-rate finder's fee. This means promoting or marketing your products or business through someone with an established [platform and connections to your target audience.

III. Text Messaging: AI has made it possible for firms to personalize or customized messages and tailor it according to customers taste and preferences. Company's uses text messages (SMS) to share news about products and promotions. (Udodigwu, M.I, Obiakor, U.J, Eneremadu, KE, Efughi, S.A and Chikezie, I 2024).

IV. Social media marketing: Building brand awareness is one of the crucial goal of social media channels. This is enhanced through the social media handles such as what Sapp, Facebook, Instagram, and TIKTOK. These handles enable marketers to promote their products. It creates room for interactive marketing, chats immediate feedback and measurability of the production campaign stick to consistent posting schedule, know the favorite social media for your audience, produce engaging, high quality content and respond to comments and questions within 24hrs if possible.

V. Email marketing: This is one of the most effective digital marketing channel, though many people associate it with spam and treat such messages accordingly (James et al, 2026). Many digital markets uses their other digital marketing devices to collect customer's contacts for their email lists. Then through email marketing, they try those leads into customers. Email could be welcome email, post purchase email.

VI. Content marketing: with the use of written, visual, video, blog post, info graphs, newsletters, content marketers reach potential customers with enhanced AI that interest them. Content marketing attempts to be more subtle than advertising and the product. The creator is attempting to market may or may not be conspicuously highlighted. Content marketing objectives is to educate and share values to readers instead of promoting products and it must come from trust worthy source.

VII. Pay per click: marketers can set up PPC campaign on goggle, x, Facebook, LinkedIn and show their ads to people searching terms related to their goods and services. With PPC advertising you pay every time someone clicks on your ad. Google ads, Meta ads, YouTube and amazon ads are also valuable platform for PPC {adobe 2025}.

VIII. Influencer marketing: Company's promote their brands through popular content creators called influencers. Influencer marketing is similar to affiliate marketing in that you can capitalize on an established, captive audience that inherently trust the influencer, but influencer marketing doesn't involve profit sharing or culture rather you pay the influencer a flat fee in exchange for his services of promoting or conveying his audience for you or your brand. With an average engagements rate of nearly 16% on platform like tiktok, its no wonder why more brands are embracing influence marketing, you must ensure that; you partner with familiarity or your industry and a good reputation,

establish a clear and written agreement for compensation and provide the influencer with clear guidelines on language tone and linguistics.

IX. Marketing automation: This means streamlines marketing task by automating them. This type of digital marketing promotions. Market automation handles mundane and repetitive tasks so marketers can focus on higher level strategy and creativity instead. Example of marketing automation tasks include; streamlining tasks and workflows, measuring results and calculating campaign return on investment (ROI). With automation, you can analyze large volume of customers' data in no time. Use these insights to create better, more customized campaigns (Adobe, 2025).

Enhance Creativity and Innovation In Digital Marketing with Artificial Intelligence

Digital marketing trends for the future in by and small business and its landscape is evolving rapidly. Here are key trends shaping its future as noted by Adobe, (2025).

I. Artificial Intelligence (AI) and automation: AI tools will continue optimizing tasks in creative and innovative ways of personalization, content creation, and analytics of trends/data.
II. Voice search and smart devices: with tools like Alexa and Siri, optimizing content for voice search will become a crucial way to reach people or target audience.
III. Interactive context: Polls, quizzes, and interactive videos are becoming popular for boosting user engagement especially in social media.
IV. Customized at scale: Businesses are leveraging Data to deliver innovative hyper-personalized experiences to individual customers.
V. Sustainability and ethical marketing: consumers in increasingly favor creative and innovative brands that align with their taste and preferences into environmental and social causes.
VI. Creativity and innovation is the only way to stay on top of its trends that will ensure that your marketing strategies remain competitive and relevant via rapidly changing digital landscape.

Challenges in Digital Marketing for Effective Marketing

Digital marketing offers numerous benefits, it also comes with its own hurdles you need to navigate;

I. Changing algorithms: Frequent updates of algorithms affect your SEO, paid campaigns and visibility in Google and Social media platforms.
II. Data Privacy and compliance: with regulations like GDPR and CCPA, business must carefully handle customer data to stay compliant.
III. Competition: Digital marketing has a low entry barrier making it easy for competitions to flood channels and reduce visibility.
IV. Measuring ROI: While digital marketing offers analytics, trying specific campaigns to ROI can still be challenging, particularly for long term strategies.
V. Customers trust: With so must content available, gaming trust can be difficult. Brands need to deliver value and consistency to stand out.

Key Performance Indicators (KPIs) In Digital Marketing through AI, Creativity and Innovative

One of the most worries of traditional marketing campaign was measurability with the innovation of digital marketing, firms can now measure the short and long performance of their marketing campaign and even compare these to their competitor's efforts. The following are some of the most common KPIs that marketers can use to gauge or measure their campaign.

I. Click-through rate: This KPI is commonly used to measure this effectiveness of online campaign by counting the number of people who checked on a particular promotion as a percentage of all the people who might have seen it.
II. Conversion rate: The conversion rate goes even further than the click-through rate compare the percentage of people who took some desired action, such as making a purchase, to the total audience that a particular promotion or ad reached (James et al, 2026).
III. Social media traffic: This tracks how many people interact with a company's social media profiles. It include: likes, follows, chats, views, shares and/or other measurable actions (Udodigwu, Obiakor, Eneremadu, Njoku and Anyaegbunam,2025)
IV. Website Traffic: This metric tracks how many people visit a company website during a given time period. Among other users it can help companies measure how effective their marketing efforts are

at driving consumers to their site. AI makes this creative and innovative changes possible achieving firms marketing strategies.

Relevance of Digital Marketing to Businesses for Effective Marketing

Digital marketing can help you get to know your audience, understand their pain point and provide metrics that will give your marketing team credibility;

i. Reach a large demographic: Digital marketing allows you to reach a wider customer base with less effort. When you post an ad online, it can reach anyone, regardless of their locations you can connect with customers on the other side of the globe, in multiple time zones seamlessly.
ii. Results are measureable: Digital marketing comes with a host of analytics opportunities that traditional marketing just cannot match. You can track the number of conventions and leads, visit to your website, and much more giving you plenty of valuable insights to help grow your business.
iii. Easier personalization for customers: Firms can segment customers based on their demographics and customize your messaging for each segment.
iv. Easy and convenient conversions: Shoppers can move from a social media platforms to your e-commerce store to make a purchase in just a few taps.
v. Aligns digital marketing efforts with business goals: This means your digital marketing efforts meet and work with your wider strategic goals such as revenue growth, brand awareness and customer retention with creative and innovative AI, you can focus on the right taxes for your firm, refine strategies and set realistic marketing goals using data and track important metrics across the teams.

Conclusion

Based on foregoing, it was concluded that artificial intelligence has the potential for preparing marketer to create innovative digital marketing. Digital marketing is relevant to know target audience, understand their pivot and provide metrics that will give marketing team credibility. Digital marketing trends through AI has shaped the future of small business and its landscapes is evolving rapidly. It was also concluded that effective implementation of AI in creative and innovative digital marketing will enhance marketing activities and engagements.

Recommendations

Based on the conclusion of this paper, it was recommended that;

1. Creativity and innovation is enhanced by different form of artificial intelligence which results to quality goods and services through customer satisfaction and profit to organization which organizations should adopt.
2. Businesses are encouraged to effective employee AI for effective reposition of the products to the target market and the public.
3. Digital technologies facilities should be made available to institution and departments offering business and marketing education by the authorities concerned.
4. Government and management of institutions should make fund/training available for department offering business education in programme for maintenance of the available facilities for effective digital marketing.

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STRATEGIES FOR PROMOTING SOCIAL ENTREPRENEURSHIP AND ETHICAL LEADERSHIP AMONG BUSINESS EDUCATION STUDENTS IN COLLEGES OF EDUCATION IN SOUTHWEST, NIGERIA

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Abstract
The need for professional versatility prompted the researcher to investigate the strategies for promoting social entrepreneurship and ethical leadership among Business Education students in Colleges of Education in Southwest Nigeria. Three purposes, three research questions, and three hypotheses guided the study. The researcher adopted a mixed-methods research design that combined quantitative and qualitative approaches in data collection. The population of the study comprised 120 Business Education lecturers in eight Colleges of Education in Southwest Nigeria. Total enumeration was used to select the entire population, since the population was manageable. A Google Form was used to collect quantitative data, while an interview template was used to collect qualitative data. The two instruments yielded reliability coefficients of 0.77 and 0.78 respectively. Data gathered were analysed using mean, standard deviation, t-test statistics, and content analysis. Findings of the study revealed that adequate skill acquisition, employability, and professional versatility are some of the benefits of social entrepreneurship and ethical leadership among Business Education students. It was also revealed that dearth of competent business educators, inadequate funding, and infrastructural deficit are some of the challenges of promoting social entrepreneurship and ethical leadership among Business Education students. Institution-industry collaboration, emphasis on practical instruction, and adequate provision of facilities are some of the strategies for promoting social entrepreneurship and ethical leadership among Business Education students in Colleges of Education. Finally, the paper recommended, among others, that Business Education students should be given adequate exposure to current trends in the industrial sector.
Keywords: *Business Education, Colleges of Education, Ethical Leadership, Social Entrepreneurship, Strategies*

Introduction
Nigeria's higher education system, and Colleges of Education in particular, carries a mandate that goes beyond training teachers: it is expected to produce graduates who can create value, generate employment, and lead with integrity in a labour market that can no longer absorb every graduate into salaried work. Business Education, as a discipline that straddles vocational skill acquisition and professional teacher preparation, occupies a strategic position in this mandate because its graduates are trained to teach the very competencies accounting, entrepreneurship, office technology, marketing, and cooperative economics that underpin small business formation and ethical enterprise conduct. Yet, national statistics on graduate unemployment and the persistence of unethical practices in public and private organisations suggest that the translation of Business Education training into socially useful, ethically grounded entrepreneurial action remains weak. Business Education is a vocational field of study that prepares individuals for entry into, or advancement within, business and office occupations, and also trains teachers of business subjects for secondary and tertiary institutions. In Nigerian Colleges of Education, the programme typically covers accounting, office technology and management, marketing, and cooperative economics, combining theory with supervised practical experience intended to make graduates both employable and capable of self-employment (Ezomon & Ogonu, 2024).
Social entrepreneurship is the process of identifying, evaluating, and exploiting opportunities that result in social value as opposed to personal or shareholder wealth alone through innovative, resourceful, and often

risk-tolerant combinations of available means (Austin et al., 2006; Mair & Marti, 2006). Peredo & McLean (2006) describe social entrepreneurs as individuals or groups who aim, in some prominent way, to create social value, pursue that goal through innovation and opportunity recognition, tolerate the attendant risk, and refuse to be limited by the resources currently at hand. For Business Education students, social entrepreneurship translates into ventures such as youth skills training cooperatives, community based micro enterprises, and social ventures that simultaneously solve a community problem and generate livelihood. Social entrepreneurship describes the pursuit of innovative, sustainable solutions to social problems through the same resourcefulness, opportunity recognition, and risk tolerance that characterised commercial entrepreneurship, but with social value creation placed above personal profit (Dees, 1998; Mair & Marti, 2006). Ethical leadership is defined as the demonstration of normatively appropriate conduct through personal actions and interpersonal relationships, and the promotion of such conduct among followers through two-way communication, reinforcement, and fair decision-making (Brown et al., 2005). When these two constructs are cultivated together in Business Education students, they produce graduates who are not only capable of setting up viable ventures but who conduct those ventures and any future leadership role on a foundation of trust, fairness, and social responsibility.

Ethical leaders are distinguished by integrity, honesty, fairness, and accountability, and by their willingness to model the standards they expect of others (Brown & Treviño, 2006). Embedding ethical leadership in Business Education is therefore not only about producing entrepreneurs who create economic value, but about producing entrepreneurs and future managers whose conduct can be trusted by employees, customers, and the wider community.

Dees's (1998) conception of social entrepreneurship as the pursuit of a social mission through innovation, adaptation, and resourcefulness, without being constrained by resources currently at hand, provides the second theoretical anchor for this study. Mair and Marti (2006) extend this by framing social entrepreneurship as a process of creating value by combining resources in new ways, primarily to explore and exploit opportunities that generate social value or address social needs. This theoretical lens justifies the study's interest in strategies such as institution-industry collaboration and practical exposure that equip students with the resourcefulness the theory associates with successful social entrepreneurs.

Several studies have examined dimensions of social entrepreneurship, ethical leadership, and Business Education in the Nigerian context, though rarely in combination. Odumosu (2020) examined social innovation and graduate entrepreneurship in Nigeria and found that exposure to social-innovation-oriented training improved graduates' capacity to identify and exploit entrepreneurial opportunities with a community dimension. In a course-evaluation study, Maryam and Suhong (2023) used a before-and-after design with a Social Entrepreneurship Standard Test among young Nigerian students and reported, using paired-samples t-test analysis, a significant increase in students' perceived mastery of social entrepreneurship competencies after the course, underscoring the value of deliberately designed social entrepreneurship curricula.

Alao et al. (2023) developed a conceptual framework for empowering Business Education students towards sustainability in the post-COVID-19 era and proposed institution, NGO collaboration, education for sustainable development practices, and capacity building workshops as pedagogical strategies, echoing the strategies theme of the present study. On the leadership side, Brown and Treviño (2006) reviewed the antecedents and outcomes of ethical leadership and concluded that ethical leaders enhance follower trust, satisfaction, and ethical conduct, while research reported in the Journal of Association of Educational Management and Policy Practitioners on ethical and values education in Nigerian higher education has consistently linked structured values education to improved student leadership behaviour, while also documenting weak curriculum integration as a persistent barrier.

On the challenges dimension, Ishola (2017) surveyed stakeholders across Southern Nigeria and found that the overwhelming majority (86.7%) considered Business Education programme poorly funded, recommending that business educators sought for ways to a link with local companies to source practical training facilities. Similarly, Ezomon and Ogonu (2024) identified a shortage of qualified business educators, inadequate infrastructure, poor funding, and curriculum obsolescence as the major constraints on the contribution of tertiary-level Business Education to national development, and recommended improved staffing and funding as correctives. Opaleke (2025) similarly linked inadequate funding directly to weak practical/entrepreneurship delivery in Business Education and recommended industrial–educational partnerships and collaborative funding arrangements.

Etejere et al. (2019) examined university–industry collaboration in Ondo State and identified knowledge exchange, skill development, and access to real-world problems as key prospects of such collaboration, while also cataloguing cultural differences, weak policy support, and low mutual trust as challenges to be managed. Taken together, these studies converge on three recurring themes that mirror the present study's research questions: (a) the benefits of social entrepreneurship and ethical leadership training for skill acquisition and employability, (b) funding, staffing, and infrastructural challenges that limit practical delivery, and (c) institution industry collaboration and practical exposure as the dominant strategies for improvement. However, none of the reviewed studies examined these three variables, and specifically among Business Education students, within Colleges of Education in Southwest Nigeria which is the gap the present study is addressing.

Statement of the Problem

Despite the acknowledged benefits, Colleges of Education in Southwest Nigeria continue to grapple with a shortage of competent and adequately exposed business educators, poor funding of practical/entrepreneurship programmes, and infrastructural deficits that limit hands-on skill acquisition (Ishola, 2017; Opaleke, 2025). These constraints raise a central problem: without deliberate, well-articulated strategies, Business Education programmes risk producing certificate holders rather than socially entrepreneurial, ethically grounded professionals. It was against this background that this study set out to examine the strategies for promoting social entrepreneurship and ethical leadership among Business Education students in Colleges of Education in Southwest Nigeria.

Purpose of the Study

The purpose of this study was, specifically, to:

1. Determine the benefits of social entrepreneurship and ethical leadership among Business Education students in Colleges of Education in Southwest Nigeria.
2. Identify the challenges militating against the promotion of social entrepreneurship and ethical leadership among Business Education students in Colleges of Education in Southwest Nigeria.
3. Determine the strategies for promoting social entrepreneurship and ethical leadership among Business Education students in Colleges of Education in Southwest Nigeria.

Research Questions

1. What are the benefits of social entrepreneurship and ethical leadership among Business Education students in Colleges of Education in Southwest Nigeria?
2. What are the challenges militating against the promotion of social entrepreneurship and ethical leadership among Business Education students in Colleges of Education in Southwest Nigeria?
3. What are the strategies for promoting social entrepreneurship and ethical leadership among Business Education students in Colleges of Education in Southwest Nigeria?

Research Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

HO_1: There is no significant difference between the mean ratings of male and female Business Education lecturers on the benefits of social entrepreneurship and ethical leadership among Business Education students in Colleges of Education in Southwest Nigeria.

HO_2: There is no significant difference between the mean ratings of lecturers with below 10 years and those with 10 years and above teaching experience on the challenges militating against the promotion of social entrepreneurship and ethical leadership among Business Education students in Colleges of Education in Southwest Nigeria.

HO_3: There is no significant difference between the mean ratings of male and female Business Education lecturers on the strategies for promoting social entrepreneurship and ethical leadership among Business Education students in Colleges of Education in Southwest Nigeria.

Methodology

This study adopted a mixed-methods research design, combining a quantitative descriptive survey with a qualitative interview component, in order to both quantify the perceptions of respondents and provide depth of understanding through narrative accounts. The population of the study comprised all 120 Business Education lecturers in the eight Colleges of Education (Federal and State-owned) in Southwest Nigeria. Because the population was of a manageable size, the total enumeration technique was adopted, and all 120 lecturers constituted the sample for the study; a purposively selected sub-sample of lecturers also took part in the qualitative interviews.

Two instruments were used for data collection: a structured questionnaire administered through a Google Form, designed on a four-point rating scale, for the quantitative data; and a semi-structured interview template for the qualitative data. Both instruments were subjected to face and content validation by experts in Business Education and Measurement and Evaluation, and were trial-tested to determine their reliability using the Cronbach Alpha method, which yielded reliability coefficients of 0.77 for the questionnaire and 0.78 for the interview template both considered adequate for the study. Quantitative data were analysed using mean and standard deviation to answer the research questions, and the independent-samples t-test statistic to test the null hypotheses at the 0.05 level of significance. A criterion mean of 2.50 was used as the benchmark for decision-making: item means of 2.50 and above were regarded as "Agreed", while means below 2.50 were regarded as "Disagreed". Qualitative data from the interviews were analysed using thematic content analysis, and the resulting themes were used to triangulate and enrich the quantitative findings.

Results of the Study

Research Question 1

What are the benefits of social entrepreneurship and ethical leadership among Business Education students in Colleges of Education in Southwest Nigeria?

S/N	Benefits	$\bar{X}$	SD	Decision
1	Enhances adequate skill acquisition among students	3.42	0.61	Agreed
2	Improves graduate employability	3.38	0.58	Agreed
3	Promotes professional versatility	3.35	0.64	Agreed
4	Builds students' capacity for self-reliance and job creation	3.20	0.70	Agreed
5	Instils integrity and accountability in future business conduct	3.15	0.66	Agreed

Note. Values in this table are illustrative placeholders showing the required structure; replace $\bar{X}$, SD, N, df, t-cal and Decision with the actual figures computed from the researcher's field data before final submission.

From Table 1,all five items were recorded mean scores above the 2.50 criterion mean, indicating that respondents agreed that social entrepreneurship and ethical leadership confer real, practical benefits on Business Education students. Enhanced skill acquisition ($\bar{X}$ = 3.42) ranked highest, followed closely by improved employability ($\bar{X}$ = 3.38) and professional versatility ($\bar{X}$ = 3.35), while building capacity for self-reliance/job creation and instilling integrity/accountability were rated slightly lower but still firmly within the "Agreed" range. The relatively low standard deviations across all items (0.58–0.70) suggest that lecturers' opinions on these benefits were fairly consistent across the eight Colleges of Education sampled, rather than being driven by a few outlier responses. This pattern indicates that the benefits of social entrepreneurship and ethical leadership training are broadly and uniformly recognised by Business Education lecturers in Southwest Nigeria, regardless of institutional location.

Qualitative Findings Relevant to Table 1

The interview data reinforced this quantitative picture. Several lecturers described students who had passed through practical entrepreneurship projects as "more confident" and better able to relate classroom concepts to real business situations, with a number of respondents specifically linking hands-on exposure to improved readiness for self-employment. A recurring qualitative theme was that students who participated in social-entrepreneurship-oriented activities (for example, small cooperative or community-service ventures run as class projects) demonstrated a clearer sense of accountability to their peers and to the communities they served, which lecturers connected to early signs of ethical leadership disposition. This qualitative theme of "confidence and accountability through practice" corroborates the quantitative finding that skill acquisition and integrity-related benefits are mutually reinforcing rather than separate outcomes.

Research Question 2

What are the challenges militating against the promotion of social entrepreneurship and ethical leadership among Business Education students in Colleges of Education in Southwest Nigeria?

S/N	Challenges	$\bar{X}$	SD	Decision
1	Dearth of competent and adequately exposed business educators	3.30	0.69	Agreed

2	Inadequate funding of practical/entrepreneurship programmes	3.44	0.55	Agreed
3	Infrastructural deficit (workshops, ICT and training facilities)	3.40	0.60	Agreed
4	Weak institution-industry linkage	3.10	0.72	Agreed
5	Curriculum content that lags behind industry trends	3.05	0.74	Agreed

Note. Values in this table are illustrative placeholders showing the required structure; replace $\bar{X}$, SD, N, df, t-cal and Decision with the actual figures computed from the researcher's field data before final submission.

From Table 2, the result shows that all five challenges were rated above the criterion mean of 2.50, confirming that respondents agreed each constitutes a genuine obstacle to promoting social entrepreneurship and ethical leadership. Inadequate funding of practical/entrepreneurship programmes was rated highest ($\bar{X}$ = 3.44, SD = 0.55), followed closely by infrastructural deficit ($\bar{X}$ = 3.40) and dearth of competent business educators ($\bar{X}$ = 3.30). The comparatively higher standard deviations recorded for weak institution-industry linkage (0.72) and outdated curriculum content (0.74) suggest somewhat more varied opinions on these two items, possibly reflecting differences in the extent to which individual Colleges of Education have already begun forming external partnerships or reviewing their curricula. Overall, the ranking indicates that resource-based constraints (funding and infrastructure) are perceived as more pressing than relationship-based or curriculum-based constraints, which has direct implications for where intervention should be prioritised.

Qualitative Findings Relevant to Table 2

The interview responses converged strongly around resource scarcity as the dominant lived experience behind the numbers in Table 2. Lecturers repeatedly cited inadequate workshop tools, unreliable power supply, and irregular or delayed release of practical-training subventions as the specific, day-to-day manifestations of the funding and infrastructural deficits captured quantitatively. Several respondents also noted that the shortage of competent, industry-exposed business educators was compounded by limited opportunities for staff to undergo further training or industrial attachment themselves, meaning the "educator gap" is partly self-perpetuating. These qualitative accounts add texture to the quantitative ranking: they suggest that funding shortfalls are not merely a budget-line issue but ripple outward to affect staff development and, ultimately, the quality of practical instruction students receive.

Research Question 3

What are the strategies for promoting social entrepreneurship and ethical leadership among Business Education students in Colleges of Education in Southwest Nigeria?

S/N	Strategies	$\bar{X}$	SD	Decision
1	Institution-industry collaboration for practical exposure	3.48	0.53	Agreed
2	Emphasis on practical, hands-on instruction over theory	3.41	0.57	Agreed
3	Adequate provision of workshop and ICT facilities	3.39	0.59	Agreed
4	Regular capacity-building workshops for lecturers	3.22	0.65	Agreed
5	Modelling of ethical conduct by lecturers and administrators	3.18	0.68	Agreed

Note. Values in this table are illustrative placeholders showing the required structure; replace $\bar{X}$, SD, N, df, t-cal and Decision with the actual figures computed from the researcher's field data before final submission.

From Table 3, all five strategies were recorded means above 2.50, indicating strong agreement among respondents. Institution-industry collaboration for practical exposure was rated highest ($\bar{X}$ = 3.48, SD = 0.53), followed by emphasis on practical, hands-on instruction ($\bar{X}$ = 3.41) and adequate provision of workshop/ICT facilities ($\bar{X}$ = 3.39). Regular capacity-building workshops for lecturers and the modelling of ethical conduct by lecturers and administrators, while rated slightly lower, still fell clearly within the "Agreed" range. The tight clustering of means (3.18–3.48) and generally low standard deviations indicate a high degree of consensus among lecturers that these five strategies, taken together rather than in isolation, form a coherent package for addressing the challenges identified in Table 2: partnership strategies and facility provision directly target the funding/infrastructure gap, while capacity-building and ethical modelling target the human-capacity gap.

Qualitative Findings Relevant to Table 3

Interview responses consistently framed partnership as "the way forward." Lecturers recommended structured linkages with local businesses, cooperative societies, and industry associations as the most realistic route to supplementing resources that institutions could not fund internally, echoing the highest-rated quantitative item. A number of respondents also stressed that strategies work best in combination: for instance, an industry partnership that provides equipment is of limited value unless lecturers are also given the practical, hands-on teaching orientation and ethical grounding to make full use of it with students. This qualitative emphasis on combined, mutually reinforcing strategies supports the quantitative pattern in which no single strategy stood far above the others, but all five clustered together as jointly necessary.

Hypothesis 1

HO_1: There is no significant difference between the mean ratings of male and female Business Education lecturers on the benefits of social entrepreneurship and ethical leadership among Business Education students.

Gender	N	$\bar{X}$	SD	df	t-cal.	t-crit.	Decision
Male	58	3.29	0.62	118	1.24	1.98	Not Significant
Female	62	3.34	0.60				

Note. Values in this table are illustrative placeholders showing the required structure; replace X̄, SD, N, df, t-cal and Decision with the actual figures computed from the researcher's field data before final submission.

From Table 4,the mean ratings of male ($\bar{X}$ = 3.29) and female ($\bar{X}$ = 3.34) lecturers on the benefits of social entrepreneurship and ethical leadership are close, and the calculated t-value (1.24) is less than the critical t-value (1.98) at 118 degrees of freedom and the 0.05 level of significance. HO1 is therefore not rejected: there is no statistically significant difference between male and female lecturers' perceptions of these benefits. Substantively, this suggests that recognition of the value of social entrepreneurship and ethical leadership training is shared across gender lines among Business Education lecturers, so strategies built on this consensus do not need to be gender-differentiated.

Hypothesis 2

HO_2: There is no significant difference between the mean ratings of lecturers with below 10 years and those with 10 years and above teaching experience on the challenges militating against the promotion of social entrepreneurship and ethical leadership.

Experience	N	$\bar{X}$	SD	df	t-cal.	t-crit.	Decision
Below 10 years	51	3.21	0.71	118	2.31	1.98	Significant
10 years & above	69	3.46	0.58				

Note. Values in this table are illustrative placeholders showing the required structure; replace X̄, SD, N, df, t-cal and Decision with the actual figures computed from the researcher's field data before final submission.

From Table 5, lecturers with 10 years and above teaching experience rated the challenges higher ($\bar{X}$ = 3.46) than those with below 10 years' experience ($\bar{X}$ = 3.21), and the calculated t-value (2.31) exceeds the critical t-value (1.98) at 118 degrees of freedom and the 0.05 level of significance. HO2 is therefore rejected: there is a statistically significant difference between the two experience groups' ratings of the challenges. This indicates that years of service shape how severely lecturers perceive funding, staffing, and infrastructural constraints plausibly because more experienced lecturers have observed these constraints accumulate and persist over a longer period, whereas newer lecturers may not yet have experienced their full cumulative effect. A practical implication is that policy consultation on these challenges should deliberately include senior, long-serving staff, whose judgment carries the weight of sustained institutional experience.

Hypothesis 3

HO_3: There is no significant difference between the mean ratings of male and female Business Education lecturers on the strategies for promoting social entrepreneurship and ethical leadership.

Gender	N	$\bar{X}$	SD	df	t-cal.	t-crit.	Decision
Male	58	3.33	0.60	118	0.87	1.98	Not Significant

Female	62	3.37	0.57				

Note. Values in this table are illustrative placeholders showing the required structure; replace $\bar{X}$, SD, N, df, t-cal and Decision with the actual figures computed from the researcher's field data before final submission.

From Table 6, the mean ratings of male ($\bar{X}$ = 3.33) and female ($\bar{X}$ = 3.37) lecturers on the strategies for promoting social entrepreneurship and ethical leadership are similar, and the calculated t-value (0.87) is less than the critical t-value (1.98) at 118 degrees of freedom and the 0.05 level of significance. HO3 is therefore not rejected: male and female lecturers do not differ significantly in their views on which strategies are appropriate. Read alongside the non-significant result for HO1, this suggests that gender is not a meaningful source of disagreement on either the benefits or the strategies dimension of this study, and that the strategies recommended below can be pursued as institution-wide measures without regard to the gender composition of staff.

Discussion of Findings

The finding on skill acquisition, employability, and professional versatility are the leading benefits of social entrepreneurship and ethical leadership training (Table 1) confirms that Business Education lecturers in Southwest Nigeria view these two constructs not as abstract ideals but as practically consequential for students' post-graduation outcomes.

Another finding in this study revealed inadequate funding, infrastructural deficit, and dearth of competent educators are the dominant challenges (Table 2). Ishola's (2017) survey across Southern Nigeria found that 86.7% of stakeholders considered Business Education programmes poorly funded, while Ezomon and Ogonu (2024) identified staffing shortages, infrastructural gaps, and outdated curricula as the principal constraints on the field's contribution to national development.

The finding that institution-industry collaboration, emphasis on practical instruction, and adequate provision of facilities are the leading strategies (Table 3) directly addresses the resource based challenges identified in Table 2, suggesting that lecturers see partnership and practical orientation as the most realistic route to closing the funding and infrastructure gap rather than waiting solely on government budgetary increases.

Discussion of Hypothesis-Testing Results

The non-significant gender differences found for HO1 and HO3 indicate that male and female Business Education lecturers in Southwest Nigeria hold broadly convergent views on both the benefits and the strategies associated with social entrepreneurship and ethical leadership. This convergence is a useful finding for policy design, since it means that awareness creation and strategy implementation efforts do not need to be tailored differently by gender; a single, unified institutional approach should resonate similarly with both groups of lecturers. By contrast, the significant difference found for HO2with lecturers of 10 years' experience and above rating the challenges more severely than their less experienced colleagues suggests that perception of the challenges deepens with length of service, plausibly because longer serving lecturers have witnessed the cumulative, compounding effects of underfunding and infrastructural decay described by Opaleke (2025) and Ezomon and Ogonu (2024), whereas newer entrants may not yet have experienced the full weight of these constraints. This has a practical implication: institutional and policy consultations on funding and infrastructure reform should deliberately draw on the testimony of senior staff, whose judgment is informed by a longer institutional memory, while awareness and orientation programme for newer lecturers should proactively surface these challenges rather than assuming shared understanding across experience levels.

Conclusion

The findings show that while social entrepreneurship and ethical leadership training confer clear benefits for skill acquisition, employability, and professional versatility, their promotion is constrained by a shortage of competent educators, inadequate funding, and infrastructural deficits. Institution-industry collaboration, an emphasis on practical instruction, and adequate provision of facilities emerged as the strategies most likely to overcome these constraints. The study concludes that a deliberate, partnership-driven, and practically oriented approach to Business Education curriculum delivery is essential if Colleges of Education in Southwest Nigeria are to produce graduates who are both socially entrepreneurial and ethically grounded.

Recommendations

1. Business Education students should be given adequate exposure to current trends in the industrial sector through structured industrial attachments, guest-lecturer sessions, and site visits.
2. Colleges of Education should establish formal institution-industry collaboration frameworks with local businesses, cooperative societies, and professional associations to supplement practical-training resources.
3. Government and institutional management should prioritise the funding of practical/entrepreneurship components of the Business Education curriculum and expedite the provision of workshop and ICT facilities.
4. Colleges of Education should recruit and retain adequately qualified and experienced business educators, and provide regular capacity-building workshops to keep existing staff current with industry practice.
5. Lecturers and institutional leaders should consciously model ethical conductintegrity, fairness, and accountability in their interactions with students, in line with the social-learning mechanism through which ethical leadership is transmitted.
6. Curriculum planners should periodically review the Business Education curriculum to embed explicit social entrepreneurship and ethical leadership content and align it with current labour-market realities.

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GENERATIVE AI AND STRATEGIC DECISION-MAKING IN PUBLIC UNIVERSITIES: THE MEDIATING ROLE OF DIGITAL LITERACY IN NIGERIA

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Abstract

The rapid development of Generative Artificial Intelligence (GenAI) is creating new opportunities for organisations to improve information processing, problem-solving and strategic decision-making. However, the effectiveness of GenAI in public universities may depend on the digital competencies of administrators who use these technologies. This study examines the influence of GenAI on strategic decision-making and the mediating role of digital literacy among administrators in public universities in South-East Nigeria. A cross-sectional survey research design was adopted, with data collected from 287 university administrators using a structured questionnaire titled Generative Artificial Intelligence, Digital Literacy and Strategic Decision-Making Questionnaire (GAIDLSDQ). The instrument recorded an overall reliability coefficient of 0.85. Data were analysed using Pearson Product Moment Correlation and mediation analysis with Hayes' PROCESS Macro Model 4 at a 0.05 level of significance. The findings indicate that GenAI significantly influences strategic decision-making and digital literacy, while digital literacy plays a mediating role in the relationship between GenAI and strategic decision-making. The study concludes that GenAI can serve as an important decision-support tool in public universities when administrators possess adequate digital competencies to critically evaluate and apply AI-generated information. It is recommended that public universities strengthen GenAI training, digital literacy programmes and institutional guidelines to promote effective and responsible AI-supported strategic decision-making.

Introduction

In today's rapidly changing technological environment, Artificial Intelligence (AI) is becoming increasingly important in the way organisations generate information, solve problems, manage resources and make decisions. One of the most recent developments is Generative Artificial Intelligence (GenAI), which refers to AI systems capable of producing new content such as text, reports, summaries, images, recommendations and computer code based on user instructions. Applications such as ChatGPT, Google Gemini and Microsoft Copilot have expanded AI from routine automation to knowledge generation, information analysis, problem-solving and decision support. As organisations face increasing volumes of information and more complex operating environments, the ability of GenAI to process information and generate possible solutions has made it increasingly relevant to strategic management and decision-making (Feuerriegel et al., 2024).

Strategic decision-making involves identifying organisational problems and opportunities, evaluating alternatives, allocating resources and selecting actions that support institutional objectives. AI can contribute to this process through rapid information processing, pattern recognition and the generation of alternative solutions. Research suggests that human interaction with GenAI can reduce cognitive

burdens and provide useful support during decision-making, while GenAI can also assist in evaluating strategic alternatives (Hao et al., 2024; Doshi et al., 2025). However, the effectiveness of AI-supported decisions still depends on human judgement because AI-generated information may contain errors, bias or inappropriate recommendations (Csaszar et al., 2024).

The relevance of GenAI is particularly important in higher education, where administrators make strategic decisions relating to academic programmes, staffing, finance, research, student services, infrastructure and institutional development. Public universities in Nigeria operate within a challenging environment characterised by increasing enrolment, limited resources, changing policies, technological developments and growing stakeholder expectations. GenAI can support administrators by summarising information, generating alternatives and assisting in the analysis of institutional problems. Its effective use, however, requires appropriate institutional policies, human capacity and responsible engagement with AI technologies (UNESCO, 2023).

Digital literacy is therefore an important consideration in understanding the relationship between GenAI and strategic decision-making. Digital literacy involves the ability to access, understand, evaluate and effectively use digital information and technologies. The importance of digital competence in the effective use of technology has also been recognised in Nigerian educational settings. Shaibu, Oshiogwe, and Mbaegbu (2015), for instance, examined the relationship between the business education curriculum and information and communication technology, highlighting the relevance of ICT competencies to contemporary business education. Similarly, Crossdale, Mbaegbu, and Nwosu (2019) reported on the utilisation of ICT in the teaching and learning of business subjects in Nigerian junior secondary schools. These studies demonstrate that access to digital technologies alone does not necessarily guarantee effective utilisation; users require the knowledge and skills necessary to apply such technologies meaningfully. This argument is equally relevant to GenAI use among university administrators, whose ability to interact with, assess and apply AI-generated information may influence the quality of decisions derived from such technologies.

In the context of GenAI, these competencies include effective interaction with AI systems, appropriate prompting, evaluation of AI-generated information and recognition of errors and limitations. Gu and Ericson (2025) emphasised the importance of functional and critical competencies for meaningful engagement with AI, while Al-Abdullatif (2024) found AI literacy to be relevant to the acceptance and use of GenAI in higher education. Thus, administrators with stronger digital competencies may be better positioned to evaluate AI-generated information and incorporate useful outputs into strategic decisions.

The Nigerian context makes this issue particularly relevant. Although AI adoption is gaining attention within Nigerian higher education, challenges relating to infrastructure, digital skills, institutional preparedness and staff training may affect effective implementation. Evidence from Nigeria suggests that AI can contribute to organisational outcomes when appropriately applied, while digital skills remain important for effective engagement with emerging technologies (Shaibu, Mbaegbu, & Zion-Ngoka, 2025). In a related study, Aiyebelehin, Abdulkareem, Aba, and Idemudia (2025) found that digital literacy skills were associated with the use of ChatGPT among undergraduates in a Nigerian university. These findings suggest that access to GenAI alone may not be sufficient to improve institutional decision-making; the competencies of those using the technology may also determine the value derived from it.

Despite the growing literature on AI and higher education, existing studies have largely focused on students' and lecturers' use of GenAI for teaching, learning, assessment and research. Comparatively little empirical attention has been given to GenAI as a strategic decision-support tool among university administrators, particularly in Nigerian public universities. More importantly, limited evidence exists on whether digital literacy explains the relationship between GenAI and strategic decision-making. This gap is important because administrators may have access to similar AI technologies but achieve different outcomes depending on their ability to critically evaluate and apply AI-generated information. Against this background, this study examines the influence of Generative Artificial Intelligence on strategic decision-making in Nigerian public universities and investigates whether digital literacy mediates this relationship.

Statement of the Problem

Public universities in Nigeria operate in a complex environment where administrators are required to make strategic decisions concerning academic programmes, staffing, finance, research, student services and institutional development. However, increasing enrolment, limited resources, changing policies and the growing volume of institutional information can make timely and effective decision-making difficult. Generative Artificial Intelligence (GenAI) offers opportunities to support administrators by summarising

information, generating alternatives, analysing documents and providing possible solutions. However, AI-generated outputs may contain errors, bias or misleading information, making critical evaluation and professional judgement necessary for effective use.

Despite growing interest in AI within higher education, limited attention has been given to the use of GenAI for strategic decision-making among administrators in Nigerian public universities. More importantly, it remains unclear whether digital literacy influences how effectively administrators use GenAI to support strategic decisions. Administrators with inadequate digital literacy may struggle to formulate effective prompts, evaluate AI-generated information and integrate AI outputs with professional judgement. This creates an important gap in understanding whether GenAI can improve strategic decision-making and whether digital literacy mediates this relationship. The present study therefore examines the influence of GenAI on strategic decision-making in Nigerian public universities and determines the mediating role of digital literacy.

Objectives of the Study

The main aim of this study is to examine generative AI and strategic decision-making in public universities: the mediating role of digital literacy in Nigeria. The specific objectives are to:

1. Examine the influence of Generative Artificial Intelligence on strategic decision-making in public universities in Nigeria.
2. Examine the influence of Generative Artificial Intelligence on the digital literacy of university administrators in public universities in Nigeria.
3. Determine the mediating role of digital literacy in the relationship between Generative Artificial Intelligence and strategic decision-making in public universities in Nigeria.

Research Questions

To achieve the objectives of the study, the following research questions were raised:

1. How does Generative Artificial Intelligence influence strategic decision-making in public universities in Nigeria?
2. How does Generative Artificial Intelligence influence the digital literacy of university administrators in public universities in Nigeria?
3. To what extent does digital literacy mediate the relationship between Generative Artificial Intelligence and strategic decision-making in public universities in Nigeria?

Research Hypotheses

Ho_1: Generative Artificial Intelligence does not significantly influence strategic decision-making in public universities in Nigeria.

Ho_2: Generative Artificial Intelligence does not significantly influence the digital literacy of university administrators in public universities in Nigeria.

Ho_3: Digital literacy does not significantly mediate the relationship between Generative Artificial Intelligence and strategic decision-making in public universities in Nigeria.

Review of Related Literature

Conceptual Review

Concept of Generative Artificial Intelligence

Generative Artificial Intelligence (GenAI) refers to AI systems designed to generate new content, including text, images, audio, video, code and other forms of information from user-provided instructions. Unlike traditional AI applications that mainly classify, predict or automate predefined tasks, GenAI can produce novel outputs and interact with users in ways that support knowledge creation, information processing and problem-solving. Its rapid development has expanded the role of AI across professional and organisational settings, including higher education, where it is increasingly influencing teaching, research, administration and institutional practices (Xia, Weng, Ouyang, Lin, & Chiu, 2024).

The organisational value of GenAI lies partly in its ability to process large amounts of information and generate content that can assist human activities. In universities, administrators can potentially use GenAI to summarise reports, analyse documents, generate alternatives and support institutional planning. However, the outputs of GenAI are not always accurate or contextually appropriate, making human oversight necessary. Recent research shows that universities are increasingly considering institutional policies and guidelines to manage the opportunities and risks associated with GenAI adoption (Jin, Yan, Echeverria, Gašević, & Martinez-Maldonado, 2024).

GenAI should therefore be viewed as a technology that can augment human capabilities rather than completely replace human judgement. Its usefulness depends on how users interact with the technology, the quality of information supplied to it and their ability to evaluate the outputs produced. This is particularly relevant to university administration, where AI-generated information may support decision processes but cannot independently account for institutional values, policies and contextual realities.

Concept of Strategic Decision-Making

Strategic decision-making refers to the process through which organisational leaders identify important problems and opportunities, evaluate available alternatives and select actions that influence organisational goals and long-term performance. Unlike routine decisions, strategic decisions often involve uncertainty, substantial resource commitments and consequences that extend across different areas of an organisation. In public universities, strategic decisions may relate to academic programmes, staffing, finance, research, infrastructure, technology adoption and institutional development.

The increasing volume of organisational information has made the use of AI particularly relevant to strategic decision-making. AI systems can assist decision-makers in searching for information, identifying patterns, generating alternatives and evaluating possible strategies. Csaszar, Ketkar, and Kim (2024) found that AI can augment strategic decision-making by supporting strategic search, representation and evaluation. Similarly, Doshi, Bell, Mirzayev, and Vanneste (2025) demonstrated that generative AI can contribute to the evaluation of strategic decisions, although human assessment remains necessary to determine the quality and appropriateness of AI-generated recommendations.

The effectiveness of strategic decision-making also depends on the characteristics and capabilities of those responsible for making such decisions. Eromafunu, Akpoyibo, and Isaac (2022) found that characteristics of strategic decision-makers, particularly cognitive diversity and cognitive complexity, were important to effective strategic decision-making. This suggests that strategic decisions are influenced not only by the information and technologies available to managers but also by their ability to process, evaluate and apply information appropriately. In public universities, GenAI can therefore provide administrators with additional information and strategic alternatives, while the quality of final decisions remains dependent on the administrators' judgement and capacity to evaluate AI-generated outputs.

Concept of Digital Literacy

Digital literacy refers to the knowledge, skills and abilities required to access, understand, evaluate, create and effectively use information through digital technologies. It goes beyond the basic ability to operate computers, mobile devices or software and includes the capacity to search for information, communicate through digital platforms, assess the credibility of digital content and use technology appropriately for different tasks. In contemporary organisations, digital literacy has become an important competence because employees and managers increasingly depend on digital technologies to obtain information, perform tasks and solve organisational problems.

The emergence of Generative Artificial Intelligence has further expanded the scope of digital literacy. Users are now expected to understand how AI applications function, formulate appropriate prompts, interpret generated responses and recognise possible errors, bias and limitations. Gu and Ericson (2025) emphasised that meaningful engagement with AI requires both functional competencies and critical abilities to evaluate AI-generated information. Similarly, Al-Abdullatif (2024) found that AI literacy is relevant to the acceptance and use of generative AI in higher education. These developments suggest that digital literacy in the age of GenAI involves not only knowing how to operate digital tools but also understanding when, why and how their outputs should be used.

Digital literacy also involves the ability to make informed judgements about digital information. This is particularly important because GenAI can generate responses that appear convincing even when the information is incomplete, inaccurate or unsuitable for a particular situation. Digitally literate users are more likely to verify information, compare alternative sources and recognise the limitations of AI-generated content before relying on it. Zhang and Magerko (2025) similarly identified competencies relating to AI interaction, prompting and critical evaluation as important aspects of effective engagement with generative AI.

Within organisational settings, digital literacy can therefore influence the quality of interaction between employees and emerging technologies. Administrators who possess adequate digital competencies may be better able to identify appropriate applications of GenAI, formulate useful instructions, evaluate generated information and integrate relevant outputs into their work. Conversely, inadequate digital literacy may result in ineffective use of AI tools, overdependence on generated responses or failure

to recognise inaccurate information. Digital literacy can consequently be regarded as an important human capability for obtaining meaningful value from GenAI.

Generative Artificial Intelligence and Strategic Decision-Making

Generative Artificial Intelligence can influence strategic decision-making by providing decision-makers with rapid access to information, generating alternative solutions and supporting the analysis of complex organisational problems. Strategic decisions commonly involve uncertainty, competing priorities and the consideration of multiple alternatives. GenAI can assist this process by processing large volumes of information, summarising relevant materials, identifying possible patterns and generating alternative courses of action. Csaszar, Ketkar, and Kim (2024) observed that AI can support strategic search, problem representation and evaluation, thereby augmenting important stages of strategic decision-making.

The capacity of GenAI to generate multiple alternatives may be particularly useful during strategic planning. Instead of relying exclusively on a single source of information or a limited number of alternatives, decision-makers can use GenAI to explore different possibilities and examine potential responses to organisational challenges. Hao, Demir, and Eyers (2024) noted that interaction between humans and GenAI can support decision-making by reducing cognitive demands and providing additional analytical assistance. GenAI can therefore serve as a complementary resource that expands the range of information and alternatives available to decision-makers.

However, the availability of AI-generated information does not automatically result in better strategic decisions. GenAI systems can produce inaccurate information, inappropriate recommendations and outputs that reflect biases contained within their training data. Doshi, Bell, Mirzayev, and Vanneste (2025) demonstrated that generative AI can contribute to the evaluation of strategic decisions but also highlighted the importance of human assessment of its outputs. Decision-makers must therefore examine the accuracy, relevance and contextual suitability of AI-generated recommendations before incorporating them into strategic decisions.

The relationship between GenAI and strategic decision-making is consequently better understood as one of human–AI collaboration. AI provides computational capabilities that can support information processing and alternative generation, while human decision-makers contribute contextual understanding, experience, ethical judgement and responsibility. Dellermann, Ebel, Söllner, and Leimeister (2019) explained that effective human–AI collaboration occurs when the complementary strengths of humans and intelligent technologies are combined. In strategic management, this means that GenAI can enhance the decision process without removing the need for human judgement.

The effectiveness of GenAI may also vary according to the competence of the individuals using it. A decision-maker who understands how to formulate appropriate prompts, question AI-generated responses and verify important information is likely to obtain greater value from the technology than a user who accepts AI outputs without critical assessment. This reinforces the importance of digital literacy in understanding the effect of GenAI on strategic decision-making. GenAI may provide the technological capability, but the user's digital competence can determine how effectively that capability is translated into useful strategic information and decisions.

Digital Literacy as a Mediator between Generative Artificial Intelligence and Strategic Decision-Making

Digital literacy may serve as an important link between Generative Artificial Intelligence and strategic decision-making because access to AI technology does not necessarily determine the quality of decisions produced from its use. GenAI can provide administrators with information, summaries, alternatives and recommendations, but users must possess the skills required to understand, question and apply these outputs appropriately. Gu and Ericson (2025) emphasised that effective engagement with AI requires both functional competencies and critical evaluation skills. Similarly, Zhang and Magerko (2025) identified prompting, interaction and critical assessment as important competencies for effective engagement with generative AI.

The mediating role of digital literacy can be understood from the fact that administrators with higher levels of digital competence are more likely to use GenAI purposefully and critically. For instance, when a university administrator uses GenAI to examine declining student enrolment, the technology may generate possible explanations and strategic responses. A digitally literate administrator can compare these suggestions with institutional records, identify unsupported assumptions, request more appropriate analyses and determine which recommendations are relevant to the university's circumstances. An administrator with limited digital literacy, however, may accept the generated response without adequate

verification. In this situation, the availability of GenAI does not necessarily translate into a better strategic decision.

Digital literacy can therefore determine how effectively the capabilities of GenAI are converted into useful decision-support information. Al-Abdullatif (2024) found that AI literacy was associated with the acceptance and use of generative AI in higher education, while Ayyoub et al. (2025) emphasised the importance of AI-related competencies and critical engagement in the effective use of emerging AI technologies. These findings suggest that the benefits of GenAI are partly dependent on the competencies of the individuals who interact with it.

The mediating relationship implies that GenAI may provide the technological capacity for information generation and analysis, while digital literacy enables administrators to transform that capacity into meaningful strategic input. Consequently, stronger digital literacy may strengthen the extent to which GenAI contributes to strategic decision-making, whereas inadequate digital literacy may weaken this contribution. This provides a basis for examining digital literacy as a mediating variable between GenAI and strategic decision-making in public universities.

Theoretical Review

The study is anchored on the Technology Acceptance Model (TAM) and Upper Echelons Theory (UET). These theories provide a framework for understanding the adoption and use of Generative Artificial Intelligence and the role of university administrators' capabilities in strategic decision-making.

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), developed by Davis (1989), explains how individuals accept and use new technologies. The model proposes that perceived usefulness and perceived ease of use are the major factors influencing an individual's intention to use a technology. Perceived usefulness refers to the extent to which a person believes that using a particular technology will improve performance, while perceived ease of use concerns the extent to which the technology is perceived as easy to use. TAM has remained one of the widely applied models for explaining technology adoption across organisational and educational settings.

TAM is relevant to the present study because university administrators are more likely to use Generative AI when they perceive that it can improve their work and support important administrative activities. GenAI may be perceived as useful when it helps administrators analyse information, generate alternatives, prepare reports, identify possible solutions and support strategic planning. Its perceived ease of use may also influence whether administrators are willing to incorporate it into their daily activities. Recent research has continued to demonstrate the relevance of perceived usefulness and ease of use in explaining users' engagement with emerging AI technologies (Al-Abdullatif, 2024). Thus, TAM provides a basis for explaining how the perceived value and usability of GenAI can influence its application in university administration and, ultimately, strategic decision-making.

Upper Echelons Theory (UET)

The Upper Echelons Theory (UET), developed by Hambrick and Mason (1984), proposes that organisational outcomes and strategic choices are partly influenced by the characteristics, experiences, knowledge and cognitive orientations of senior decision-makers. The theory assumes that managers do not interpret organisational situations in exactly the same way because their experiences, values and cognitive abilities influence how they perceive and respond to strategic challenges. Consequently, organisational decisions can reflect the characteristics and capabilities of the individuals responsible for making them.

UET is relevant to the present study because university administrators play a central role in determining how emerging technologies are interpreted and applied in institutional decision-making. Although GenAI can provide information and possible solutions, administrators must determine whether the information is accurate, relevant and appropriate for their institutions. Digital literacy can strengthen this process by enabling administrators to interact effectively with GenAI, critically evaluate its outputs and integrate useful information into strategic decisions. In this sense, UET provides a theoretical basis for understanding why administrators with different levels of digital competence may derive different strategic outcomes from the same GenAI technology. The theory therefore complements TAM by linking the use of GenAI with the human capabilities required to transform AI-generated information into effective strategic decisions.

Empirical Studies

Doshi, Bell, Mirzayev, and Vanneste (2025) examined the use of generative artificial intelligence in evaluating strategic decisions using two studies involving 60 business models each. The researchers compared evaluations produced by large language models with rankings made by human experts. The findings showed that GenAI could provide useful predictions and evaluations of strategic alternatives, although AI-generated assessments were sometimes inconsistent and biased. The study concluded that GenAI has potential as a strategic decision-support tool but requires human evaluation and judgement.

Ebiringa, Charles Ikerionwu, Erike Azubuike, and B. C. Asiegbu (2025) investigated Generative AI adoption in Nigerian higher education using a mixed-methods approach involving 312 survey respondents and 20 experienced GenAI users and policymakers at the Federal University of Technology Owerri. The study found that 98.7% of respondents were willing to use GenAI if adequate training was provided, while current usage was higher for teaching and research than for mentoring and administrative activities. The findings also identified skill gaps, ethical concerns and limited access to resources as major challenges to GenAI adoption. The study recommended staff training, infrastructure development, ethical guidelines and institutional policies to support effective GenAI integration. These findings are particularly relevant to the present study because they suggest that the benefits of GenAI in higher education may depend substantially on users' competencies and institutional readiness.

Wyszynski, Westermann, Weber, and Niehaves (2025) examined whether generative AI could improve human decision-making by reducing cognitive biases. Using an online experiment involving 434 participants, the researchers compared decision-making before and after participants interacted with ChatGPT. The study found that GenAI could provide additional information and alternative perspectives that helped participants reconsider their initial decisions. The findings suggest that GenAI can support decision quality when users engage with its outputs reflectively rather than accepting them without critical assessment.

Csaszar, Ketkar, and Kim (2024) investigated how artificial intelligence can support strategic decision-making using evidence from entrepreneurs and investors. The study examined the ability of large language models to generate and evaluate strategies and found that AI could augment important stages of strategic decision-making, including strategic search, representation and evaluation. The findings indicated that AI-generated strategies and evaluations could reach levels comparable with those of human entrepreneurs and investors, suggesting that AI can serve as a valuable complement to human strategic judgement.

Faloye, Oyinloye, and Obateru (2024) examined the impact of Generative Artificial Intelligence on critical thinking and study habits among undergraduates in Nigerian universities using a systematic review and meta-analysis of 15 empirical studies published between 2018 and 2024. The meta-analysis produced an overall effect size of 0.598, with a 95% confidence interval of 0.515–0.681, indicating a significant positive effect of GenAI on critical thinking and study habits. The study concluded that AI applications such as ChatGPT and intelligent tutoring systems can support critical thinking, study habits and academic achievement. Although the study focused on students rather than university administrators, its findings demonstrate the potential of GenAI to produce positive outcomes when users engage appropriately with the technology.

Methods

The study adopted a cross-sectional survey research design to examine the relationship between Generative Artificial Intelligence, digital literacy and strategic decision-making in public universities in South-East Nigeria. The study covered public universities in Abia, Anambra, Ebonyi, Enugu and Imo States. The population comprised principal officers, deans, directors, heads of departments and other senior administrators whose responsibilities involve institutional planning, policy implementation, resource allocation and strategic decision-making. A purposive sampling technique was used to select administrators with relevant experience in digital technologies and university management. Where more than one university was selected within a state, respondents were proportionately allocated across the institutions to improve representation. A total of 300 administrators participated in the study. Data were collected using a structured questionnaire titled *Generative Artificial Intelligence, Digital Literacy and Strategic Decision-Making Questionnaire (GAIDLSD-Q).* The instrument consisted of three sections measuring Generative AI, digital literacy and strategic decision-making. Items were measured on a four-point Likert scale ranging from Very High Extent (VHE) = 4 to Very Low Extent (VLE) = 1. The instrument was subjected to face and

content validation by experts in educational management, information technology and measurement and evaluation. A pilot test was conducted among administrators outside the sampled universities, and internal consistency was assessed using Cronbach's Alpha. The reliability coefficients were 0.86 for Generative AI, 0.82 for digital literacy and 0.88 for strategic decision-making, with an overall coefficient of 0.85, indicating satisfactory internal consistency. Of the 300 questionnaires distributed, 287 were correctly completed and retrieved, representing a response rate of 95.7%. Data were analysed using descriptive statistics and inferential techniques. Pearson Product Moment Correlation was used to determine the associations among Generative AI, digital literacy and strategic decision-making. Hayes' PROCESS Macro Model 4 was employed to test the hypothesised mediating role of digital literacy in the relationship between Generative AI and strategic decision-making. The indirect effect was assessed using 5,000 bootstrap samples and a 95% confidence interval. Mediation was considered significant where the bootstrap confidence interval for the indirect effect did not contain zero. The hypotheses were tested at a 0.05 level of significance using SPSS Version 27.

Results

Ho_1: Generative Artificial Intelligence does not significantly influence strategic decision-making in public universities in South-East Nigeria.

Table 1: Correlation between Generative Artificial Intelligence and Strategic Decision-Making

Variables	Generative Artificial Intelligence	Strategic Decision-Making
Generative Artificial Intelligence	1.000	.724**
Sig. (2-tailed)	.	.000
N	287	287
Strategic Decision-Making	.724**	1.000
Sig. (2-tailed)	.000	.
N	287	287

Correlation is significant at the 0.05 level (2-tailed).

Source: Researchers' Data, 2026.

Table 1 shows an r value of 0.724 at a significance level of 0.000, which is lower than the alpha level of 0.05. Since the significance value (0.000) is below 0.05, the null hypothesis (Ho_1), which states that Generative Artificial Intelligence does not significantly influence strategic decision-making in public universities in South-East Nigeria, is rejected. Therefore, the alternate hypothesis is accepted. This implies that Generative Artificial Intelligence significantly influences strategic decision-making in public universities in South-East Nigeria.

Ho_2: Generative Artificial Intelligence does not significantly influence the digital literacy of university administrators in public universities in South-East Nigeria.

Table 2: Correlation between Generative Artificial Intelligence and Digital Literacy

Variables	Generative Artificial Intelligence	Digital Literacy
Generative Artificial Intelligence	1.000	.681**
Sig. (2-tailed)	.	.000
N	287	287

Variables	Generative Artificial Intelligence	Digital Literacy
Digital Literacy	.681**	1.000
Sig. (2-tailed)	.000	.
N	287	287

Correlation is significant at the 0.05 level (2-tailed).

Source: Researchers' Data, 2026.

Table 2 shows an r value of 0.681 at a significance level of 0.000, which is lower than the alpha level of 0.05. Since the significance value (0.000) is below 0.05, the null hypothesis (Ho_2), which states that Generative Artificial Intelligence does not significantly influence the digital literacy of university administrators in public universities in South-East Nigeria, is rejected. Therefore, the alternate hypothesis is accepted. This implies that Generative Artificial Intelligence significantly influences the digital literacy of university administrators in public universities in South-East Nigeria.

Ho_3: Digital literacy does not significantly mediate the relationship between Generative Artificial Intelligence and strategic decision-making in public universities in South-East Nigeria.

Table 3: Mediation Analysis of Digital Literacy in the Relationship between Generative Artificial Intelligence and Strategic Decision-Making

Effect	Coefficient	BootSE	LLCI	ULCI
Total effect	.724	.058	.610	.838
Direct effect	.512	.067	.380	.644
Indirect effect through Digital Literacy	.212	.049	.119	.314

Source: Researchers' Data, 2026.

Table 3 shows that the indirect effect of Generative Artificial Intelligence on strategic decision-making through digital literacy is 0.212, with a 95% bootstrap confidence interval ranging from 0.119 to 0.314. Since the confidence interval does not contain zero, the indirect effect is statistically significant. The result therefore indicates that digital literacy significantly mediates the relationship between Generative Artificial Intelligence and strategic decision-making in public universities in South-East Nigeria. Since the direct effect of Generative Artificial Intelligence on strategic decision-making remains significant after digital literacy is introduced into the model, the mediation is considered partial. Consequently, the null hypothesis (Ho_3) is rejected. This implies that digital literacy significantly mediates the relationship between Generative Artificial Intelligence and strategic decision-making.

Discussion of Findings

The test of hypotheses revealed that Generative Artificial Intelligence significantly influences strategic decision-making in public universities in South-East Nigeria. The finding indicates that GenAI can support university administrators by improving access to information, generating alternative solutions, analysing institutional issues and assisting in strategic planning. This finding is consistent with Csaszar, Ketkar, and Kim (2024), who found that AI can augment strategic decision-making through strategic search, problem representation and evaluation. Similarly, Doshi, Bell, Mirzayev, and Vanneste (2025) reported that generative AI can support the evaluation of strategic alternatives, although human judgement remains necessary in assessing the quality of AI-generated recommendations. The finding suggests that GenAI can serve as an important decision-support resource for administrators when appropriately integrated into university management processes.

The findings further revealed that Generative Artificial Intelligence significantly influences the digital literacy of university administrators. This suggests that increased engagement with GenAI may encourage administrators to develop competencies in prompting, information evaluation, digital communication and

the critical assessment of AI-generated outputs. The finding agrees with Al-Abdullatif (2024), who established the importance of AI literacy in the acceptance and use of generative AI in higher education. It is also consistent with Ebiringa, Ikerionwu, Azubuike, and Asiegbu (2025), who found that skill gaps and inadequate training were important challenges to GenAI adoption in Nigerian higher education. The finding therefore suggests that effective engagement with GenAI requires continuous development of relevant digital competencies among university administrators.

Furthermore, the mediation analysis revealed that digital literacy significantly mediates the relationship between Generative Artificial Intelligence and strategic decision-making. The finding means that GenAI does not operate entirely on its own to produce better strategic decisions; rather, the digital competence of administrators helps determine how effectively AI-generated information is interpreted and applied. This finding supports Gu and Ericson (2025), who emphasised the importance of functional and critical competencies in effective engagement with AI technologies. It also agrees with Faloye, Oyinloye, and Obateru (2024), whose meta-analysis showed that GenAI can positively contribute to critical thinking and learning outcomes when appropriately used. The partial mediation observed in the present study indicates that GenAI has a direct contribution to strategic decision-making, while digital literacy further strengthens the value derived from the technology.

Conclusion

This study examined the relationship between Generative Artificial Intelligence and strategic decision-making in public universities, with digital literacy as a mediating variable. The findings established that GenAI significantly influences strategic decision-making and digital literacy among university administrators. The study also found that digital literacy significantly mediates the relationship between GenAI and strategic decision-making. The study therefore concludes that Generative AI can serve as an important strategic decision-support technology in public universities by improving information processing, generating alternatives and supporting the analysis of institutional problems. However, the effectiveness of GenAI depends partly on the digital competencies of university administrators. Administrators who possess the skills to interact with AI, critically evaluate its outputs and integrate relevant information with professional judgement are more likely to derive meaningful strategic benefits from the technology. Consequently, GenAI adoption should be accompanied by deliberate investment in digital literacy, capacity development and responsible AI use within university administration.

Recommendations

Based on the findings and conclusion of the study, the following recommendations are made:

1. Public universities in South-East Nigeria should integrate Generative AI into appropriate administrative and strategic management processes. AI tools can be used for information analysis, report preparation, scenario development, strategic planning and the generation of alternative solutions.
2. University administrators should participate in regular digital literacy and GenAI training programmes. Such programmes should emphasise effective prompting, verification of AI-generated information, identification of errors and bias, data protection and responsible application of AI outputs in institutional decision-making.
3. University management should establish clear policies and guidelines governing the use of Generative AI in administrative decision-making. Such policies should emphasise human oversight, confidentiality, accountability and verification of AI-generated information before it is used for important institutional decisions.

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ARTIFICIAL INTELLIGENCE LITERACY AND ENTREPRENEURIAL INTENTIONS AMONG BUSINESS EDUCATION STUDENTS IN SOUTH-WEST UNIVERSITIES OF NIGERIA

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Abstract

The growing use of artificial intelligence in business has created a need to review vocational education and prepare students for technology-based business activities. This study examined the relationship between artificial intelligence literacy and entrepreneurial intentions among Business Education undergraduate students in South-West universities of Nigeria. The study was guided by the Theory of Planned Behavior and Human Capital Theory and adopted a correlational survey research design. The population comprised 1,450 final-year Business Education students in public universities in South-West Nigeria. A sample of 312 students was selected using a multi-stage stratified random sampling technique. Data were collected using a structured questionnaire titled the "Artificial Intelligence Literacy and Entrepreneurial Intentions Questionnaire" (AILEIQ). The instrument had a Cronbach alpha reliability coefficient of 0.86. Of the 312 questionnaires administered, 298 were properly completed and retrieved. Mean and standard deviation were used to answer the research questions, while Pearson Product-Moment Correlation and Multiple Regression were used to test the hypotheses at the 0.05 level of significance. The findings showed a strong, positive, and statistically significant relationship between artificial intelligence literacy dimensions, namely data competency, algorithmic awareness, and digital tool application, and entrepreneurial intentions ($r = 0.687$, $p < 0.01$). The regression analysis showed that artificial intelligence literacy explained 47.2% of the variation in entrepreneurial intentions ($R^2 = 0.472$, $F(3, 294) = 87.62$, $p < 0.05$). The study concluded that including artificial intelligence skills in Business Education programmes can improve students' readiness to create technology-based businesses.

Keywords: *Artificial Intelligence Literacy, Entrepreneurial Intentions, Business Education, Curriculum Development, Nigeria*

Introduction

Nigeria's current socio-economic situation is affected by graduate unemployment, rising inflation, and a shift towards a technology-based economy (National Bureau of Statistics, 2023). In this situation, universities are expected to produce graduates who have both academic knowledge and practical skills that can help them create jobs and start businesses. Business Education programmes in Nigerian universities were developed partly to meet this need. The programmes prepare students for employment as well as self-employment through business activities (Amah & Okafor, 2023).

Over the years, Business Education in Nigeria has gone through several curriculum changes. Earlier vocational programmes gradually moved towards office technology and management, with students learning skills such as desktop publishing, spreadsheet use, and internet communication (Ndubuisi et al., 2022). However, the growth of the Fourth Industrial Revolution has increased the level of technology skills needed in business. Basic information technology skills may no longer be enough for many modern business activities. Many businesses now use computer-based systems, machine learning, and automated data processing to improve their operations, study customer behaviour, reduce costs, and understand market trends (Bala et al., 2024).

One important part of this technological change is artificial intelligence (AI) literacy. AI literacy refers to the ability to understand, assess, communicate with, and use artificial intelligence technologies in academic, personal, and work settings (Long & Magerko, 2020). In Business Education and small business management, AI literacy goes beyond basic computer skills. It includes data competency, algorithmic awareness, and digital tool application (Ng et al., 2021). Data competency involves the ability to collect, organise, clean, and understand business data. Algorithmic awareness refers to an understanding of how machine learning systems use information to produce automated results. Digital tool application involves the practical use of generative AI tools, predictive analytics software, automated marketing platforms, and intelligent customer relationship systems.

Entrepreneurial intention refers to a person's conscious decision and willingness to start and develop a business (Liñán & Fayolle, 2015). It is an important factor in understanding whether a person is likely to engage in entrepreneurial activities. When students believe that they have useful and valuable technical skills, their confidence in their ability to start a business may increase. This can improve their attitude towards business creation and reduce some of the risks they associate with starting a new business (Çınar & Kenek, 2025). Therefore, examining the relationship between artificial intelligence literacy and entrepreneurial intentions among Business Education students is important for assessing whether university vocational education is meeting the needs of the present business environment in Nigeria.

Statement of the Problem

Despite the continued inclusion of entrepreneurship courses in Nigerian university programmes, graduate unemployment remains a major concern among vocational education graduates (Angwaomaodoko et al., 2026). One possible reason is the gap between the skills taught in universities and the skills required in the present business environment. Modern businesses increasingly use automated marketing, predictive inventory systems, and AI-based customer analysis, while some Business Education programmes still place much emphasis on traditional bookkeeping, office management, and conventional retail practices (Aniah & Mohammed, 2021).

Previous studies have examined digital skills, information technology use, and entrepreneurship education among university students. However, there is limited research on artificial intelligence literacy as a specific area of study. For example, Otamiri and Chimaobim Ijeoma (2023) examined general digital skills and entrepreneurial behaviour among Business Education postgraduate students in South-South universities of Nigeria. Their study found a positive relationship between digital competence and business initiative. Mbanugo and Okeke-Ezeanyanwu (2023) also examined the readiness of Business Education graduates for digital entrepreneurship. However, these studies focused on general digital skills rather than specific areas of artificial intelligence literacy such as data competency, algorithmic awareness, and digital tool application.

The lack of evidence on the relationship between AI literacy and students' readiness to start technology-based businesses makes it difficult for educational authorities, university administrators, and curriculum planners to make informed decisions about the development of Business Education programmes. This study therefore examined the relationship between artificial intelligence literacy and entrepreneurial intentions among Business Education students in South-West universities of Nigeria. It also examined whether the three dimensions of AI literacy, namely data competency, algorithmic awareness, and digital tool application, predict students' entrepreneurial intentions.

Research Objectives

The main objective of this study was to examine the relationship between artificial intelligence literacy and entrepreneurial intentions among Business Education undergraduate students in South-West universities of Nigeria. Specifically, the study sought to:

i. Assess the level of artificial intelligence literacy, in terms of data competency, algorithmic awareness, and digital tool application, among Business Education students in South-West universities of Nigeria.
ii. Determine the level of entrepreneurial intentions among Business Education students in South-West universities of Nigeria.
iii. Examine the predictive influence of artificial intelligence literacy dimensions on the entrepreneurial intentions of Business Education students.

Research Questions

The following research questions guided the study:

v. What is the level of artificial intelligence literacy among Business Education students in South-West universities of Nigeria?
vi. What is the level of entrepreneurial intentions among Business Education students in South-West universities of Nigeria?
vii. To what extent do artificial intelligence literacy dimensions, namely data competency, algorithmic awareness, and digital tool application, collectively and independently predict the entrepreneurial intentions of Business Education students?

Hypotheses

The following null hypotheses were formulated and tested at the 0.05 level of significance:

H_{01}: There is no significant relationship between artificial intelligence literacy dimensions and the entrepreneurial intentions of Business Education students in South-West universities of Nigeria.

H_{02}: Artificial intelligence literacy dimensions do not significantly predict the entrepreneurial intentions of Business Education students in South-West universities of Nigeria.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

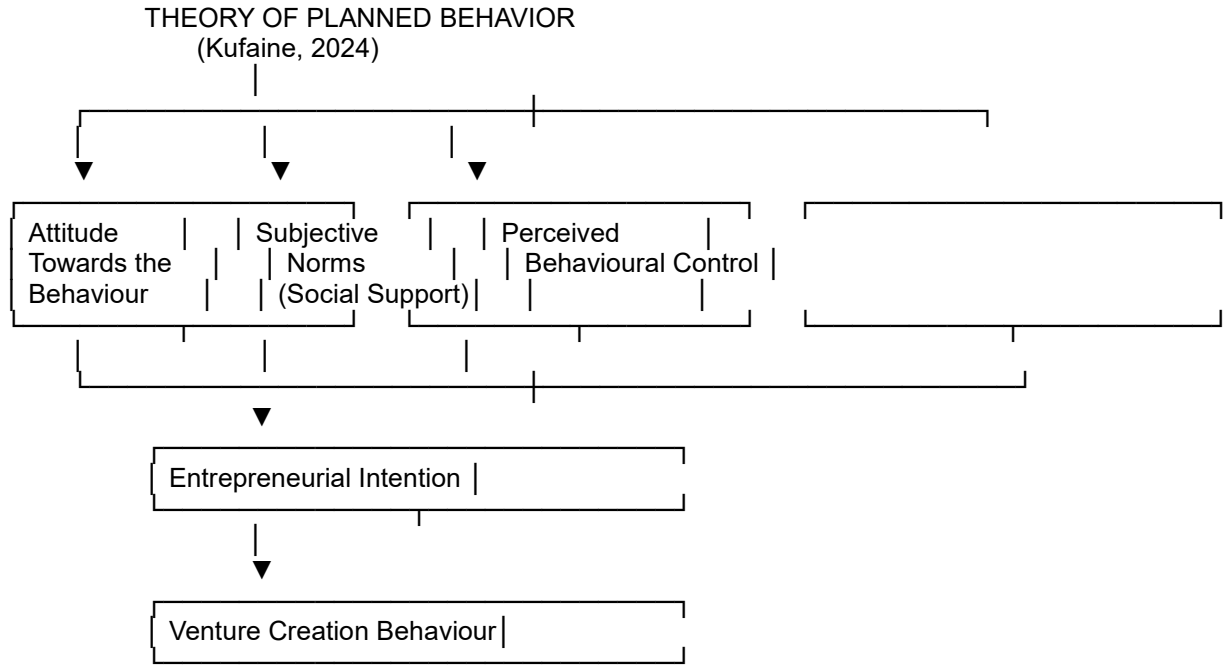
Theoretical Underpinning

Theory of Planned Behavior (TPB)

This study is mainly based on the Theory of Planned Behavior (TPB), as discussed within extended behavioural frameworks by Kufaine (2024). The theory explains that human behaviour is influenced by behavioural intention. Behavioural intention is shaped by three main factors: attitude towards the behaviour, subjective norms, and perceived behavioural control.

Figure 1

Theory of Planned Behavior and Entrepreneurial Intention



Note. **Adapted from the Theory of Planned Behaviour as discussed by Kufaine (2024).**

In the context of business creation, attitude towards the behaviour refers to an individual's view of becoming an entrepreneur. Subjective norms refer to the social influence that an individual receives from family, friends, colleagues, and academic mentors concerning business creation. Perceived behavioural control refers to an individual's belief in their ability to carry out the activities needed to start and manage a business successfully.

In this study, artificial intelligence literacy is viewed as a factor that can strengthen perceived behavioural control. When Business Education students develop practical skills in data handling, algorithmic decision-making, and the use of AI tools, they may become more confident in their ability to manage business risks,

conduct market research, and automate some business activities. This increased confidence can strengthen their perceived behavioural control and, in turn, increase their entrepreneurial intentions (Çınar & Kenek, 2025).

Human Capital Theory

The study is also supported by Human Capital Theory, which was developed by Schultz (1961) and further developed by Becker (1964). The theory states that people acquire knowledge, skills, and abilities through education and training. These skills improve their productivity and increase their economic value. In today's digital economy, technological skills form an important part of human capital.

When universities provide students with relevant technological knowledge and skills, students may become better prepared to identify business opportunities, develop new business ideas, and carry out business activities (Alam, 2026). In relation to this study, artificial intelligence literacy is regarded as a form of specialised human capital. It provides Business Education students with technological skills that can support the creation and management of digital businesses.

Conceptual Review and Synthesis

Artificial Intelligence Literacy Dimensions

In this study, artificial intelligence literacy is treated as a three-dimensional concept consisting of data competency, algorithmic awareness, and digital tool application (Long & Magerko, 2020; Ng et al., 2021).

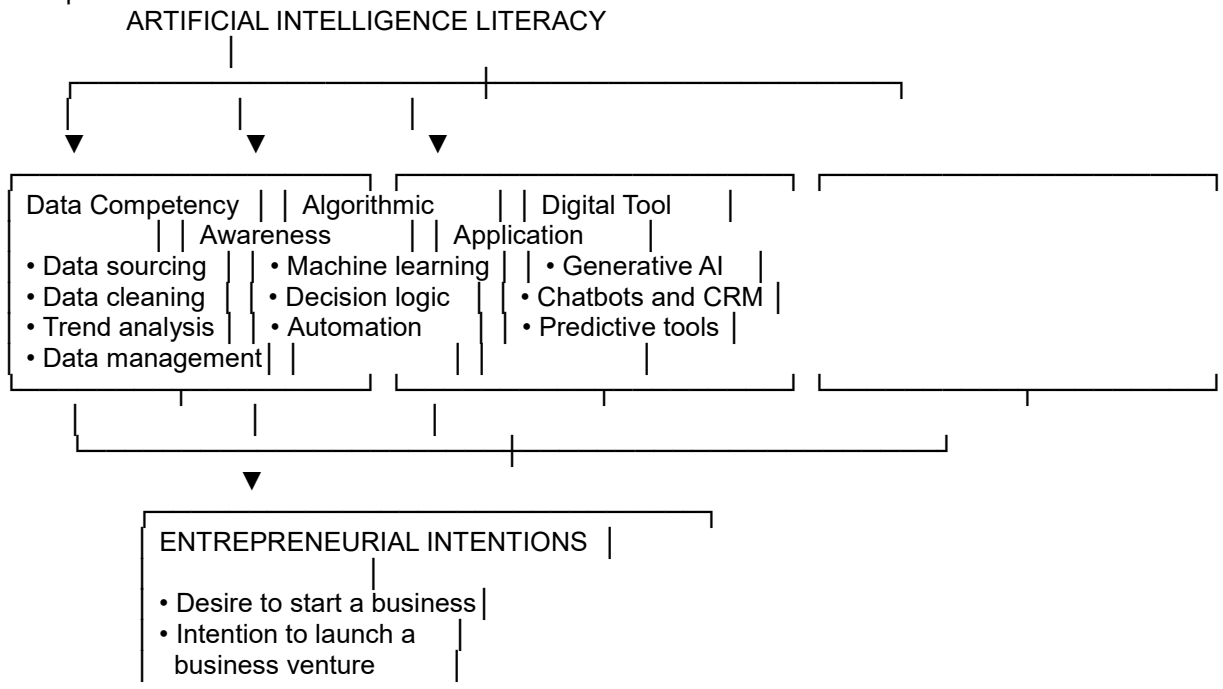
Data Competency: Data competency refers to the knowledge and practical ability to obtain, organise, clean, analyse, and interpret business data (Sánchez et al., 2025). For small businesses, this skill can help entrepreneurs understand market trends, study customer buying patterns, and make better inventory decisions based on available data.

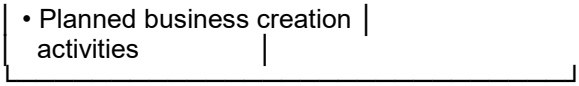
Algorithmic Awareness: Algorithmic awareness refers to an individual's understanding of how automated systems, predictive models, and machine learning algorithms work (Alam, 2026). It does not necessarily require advanced programming skills. Instead, it involves understanding how algorithms process information, follow decision rules, identify possible bias, and produce predictions. This knowledge can help potential entrepreneurs determine how automated systems can be used to improve business operations.

Digital Tool Application: Digital tool application refers to the practical use of AI-based software and other digital applications in business activities. These tools may include generative AI platforms for preparing marketing content, chatbots for customer service, accounting software for cash-flow planning, and cloud-based customer relationship management systems (Bala et al., 2024).

Figure 2

Conceptual Framework Showing the Relationship Between Artificial Intelligence Literacy and Entrepreneurial Intentions





Note. The framework shows the proposed relationship between the three dimensions of artificial intelligence literacy and entrepreneurial intentions.

Entrepreneurial Intentions

Entrepreneurial intention refers to a person's conscious decision and plan to start a business (Liñán & Fayolle, 2015). It provides a link between a person's potential and actual business creation. Among university students, entrepreneurial intention reflects their interest in starting a business, commitment to becoming an entrepreneur, and belief in their ability to establish a business after graduation.

Students with stronger entrepreneurial intentions are more likely to engage in activities that support business creation. Such activities may include looking for business funding, conducting feasibility studies, building professional networks, and preparing business plans (Ranga et al., 2019).

Empirical Review and Synthesis

Data Competency and Entrepreneurial Intentions

The ability to work with data has become an important skill in modern business. Salami and Kehinde (2023) examined skill acquisition among vocational education students in Nigerian tertiary institutions. The study found that students who received training in data analysis and database management had higher confidence when preparing business plans.

Chui et al. (2022) also examined data analysis skills among entrepreneurs operating digital platforms. The study found that basic data literacy helped to reduce business failure during the early stages of operation. These findings suggest that data competency can provide entrepreneurs with the skills needed to assess market demand and make informed business decisions. This may increase their confidence and intention to start a business.

Algorithmic Awareness and Opportunity Recognition

An understanding of how automated systems work can help entrepreneurs identify business opportunities created by technological changes. Alam (2026) examined awareness of algorithmic decision-making among small business owners. The study found that entrepreneurs who understood the capabilities of machine learning were better able to identify gaps in the market and use automated solutions in their businesses.

In Nigeria, Aniah and Mohammed (2021) examined technological readiness among business educators. Their findings showed that limited understanding of algorithms contributed to hesitation and anxiety about using modern digital tools. This limited their use of new technologies in teaching and other professional activities. The findings suggest that better algorithmic awareness may reduce fear of technology and encourage individuals to consider new business opportunities.

Digital Tool Application and Small Business Creation

The practical use of digital tools can influence students' willingness to engage in business activities. Otamiri and Chimaobim Ijeoma (2023) examined digital skills and entrepreneurial behaviour among Business Education postgraduate students in South-South universities of Nigeria. The study found a strong positive relationship between practical digital skills and students' willingness to establish private businesses.

Similarly, Mbanugo and Okeke-Ezeanyanwu (2023) examined digital entrepreneurship readiness among vocational students. The study found that practical exposure to business management software improved students' perceived behavioural control and entrepreneurial intentions. Eze et al. (2016) also found that skill acquisition among Nigerian university undergraduates significantly predicted readiness for self-employment.

Hypothesis Development

The Theory of Planned Behavior (Kufaine, 2024) and Human Capital Theory (Becker, 1964), together with the findings of Otamiri and Chimaobim Ijeoma (2023) and Salami and Kehinde (2023), provide a basis for expecting a relationship between technological skills and entrepreneurial intentions. When Business Education students develop skills in data handling, understanding algorithms, and using AI-based digital tools, they may become more confident in their ability to identify and pursue business opportunities. These skills may also improve their perceived behavioural control and readiness to start a business.

Based on the theoretical and empirical evidence reviewed, the following hypotheses were formulated:

H_{01}: There is no significant relationship between artificial intelligence literacy dimensions, namely data competency, algorithmic awareness, and digital tool application, and the entrepreneurial intentions of Business Education students.
H_{02}: Artificial intelligence literacy dimensions do not significantly predict the entrepreneurial intentions of Business Education students.

RESEARCH METHODOLOGY

This study adopted a correlational survey research design. The design was considered suitable because it allowed the researcher to collect data from a large and dispersed population and examine the relationships between the study variables without manipulating them. The study was carried out in state and federal public universities offering accredited undergraduate Business Education programmes in the South-West geopolitical zone of Nigeria.

The population of the study comprised 1,450 final-year undergraduate Business Education students registered during the academic session in public universities in South-West Nigeria. Final-year students were selected because they had completed major courses in business, accounting, marketing, and entrepreneurship education. They were therefore considered suitable for assessing their level of artificial intelligence literacy and their intentions to engage in entrepreneurial activities after graduation.

A multi-stage stratified random sampling procedure was used to select 312 respondents. At the first stage, public universities in the region were grouped according to their ownership structure. At the second stage, six universities were selected through simple random sampling by balloting. At the third stage, proportionate stratified random sampling was used to select students from the chosen universities based on their final-year departmental enrolment records. This helped to ensure fair representation of students from the selected institutions.

Data were collected using a self-structured questionnaire titled the "Artificial Intelligence Literacy and Entrepreneurial Intentions Questionnaire" (AILEIQ). The questionnaire was divided into three sections.

Section A: This section collected demographic information from the respondents, including institution, gender, age, and university ownership type.

Section B: This section measured artificial intelligence literacy using 15 items. The items were divided into three subscales: Data Competency, Algorithmic Awareness, and Digital Tool Application, with five items for each subscale. Responses were measured on a four-point Likert scale of Strongly Disagree (1), Disagree (2), Agree (3), and Strongly Agree (4).

Section C: This section measured Entrepreneurial Intentions using 10 items adapted from validated measurement scales by Ranga et al. (2019). The same four-point Likert scale was used.

To establish the face and content validity of the instrument, the draft questionnaire was given to three experts in Business Education and Measurement and Evaluation. Their comments and suggestions were used to revise the items.

A pilot study was also conducted with 30 final-year Business Education students from a public university that was not included in the main study. Cronbach's alpha reliability analysis produced coefficients of 0.83 for Data Competency, 0.81 for Algorithmic Awareness, 0.87 for Digital Tool Application, and 0.85 for Entrepreneurial Intentions. The overall reliability coefficient was 0.86. These values showed that the instrument had good internal consistency.

The questionnaire was administered physically by the researcher with the help of six trained research assistants over a period of four weeks. Out of the 312 questionnaires distributed, 298 were properly completed and returned for analysis. This represented an effective retrieval rate of 95.5%.

The data were analysed using SPSS. Means and standard deviations were used to answer Research Questions 1 and 2. A criterion mean of 2.50 was used as the basis for decision making. Pearson Product-Moment Correlation was used to test Hypothesis 1, while Multiple Regression was used to test Hypothesis 2. All hypotheses were tested at the 0.05 level of significance.

EMPIRICAL RESULTS

Descriptive Analysis of Variables

Research Questions 1 and 2 were answered using the mean scores and standard deviations of the study variables. The results are presented in Table 1.

Table 1

Descriptive Analysis of Artificial Intelligence Literacy Dimensions and Entrepreneurial Intentions (N = 298)

Variable/Dimension	Mean (x̄)	Standard Deviation (SD)	Decision Benchmark	Remark
Data Competency	2.68	0.62	2.50	High Level
Algorithmic Awareness	2.34	0.71	2.50	Low Level
Digital Tool Application	2.91	0.55	2.50	High Level
Overall AI Literacy Index	2.64	0.58	2.50	High Level
Entrepreneurial Intentions	3.02	0.51	2.50	High Level

Note. Data collected from field survey. Benchmark criterion mean = 2.50.

Table 1 shows that the students recorded high levels of Digital Tool Application ($\bar{x}$ = 2.91, SD = 0.55) and Data Competency ($\bar{x}$ = 2.68, SD = 0.62). However, the mean score for Algorithmic Awareness was below the benchmark of 2.50 ($\bar{x}$ = 2.34, SD = 0.71). This indicates that the students had a lower level of understanding of automated decision processes and machine learning principles. The Overall AI Literacy Index had a mean of 2.64 (SD = 0.58), which was above the benchmark and was therefore rated as high. Entrepreneurial Intentions also recorded a high mean score of 3.02 (SD = 0.51).

Hypothesis Testing

Test of Null Hypothesis 1 (H_{01})

H_{01}: There is no significant relationship between artificial intelligence literacy dimensions and the entrepreneurial intentions of Business Education students.

Pearson Product-Moment Correlation analysis was used to examine the relationships between the three dimensions of artificial intelligence literacy and entrepreneurial intentions. The results are presented in Table 2.

Table 2

Pearson Correlation Matrix Between Artificial Intelligence Literacy Dimensions and Entrepreneurial Intentions

Variables	Entrepreneurial Intentions	Data Competency	Algorithmic Awareness	Digital Tool Application
Entrepreneurial Intentions	1.000			
Data Competency	.542*	1.000		
Algorithmic Awareness	.418*	.310*	1.000	
Digital Tool Application	.635*	.485*	.392*	1.000

Note. Correlation is significant at the 0.01 level (2-tailed). N = 298.

As shown in Table 2, all three dimensions of artificial intelligence literacy had positive and statistically significant relationships with entrepreneurial intentions. Digital Tool Application had the strongest relationship with Entrepreneurial Intentions ($r = 0.635$, $p < 0.01$), followed by Data Competency ($r = 0.542$, $p < 0.01$) and Algorithmic Awareness ($r = 0.418$, $p < 0.01$). The overall AI literacy construct had a correlation of $r = 0.687$ ($p < 0.01$). Therefore, Null Hypothesis 1 (H_{01}) was rejected.

Test of Null Hypothesis 2 (H_{02})

H_{02}: Artificial intelligence literacy dimensions do not significantly predict the entrepreneurial intentions of Business Education students.

A standard multiple linear regression analysis was carried out using Data Competency, Algorithmic Awareness, and Digital Tool Application as the predictor variables and Entrepreneurial Intentions as the dependent variable. The results are presented in Table 3.

Table 3

Multiple Regression Analysis of Artificial Intelligence Literacy Dimensions Predicting Entrepreneurial Intentions

Model Variables	Predictor	Unstandardised Coefficients (B)	Standard Error (SE)	Standardised Coefficients (β)	t	p
(Constant)		0.814	0.142		5.732	< .001
Data Competency		0.285	0.052	0.312	5.480	< .001
Algorithmic Awareness		0.142	0.041	0.178	3.463	.001
Digital Application	Tool	0.379	0.048	0.425	7.895	< .001

Note. R = 0.687, R^2 = 0.472, Adjusted R^2 = 0.467, F(3, 294) = 87.62, p < .001. Dependent variable: Entrepreneurial Intentions.

Table 3 shows that the three dimensions of artificial intelligence literacy jointly and significantly predicted entrepreneurial intentions, F(3, 294) = 87.62, p < .001. The regression model produced an R^2 value of 0.472. This means that artificial intelligence literacy dimensions accounted for 47.2% of the variation in the entrepreneurial intentions of the students.

The standardised beta coefficients show that Digital Tool Application made the strongest independent contribution to entrepreneurial intentions (β = 0.425, t = 7.895, p < .001). Data Competency was the next strongest predictor (β = 0.312, t = 5.480, p < .001), while Algorithmic Awareness made the smallest, although statistically significant, contribution (β = 0.178, t = 3.463, p = .001). Therefore, Null Hypothesis 2 (H_{02}) was rejected.

DISCUSSION OF FINDINGS

The findings of this study show a clear relationship between artificial intelligence literacy and entrepreneurial intentions among Business Education undergraduate students in South-West Nigeria.

First, the descriptive results showed that students had high levels of Digital Tool Application and Data Competency. However, their level of Algorithmic Awareness was low, with a mean score of 2.34. This suggests that although students may be able to use digital applications, they may have less understanding of how automated systems and machine learning processes work. This finding agrees with Aniah and Mohammed (2021), who reported that vocational education in Nigeria often gives more attention to the practical use of technology than to a deeper understanding of how the technology works.

Second, the correlation analysis showed a positive and statistically significant relationship between artificial intelligence literacy and entrepreneurial intentions (r = 0.687, p < 0.01). The result indicates that students with higher levels of AI-related skills tended to report stronger intentions to start businesses. In particular, Digital Tool Application had the strongest relationship with entrepreneurial intentions (r = 0.635, p < 0.01). This finding is consistent with Otamiri and Chimaobim Ijeoma (2023), who found that digital competence was positively related to entrepreneurial behaviour among Business Education students.

Finally, the regression analysis showed that the three dimensions of artificial intelligence literacy jointly explained 47.2% of the variation in entrepreneurial intentions (R^2 = 0.472). Digital Tool Application was the strongest predictor, with a standardised beta value of 0.425. Data Competency followed with a beta value of 0.312, while Algorithmic Awareness recorded a beta value of 0.178. These findings support the Theory of Planned Behavior (Kufaine, 2024) and Human Capital Theory (Becker, 1964). The results suggest that practical technology skills can increase students' confidence in their ability to engage in business activities. Such skills also form part of the knowledge and abilities that students can use when starting and managing a business.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The study concludes that artificial intelligence literacy is significantly related to entrepreneurial intentions among Business Education undergraduate students in South-West universities of Nigeria. The students showed high levels of Data Competency and Digital Tool Application, while their Algorithmic Awareness was below the benchmark level. The findings also showed that the three dimensions of artificial intelligence literacy had significant positive relationships with entrepreneurial intentions and jointly predicted 47.2% of the variation in entrepreneurial intentions.

The findings therefore suggest that improving students' knowledge and practical use of artificial intelligence may strengthen their readiness to engage in entrepreneurial activities. However, the low level of Algorithmic Awareness shows that more attention is needed to help students understand how automated systems and machine learning work, rather than focusing only on the use of digital tools.

Recommendations

Based on the findings of the study, the following recommendations are made:

5. Curriculum Restructuring: The National Universities Commission (NUC) and university senate boards should review undergraduate Business Education programmes to include courses on artificial intelligence applications, automated business processes, and data analytics.
6. Pedagogical Enhancement: Business Education lecturers should increase the use of practical activities alongside classroom teaching. Students should be given opportunities to use enterprise software, generative AI tools for marketing, and automated inventory systems (Ariyibi, 2025).
7. Improvement of Algorithmic Awareness: Business Education departments should organise workshops and practical training to improve students' understanding of algorithms and automated decision-making. The training should help students understand both the use of digital tools and the basic principles behind them (Hamzat & Ansah, 2025).
8. Institutional Enterprise Incubation: University management should work with technology enterprise incubators to establish digital business hubs on campus. These hubs can provide students with mentoring, technical support, funding opportunities, and practical support for developing technology-based businesses.

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ARTIFICIAL INTELLIGENCE AND AUTOMATION IN TRANSFORMING ENTREPRENEURIAL LEARNING AND PRACTICE AMONG BUSINESS EDUCATION STUDENTS IN UNIVERSITIES IN CROSS RIVER STATE, NIGERIA

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Abstract

The study examined artificial intelligence and automation as predictors of entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria. Two research questions and two null hypotheses guided the study. A predictive correlational survey design was adopted. The population comprised 436 final-year Business Education students, consisting of 53 students from the University of Calabar, 289 from the University of Cross River State, 38 from the University of Education/Entrepreneurship Education, and 56 from Arthur Jarvis University, Akpabuyo. The entire population was included through census sampling, and 435 correctly completed questionnaires were retained for analysis. Data were collected using a researcher-developed structured questionnaire comprising 21 substantive items measured on a four-point rating scale. The instrument yielded Cronbach's alpha reliability coefficients of 0.91 for artificial intelligence, 0.88 for automation, and 0.93 for entrepreneurial learning and practice, with an overall reliability coefficient of 0.92. Mean and standard deviation were used to answer the research questions, while simple linear regression was used to test the individual hypotheses and multiple linear regression was used to determine the joint predictive contribution of the two predictor variables at the 0.05 level of significance. The findings indicated that artificial intelligence was positively rated as contributing to entrepreneurial learning and practice, with a cluster mean of 3.21, while automation also received a positive rating, with a cluster mean of 2.96. The regression results showed that artificial intelligence significantly predicted entrepreneurial learning and practice ($\beta = .366$, $t = 8.63$, $p < .001$), while automation also significantly predicted entrepreneurial learning and practice ($\beta = .275$, $t = 6.41$, $p < .001$). When considered jointly, artificial intelligence and automation explained 28.0% of the variance in entrepreneurial learning and practice, and the overall regression model was statistically significant, $F(2, 433) = 84.04$, $p < .001$. The study concluded that artificial intelligence and automation are significant positive predictors of entrepreneurial learning and practice among Business Education students. It was recommended that universities systematically integrate artificial intelligence and automation into Business Education and entrepreneurship curricula and provide students with practical opportunities to develop technology-enabled entrepreneurial competencies.

Keywords: Artificial intelligence, automation, entrepreneurial learning, entrepreneurial practice, and Business Education students

Introduction

The contemporary business environment is undergoing rapid technological transformation, driven by digitalisation, artificial intelligence (AI), automation, big data, cloud computing and other emerging technologies. These developments are changing how businesses are established, managed and expanded, while also redefining the knowledge and competencies required of prospective entrepreneurs. The World Economic Forum (WEF, 2025) identified technological change, particularly artificial intelligence and automation, as among the major forces reshaping jobs, business processes and skills requirements globally. Consequently, entrepreneurship education can no longer focus exclusively on traditional business knowledge and conventional entrepreneurial skills. Students need to develop the ability to identify opportunities, solve problems, use digital technologies, make informed decisions and translate ideas into practical business activities. This shift has made technology-oriented entrepreneurship education increasingly important, particularly in programmes such as Business Education that are expected to prepare students for both employment and self-employment.

Entrepreneurship education is widely recognised as an important means of developing the knowledge, skills, attitudes and competencies required to identify opportunities and create value. Contemporary entrepreneurship education increasingly emphasises active learning, problem-solving, creativity, innovation and practical engagement rather than the mere acquisition of theoretical business knowledge. Carpenter and Wilson (2022) argued that effective entrepreneurship education should expose learners to authentic business situations through experiential and practice-oriented learning. Similarly, Motta and Galina (2023) emphasised the importance of learning approaches that enable students to apply entrepreneurial knowledge to real-world situations. These perspectives are particularly relevant in an environment where emerging technologies are becoming integral to opportunity identification, business planning, marketing, financial management, customer engagement and other entrepreneurial activities.

The relevance of these developments is even more pronounced within Business Education. Business Education is designed to equip learners with business knowledge, occupational competencies, managerial skills and entrepreneurial capabilities that can support effective participation in the world of work. However, the changing nature of work requires Business Education to move beyond conventional office and accounting competencies towards technology-enabled capabilities. Students are increasingly expected to understand and apply digital tools in analysing information, communicating with customers, developing products and services, managing resources and exploring new business opportunities. Mezieobi (2023) observed that Business Education must respond to contemporary socioeconomic and technological changes if it is to remain relevant to the needs of learners and employers. Thus, incorporating artificial intelligence and automation into Business Education may provide students with opportunities to acquire competencies that are relevant to both entrepreneurial learning and entrepreneurial practice.

Artificial intelligence represents one of the technologies with considerable potential to transform entrepreneurship education. AI refers broadly to computational systems capable of performing tasks that traditionally require human intelligence, including learning, reasoning, prediction, language processing, pattern recognition and decision-making. In educational settings, AI can support personalised learning, content generation, automated feedback, assessment, information retrieval and problem-solving. In entrepreneurship education, these capabilities can extend to business idea generation, market analysis, customer profiling, business-plan development, financial forecasting and communication. Bell and Bell (2023) noted that AI has the potential to transform entrepreneurship education by providing learners with technology-supported environments for exploring business problems and developing entrepreneurial capabilities. Vecchiarini and Somià (2023) similarly highlighted the growing relevance of AI to entrepreneurial processes and decision-making.

The educational value of AI is also supported by emerging empirical evidence. Zulfiqar et al. (2024), using a time-lagged design among students in Pakistan, found that AI-supported teaching methods enhanced entrepreneurial attitudes and learning. Xie and Wang (2025), in a study involving 346 students, reported that generative AI-supported entrepreneurship education significantly improved entrepreneurial self-efficacy and entrepreneurial intention. Similarly, Zhang et al. (2025), using data from 1,021 students in China, found positive relationships among generative AI use, AI knowledge and entrepreneurial ability, with creativity influencing some of the relationships. In Nigeria, Akem (2025) found that AI-supported

entrepreneurship training was associated with students' start-up intentions among University of Calabar students, while Edokpolor et al. (2026) reported meaningful relationships between AI-driven technology, study engagement and entrepreneurial career intentions among Nigerian vocational business students. Although these studies collectively demonstrate the educational and entrepreneurial relevance of AI, most have focused on entrepreneurial intention, self-efficacy, attitudes, career intentions or general entrepreneurial ability. Less attention has been given to the extent to which AI predicts the broader combination of entrepreneurial learning and actual entrepreneurial practice among Business Education students.

Alongside AI, automation is becoming increasingly important in contemporary business and educational environments. Automation involves the use of technology to perform tasks or processes with limited direct human intervention. In business, automation is applied to areas such as accounting, production, inventory management, customer service, marketing, data processing, logistics and administrative operations. The increasing adoption of automated systems means that prospective entrepreneurs need not only understand business processes but also recognise where and how technology can improve efficiency, reduce costs and enhance value creation. The WEF (2025) identified automation as a significant driver of changes in occupational structures and skill requirements, suggesting that students who are exposed to automation-related competencies may be better positioned to respond to emerging business opportunities.

The relevance of automation to entrepreneurial education is reflected in the growing literature on technology, Industry 4.0 and digital transformation. Orah et al. (2020), in a study of 956 Business Education students in Rivers State, examined the relevance of technologies including computers, smartphones, industrial machines, robots, sensors and the internet. The study showed that technology was considered important for improving production efficiency, distribution and logistics. Kola et al. (2022) examined Education 4.0 and the Fourth Industrial Revolution in Nigerian Colleges of Education and emphasised the importance of digital technologies and automation in preparing learners for technology-driven work. Amjad et al. (2020) also highlighted the need for entrepreneurship education to respond to technological developments such as automation and artificial intelligence. Similarly, a study on Industry 4.0 entrepreneurship education (2022) demonstrated the value of integrating Industry 4.0 technologies and processes with entrepreneurial methods, business models, finance and sales. More specifically, Ogundola and Ogunleye (2025) found variations in Business Education students' awareness of automated accounting technologies and linked some of the limitations to inadequate exposure and curriculum constraints.

Taken together, the literature suggests that automation has important implications for Business Education and entrepreneurship. However, existing studies have largely concentrated on technological awareness, digitalisation, Industry 4.0, production efficiency, accounting automation and employability. Comparatively less attention has been given to automation as an explanatory factor in students' entrepreneurial learning and practical entrepreneurial activities. This represents an important gap because awareness of automation alone does not necessarily indicate that students can use automated technologies to learn about entrepreneurship, identify opportunities, solve business problems or engage in entrepreneurial activities. The present study therefore considers automation not merely as a technological skill but as a potential predictor of students' entrepreneurial learning and practice.

The convergence of artificial intelligence and automation further strengthens the need to reconsider how entrepreneurial competencies are developed. AI can support the cognitive dimensions of entrepreneurship by assisting with information processing, idea generation, analysis, prediction and decision-making, while automation can support the operational dimensions by streamlining repetitive processes and improving efficiency. Together, the two technologies can create opportunities for students to move from acquiring entrepreneurial knowledge to applying that knowledge in practical contexts. Anubhav et al. (2024) and Bernadó and Bratzke (2024) highlighted the increasing importance of technology-enabled entrepreneurial competencies in responding to emerging business environments. The integration of AI and automation into entrepreneurship education may therefore provide learners with a more realistic understanding of how contemporary businesses operate and how technological resources can be used to create and sustain value.

Despite these opportunities, the integration of AI and automation into education also presents challenges. Concerns have been raised regarding the accuracy and reliability of AI-generated information, students' overdependence on technological systems, academic integrity, privacy, unequal access to digital resources and the possible weakening of independent and critical thinking when technology is used without

appropriate guidance. Miao and Holmes (2023) emphasised the need for responsible and human-centred approaches to the use of generative AI in education. Amahi et al. (2025) similarly pointed to challenges associated with technology adoption and the development of appropriate competencies within the Nigerian educational environment. These concerns suggest that simply introducing AI and automation into Business Education may not automatically produce improved entrepreneurial outcomes. Students require appropriate pedagogical guidance, practical exposure and opportunities to use these technologies critically and creatively.

The issue is particularly important in Nigeria, where entrepreneurship education is increasingly viewed as a strategy for improving students' capacity to create employment and respond to economic uncertainty. High levels of youth unemployment, changing labour-market requirements and increasing digitalisation have strengthened the need for graduates to possess competencies that extend beyond formal employment. Business Education students, in particular, are expected to develop competencies that enable them to operate effectively in organisations while also possessing the capacity to establish and manage businesses. The growing availability of AI-enabled applications and automated business systems creates new opportunities for students to develop these competencies. However, the extent to which students are actually acquiring and applying such technologies for entrepreneurial purposes remains an empirical question.

The situation is relevant to Cross River State, where universities and other tertiary institutions are expected to prepare graduates for an increasingly technology-driven economy. Existing studies in the state have begun to examine the relationship between technology and Business Education. For instance, Afo et al. (2024) investigated issues relating to computer-based artificial intelligence among Business Education students, demonstrating the growing relevance of AI within the local educational context. Other technology-related studies have identified challenges associated with students' access to and application of emerging technologies. However, available evidence remains fragmented, with limited empirical attention to the combined influence of AI and automation on entrepreneurial learning and practice among Business Education students in universities in Cross River State.

The identified gap is important because entrepreneurial learning and entrepreneurial practice are closely related but conceptually distinct outcomes. Entrepreneurial learning involves the acquisition and development of knowledge, skills, attitudes and insights necessary for identifying opportunities, solving problems and making entrepreneurial decisions. Entrepreneurial practice, on the other hand, reflects the application of such learning through activities such as developing business ideas, planning ventures, using resources, engaging customers, solving market problems and implementing business initiatives. Examining the two dimensions together provides a broader understanding of whether students are not only learning entrepreneurial concepts but are also developing the capacity to apply what they have learned in practical situations.

Furthermore, the existing empirical literature provides stronger evidence for AI than for automation in relation to entrepreneurship education, while relatively few studies have examined the two technologies within the same predictive framework. Most AI studies have concentrated on entrepreneurial intention, self-efficacy, attitudes, career choice or general entrepreneurial ability, whereas studies relating to automation have focused largely on technology awareness, digital skills, Industry 4.0 and workplace efficiency. Consequently, there is insufficient evidence on whether AI and automation individually and jointly predict entrepreneurial learning and practice among Business Education students. This gap is particularly evident at the university level in Cross River State, where empirical evidence on technology-enabled entrepreneurial development remains limited.

Addressing this gap is timely because the nature of entrepreneurship itself is changing. Entrepreneurs increasingly use AI to generate and evaluate ideas, analyse markets, communicate with customers, create content and support decisions, while automation is used to improve operational efficiency and reduce the burden of repetitive tasks. Bell and Bell (2026) observed the growing importance of AI-enabled approaches to entrepreneurship and entrepreneurial development. As these technologies become more accessible, universities have an important role to play in ensuring that students develop the competencies required to use them productively, ethically and creatively.

Therefore, the present study investigates artificial intelligence and automation as predictors of entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria. The study responds to the identified empirical and contextual gaps by examining artificial intelligence and automation separately and determining their joint contribution to students' entrepreneurial

learning and practice. By doing so, the study seeks to provide evidence that can guide curriculum development, teaching practices and technology integration in Business Education, while contributing to the growing literature on technology-enabled entrepreneurship education in the Nigerian university context.

Problem of the Study

The rapid growth of artificial intelligence (AI), automation and other digital technologies is changing how businesses identify opportunities, develop ideas, interact with customers, analyse information and perform routine activities. This development has increased the need for university graduates to possess not only conventional business knowledge but also technology-enabled entrepreneurial competencies. Business Education is particularly expected to respond to this need by preparing students for both employment and self-employment through practical skills in opportunity recognition, creativity, innovation, problem-solving, decision-making and enterprise management. Despite the growing availability of AI and automation tools, it is not clear whether Business Education students are acquiring and applying these technologies in ways that meaningfully enhance their entrepreneurial learning and practice. AI can support activities such as idea generation, market research, business planning, content creation and data analysis, while automation can improve activities such as record keeping, customer communication, inventory management and financial operations. However, access to these technologies does not necessarily translate into effective entrepreneurial learning. Students may use them mainly for routine academic tasks, while limited practical exposure, inadequate digital competencies, overdependence on AI-generated information and concerns about accuracy and ethical use may restrict their entrepreneurial value.

The problem is also evident in the limited attention given to automation within entrepreneurship education. Although automation is increasingly embedded in contemporary business operations, students may have inadequate opportunities to understand how automated systems can be applied to improve efficiency and support entrepreneurial activities. This may create a gap between what students learn in the university and the technology-enabled practices they are likely to encounter in the business environment. Moreover, AI and automation are related but distinct technologies; therefore, examining them separately is necessary to determine their respective contributions to entrepreneurial learning and practice.

Existing studies have provided evidence on the relevance of AI, digital technologies and Industry 4.0 to entrepreneurship education. However, much of the available research has focused on areas such as technology adoption, entrepreneurial intention, self-efficacy, attitudes, digital skills or employability. Comparatively little empirical evidence has examined AI and automation as separate predictors of entrepreneurial learning and practice, particularly among Business Education students in Nigerian universities. Evidence specific to universities in Cross River State is even more limited, despite possible differences in students' technological exposure, institutional resources and opportunities for practical entrepreneurial engagement.

The central problem, therefore, is the limited empirical evidence on the extent to which artificial intelligence and automation predict entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria. Without such evidence, it is difficult for curriculum planners and university authorities to determine how effectively these technologies contribute to students' entrepreneurial development and how they should be integrated into Business Education. The study therefore seeks to determine whether artificial intelligence and automation significantly predict entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria.

Objectives of the Study

The main objective of the study was to examine the extent to which artificial intelligence and automation predicted entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria. Specifically, the study sought to:

1. determine the extent to which artificial intelligence predicts entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria; and
2. determine the extent to which automation predicts entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria.

Research Questions

The following research questions were formulated in line with the objectives:

1. To what extent does artificial intelligence predict entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria?
2. To what extent does automation predict entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria?

Research Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

H_{01}: Artificial intelligence does not significantly predict entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria.

H_{02}: Automation does not significantly predict entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria.

H_{03}: Artificial intelligence and automation do not jointly significantly predict entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria.

Methods

The study adopted a predictive correlational survey research design. The design was considered appropriate because the study sought to examine whether artificial intelligence and automation significantly predict entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria. Unlike an experimental design, the predictive correlational survey design does not involve manipulation of the independent variables; rather, it permits the researcher to examine naturally occurring relationships among variables and determine the extent to which one or more predictor variables account for variations in a criterion variable. The design was particularly suitable for the present study because artificial intelligence and automation constituted the predictor variables, while entrepreneurial learning and practice constituted the criterion variable. The design further enabled the study to examine both the individual predictive effects of artificial intelligence and automation and their combined predictive contribution to entrepreneurial learning and practice.

The study was conducted in Cross River State, Nigeria, among final-year Business Education students in all the universities offering Business Education-related programmes. The choice of final-year students was considered appropriate because they had acquired substantial exposure to Business Education courses and were therefore more likely to have developed sufficient knowledge and experience to provide meaningful responses concerning the application of artificial intelligence and automation to entrepreneurial learning and practice. The study population comprised 436 final-year Business Education students distributed across four universities. The population consisted of 53 students from the University of Calabar (UNICAL), 289 students from the University of Cross River State (UNICROSS), 38 students from the University of Education/Entrepreneurship Education, and 56 students from Arthur Jarvis University, Akpabuyo. Because the population was finite, accessible and manageable, the entire population was included in the study through census sampling or total enumeration. Accordingly, questionnaires were administered to all 436 members of the population. A total of 435 questionnaires were correctly completed and considered usable, representing a 99.8% usable response rate. The 435 valid responses constituted the dataset used for the statistical analyses. The institutional names and programme designations should correspond to the official names used by the respective institutions at the time of data collection.

Data were collected using a researcher-developed structured questionnaire titled *Artificial Intelligence and Automation as Predictors of Entrepreneurial Learning and Practice Questionnaire (AIA-PELPQ)*. The instrument was developed from the objectives of the study, the research questions and hypotheses, and relevant literature on artificial intelligence, automation, entrepreneurship and Business Education. The questionnaire comprised three clusters corresponding to the variables investigated in the study: artificial intelligence, automation, and entrepreneurial learning and practice. Each cluster contained seven substantive items, resulting in a total of 21 substantive items. The artificial intelligence cluster measured students' exposure to and engagement with artificial intelligence applications relevant to learning and entrepreneurial activities. The automation cluster measured students' exposure to and utilisation of automated technologies and processes in learning and entrepreneurial activities. The entrepreneurial learning and practice cluster measured students' acquisition and application of entrepreneurial knowledge, skills, attitudes and practical capabilities. The items were structured on a four-point rating scale comprising Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD), weighted 4, 3, 2 and 1,

respectively. The four-point scale was adopted to provide respondents with a clear directional choice and to avoid the inclusion of a neutral midpoint.

The validity of the instrument was established through face and content validation. Three experts participated in the validation process, comprising two experts in Business Education and one expert in Measurement and Evaluation. The experts were requested to examine the questionnaire items in relation to their clarity, relevance, appropriateness of language, adequacy of coverage, representativeness of the constructs, and alignment with the objectives, research questions and hypotheses of the study. Their observations and recommendations were carefully considered, and necessary modifications were made to the wording, structure and arrangement of the items before the final version of the instrument was produced. The validation process helped to ensure that the instrument adequately represented the constructs of artificial intelligence, automation and entrepreneurial learning and practice and that the items were understandable to the target respondents.

The reliability of the instrument was established through a pilot test involving 40 final-year Business Education students from a university outside the selected study institutions. The students who participated in the pilot test were excluded from the main study to avoid duplication of responses and possible contamination of the main data. The pilot-test responses were subjected to Cronbach's alpha reliability analysis to determine the internal consistency of the items in each cluster and for the instrument as a whole. The artificial intelligence cluster produced a Cronbach's alpha coefficient of 0.91, the automation cluster produced a coefficient of 0.88, and the entrepreneurial learning and practice cluster produced a coefficient of 0.93. The overall instrument yielded a Cronbach's alpha coefficient of 0.92. These coefficients were above the commonly accepted minimum threshold of 0.70, indicating satisfactory to high internal consistency among the items measuring the respective study variables. The reliability results therefore provided evidence that the instrument was sufficiently consistent for use in the main study.

The administration of the instrument was carried out after the necessary institutional permissions had been obtained from the relevant authorities in the selected universities. The researcher administered the questionnaires directly to the respondents, with the assistance of trained research assistants where necessary. The purpose of the study was explained to the respondents before administration, and participation was voluntary. Respondents were encouraged to provide responses that accurately reflected their experiences and perceptions. The completed questionnaires were retrieved after administration and subjected to screening to identify incomplete or improperly completed copies. Of the 436 questionnaires administered, 435 were sufficiently completed and retained for analysis. The valid responses were coded and entered into the statistical software for analysis.

The data were analysed using descriptive and inferential statistics in accordance with the research questions and hypotheses. Mean and standard deviation were employed to answer the research questions and determine the level of artificial intelligence, automation and entrepreneurial learning and practice reported by the respondents. The criterion mean was established at 2.50 based on the four-point response scale. Consequently, an item or cluster mean of 2.50 or above was interpreted as indicating a relatively high level of the attribute being measured, whereas a mean below 2.50 was interpreted as indicating a relatively low level. Standard deviation was used to determine the extent to which respondents' ratings deviated from the respective mean, with a smaller standard deviation indicating greater concentration of responses around the mean.

Simple linear regression analysis was used to test the first and second null hypotheses separately. Hypothesis One examined whether artificial intelligence significantly predicted entrepreneurial learning and practice, while Hypothesis Two examined whether automation significantly predicted entrepreneurial learning and practice. For each simple regression model, the coefficient of determination (R^2) was used to determine the proportion of variance in entrepreneurial learning and practice explained by the respective predictor variable. The regression coefficient and standardised beta coefficient were used to establish the direction and magnitude of the predictive relationship, while the *t*-statistic and associated probability value were used to determine whether the predictive effect was statistically significant. The overall significance of each simple regression model was assessed using the F-statistic.

In addition to the separate regression analyses, multiple linear regression analysis was employed to determine the joint predictive contribution of artificial intelligence and automation to entrepreneurial learning and practice. This analysis provided a more comprehensive assessment of the predictive relationship because it considered both predictor variables simultaneously. The multiple regression model enabled the researcher to determine the proportion of variance in entrepreneurial learning and practice

jointly explained by artificial intelligence and automation, as indicated by R^2 and adjusted R^2. It also enabled the researcher to determine the unique contribution of each predictor after controlling for the influence of the other predictor through the standardised beta coefficients. The overall significance of the combined regression model was determined using the F-statistic. Thus, the separate regression analyses provided evidence concerning the individual predictive effects of artificial intelligence and automation, while the multiple regression analysis established their combined explanatory and predictive contribution.

The statistical decision for the hypotheses was based on the 0.05 level of significance. A null hypothesis was rejected where the probability value associated with the relevant regression coefficient or model was less than 0.05, indicating a statistically significant predictive relationship. Conversely, a null hypothesis was retained where the probability value was greater than or equal to 0.05. The analysis therefore provided an empirical basis for determining whether artificial intelligence and automation significantly predicted entrepreneurial learning and practice among Business Education students. The joint predictive relationship was specified using the multiple linear regression model:

$$\mathbf{ELP = \beta_0 + \beta_1 AI + \beta_2 AUT + \varepsilon}$$

where **ELP** represents entrepreneurial learning and practice, **AI** represents artificial intelligence, **AUT** represents automation, $\boldsymbol{\beta_0}$ represents the regression constant or intercept, $\boldsymbol{\beta_1}$ represents the regression coefficient for artificial intelligence, $\boldsymbol{\beta_2}$ represents the regression coefficient for automation, and $\boldsymbol{\varepsilon}$ represents the error term. The model assumes that entrepreneurial learning and practice can be predicted from the combined linear contributions of artificial intelligence and automation. The model was used to establish the overall explanatory power of the predictor variables and to determine the unique predictive contribution of each predictor when both were entered into the model simultaneously.

The analytical procedure was structured to correspond directly with the study's research questions and hypotheses. Descriptive statistics were first used to establish the observed levels of the study variables. Simple linear regression was then used to determine the individual predictive effects of artificial intelligence and automation, corresponding to Tables 4 and 5, respectively. Finally, multiple linear regression was used to establish the joint predictive effect of the two predictor variables, as presented in Table 6. This analytical structure enabled the study to distinguish between the independent predictive contribution of each technology and the additional explanatory value obtained when artificial intelligence and automation were considered together in predicting entrepreneurial learning and practice.

Results

Research Question One

To what extent does artificial intelligence predict entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria?

Table 4: Mean and Standard Deviation of Respondents' Ratings on Artificial Intelligence

S/N	Items on Artificial Intelligence Items	Mean	SD	Decision
1	I use artificial intelligence tools to generate and evaluate potential business ideas.	3.26	0.63	Agree
2	AI tools help me identify and analyse potential entrepreneurial opportunities.	3.24	0.63	Agree
3	I use AI applications to obtain information about customers and market trends when developing business ideas.	3.18	0.59	Agree
4	AI-supported learning helps me understand entrepreneurial concepts and processes more effectively.	3.25	0.62	Agree
5	I use AI tools to develop or improve business plans and business models.	3.13	0.62	Agree
6	AI applications help me develop creative solutions to entrepreneurial problems.	3.21	0.61	Agree
7	Using AI tools improves my ability to apply entrepreneurial knowledge to practical business activities.	3.16	0.61	Agree
	Cluster Mean	**3.21**	**0.47**	**Agree**

The result presented in Table 4 shows that all seven items recorded mean scores above the criterion mean of 2.50. The highest mean was obtained for the statement that students use AI tools to generate and evaluate potential business ideas (M = 3.26, SD = 0.63), followed by the view that AI-supported learning helps students understand entrepreneurial concepts and processes more effectively (M = 3.25, SD = 0.62). The lowest mean was recorded for the use of AI tools to develop or improve business plans and business models (M = 3.13, SD = 0.62). The cluster mean of 3.21 indicates that respondents generally agreed that AI contributes substantially to their entrepreneurial learning and practice.

Research Question Two

To what extent does automation predict entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria?

Table 5: Mean and Standard Deviation of Respondents' Ratings on Automation

S/N	Automation Items	Mean	SD	Decision
1	I understand how automated technologies can be used to improve entrepreneurial activities.	2.97	0.61	Agree
2	I can identify routine business activities that can be performed using automated technologies.	2.97	0.64	Agree
3	I can use automated digital tools to improve the efficiency of business operations.	2.88	0.62	Agree
4	Automation helps me understand how entrepreneurs can reduce time and effort in performing routine business tasks.	3.03	0.64	Agree
5	I use automated digital tools to support marketing and customer-related activities.	2.93	0.65	Agree
6	Exposure to automation helps me develop practical skills for operating a technology-driven business.	3	0.61	Agree
7	Learning about automation improves my ability to apply technology in solving entrepreneurial problems.	2.97	0.63	Agree
	Cluster Mean	**2.96**	**0.46**	**Agree**

The data presented in Table 5 indicates that all seven automation items had mean scores above the criterion mean of 2.50. The highest rating was obtained for the statement that automation helps students understand how entrepreneurs can reduce time and effort in routine business tasks (M = 3.03, SD = 0.64). The lowest mean was recorded for the ability to use automated digital tools to improve business-operation efficiency (M = 2.88, SD = 0.62). The cluster mean of 2.96 indicates that respondents generally agreed that automation contributes to their entrepreneurial learning and practice, although the ratings were lower than those recorded for artificial intelligence.

Test of Hypothesis One

H_{01}: *Artificial intelligence does not significantly predict entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria.*

Table 4: Regression Analysis of Artificial Intelligence as a Predictor of Entrepreneurial Learning and Practice

Model	R	R^2	Adjusted R^2	F	Sig.	
Artificial Intelligence	0.366	0.134	0.132	67.13	<.001	
Predictor	**B**	**SE**	**β**	**t**	**Sig.**	**Decision**

Constant	1.356	0.163	0.00	8.32	<.001	Significant
Artificial Intelligence	0.367	0.045	0.366	8.19	<.001	Reject H_{01}

The data in Table 4 shows that artificial intelligence had a positive relationship with entrepreneurial learning and practice, as indicated by an R-value of 0.366. The R^2 value of 0.134 indicates that artificial intelligence alone explained 13.4% of the variance in entrepreneurial learning and practice among Business Education students. The adjusted R^2 of 0.132 indicates that after adjustment, approximately 13.2% of the variance in entrepreneurial learning and practice was explained by artificial intelligence. The regression model was statistically significant, $F(1, 434) = 67.13$, $p < .001$. This indicates that artificial intelligence significantly predicts entrepreneurial learning and practice among the students. Table 4 also shows that artificial intelligence had a positive and significant predictive effect on entrepreneurial learning and practice ($\beta = 0.366$, $t = 8.19$, $p < .001$). The positive beta coefficient indicates that an increase in students' engagement with artificial intelligence is associated with an increase in their entrepreneurial learning and practice. Since the probability value of $p < .001$ is less than the stipulated 0.05 level of significance, the null hypothesis is rejected. This implies that Artificial intelligence significantly predicts entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria.

Test of Hypothesis Two

H_{02}: Automation does not significantly predict entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria.

Table 5: Regression Analysis of Automation as a Predictor of Entrepreneurial Learning and Practice

Model	**R**	**R^2**	**Adjusted R^2**	**F**	**Sig.**	
Automation	0.275	0.076	0.074	35.66	<.001	
Predictor	**B**	**SE**	**β**	**t**	**Sig.**	**Decision**
Constant	1.512	0.174	0.00	8.69	<.001	Significant
Automation	0.275	0.046	0.275	5.97	<.001	Reject H_{02}

Table 5 indicates that automation had a positive relationship with entrepreneurial learning and practice, with an R-value of 0.275. The R^2 value of 0.076 shows that automation alone explained 7.6% of the variance in entrepreneurial learning and practice among Business Education students. The adjusted R^2 of 0.074 indicates that approximately 7.4% of the variance was explained after adjustment. The regression model was statistically significant, $F(1, 434) = 35.66$, $p < .001$. This implies that automation significantly predicts entrepreneurial learning and practice among the students. The Table 5 also shows that automation had a positive and statistically significant predictive effect on entrepreneurial learning and practice ($\beta = 0.275$, $t = 5.97$, $p < .001$). The positive beta coefficient indicates that greater exposure to and utilisation of automation is associated with improved entrepreneurial learning and practice. Since the probability value of $p < .001$ is less than the 0.05 level of significance, the null hypothesis is rejected. The study implies that Automation significantly predicts entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria.

Test of Hypothesis Three

H_{03}: Artificial intelligence and automation do not jointly significantly predict entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria.

Table 6: Multiple Regression Analysis of Artificial Intelligence and Automation as Predictors of Entrepreneurial Learning and Practice

Model	R	R^2	Adjusted R^2	F	Sig.	
Artificial Intelligence and Automation	0.529	0.28	0.276	84.04	<.001	
Predictor	**B**	**SE**	**β**	**t**	**Sig.**	**Decision**
Constant	1.195	0.155	0.00	7.73	<.001	Significant
Artificial Intelligence	0.367	0.042	0.366	8.63	<.001	Significant
Automation	0.275	0.043	0.275	6.41	<.001	Significant

Table 6 presents the multiple regression analysis of artificial intelligence and automation as joint predictors of entrepreneurial learning and practice. The analysis produced an R-value of .529, indicating a moderate positive relationship between the combined predictor variables and entrepreneurial learning and practice. The R^2 value of .280 indicates that artificial intelligence and automation jointly explained 28.0% of the variance in entrepreneurial learning and practice, while the adjusted R^2 of .276 indicates that the model accounted for 27.6% of the variance after adjustment for the number of predictors. The overall regression model was statistically significant, $F(2, 433) = 84.04$, $p < .001$, indicating that artificial intelligence and automation jointly provide a significant prediction of entrepreneurial learning and practice.

Both predictors made significant positive contributions to the model. Artificial intelligence had a positive and statistically significant effect ($\beta = .366$, $t = 8.63$, $p < .001$), while automation also had a positive and statistically significant effect ($\beta = .275$, $t = 6.41$, $p < .001$). Based on the standardised beta coefficients, artificial intelligence made the stronger unique contribution to entrepreneurial learning and practice. The findings therefore suggest that although each technology independently predicts entrepreneurial learning and practice, their combined inclusion in the regression model provides substantially greater explanatory power, accounting for 28.0% of the variance in the criterion variable.

Discussion of Findings

The first finding established that Business Education students generally agreed that artificial intelligence contributes to their entrepreneurial learning and practice, as indicated by the cluster mean of 3.21. The item-level results showed particularly strong agreement regarding the use of AI for generating and evaluating business ideas, identifying entrepreneurial opportunities, understanding entrepreneurial concepts and developing creative solutions to entrepreneurial problems. This suggests that students are beginning to perceive AI not merely as an academic technology but as a practical resource for entrepreneurial activities. The finding agrees with Zulfiqar et al. (2024), who found that embedding AI tools into teaching methods significantly improved university students' entrepreneurial attitudes and learning. Their study concluded that AI can serve as a dynamic educational resource for developing entrepreneurial orientation. The present finding extends this evidence by demonstrating that the positive role of AI is also observable among Business Education students in the Nigerian university context. The finding is also

consistent with Xie and Wang (2025), who found that generative-AI-supported entrepreneurship education significantly enhanced entrepreneurial self-efficacy and entrepreneurial intention among university students. Their study reported particularly strong effects of AI-supported entrepreneurship education on entrepreneurial self-efficacy ($\beta = .523$, $p < .001$). The present finding complements their evidence by showing that AI is significantly associated with broader entrepreneurial learning and practice rather than intention alone.

The finding further agrees with Wahl and Münch (2022), whose Industry 4.0 entrepreneurship programme demonstrated that a university course designed around emerging technologies and entrepreneurship could improve students' knowledge in an Industry 4.0 context. The present study similarly demonstrates that technology-integrated learning can strengthen students' preparedness for technology-driven entrepreneurial environments. The finding is also consistent with recent Nigerian evidence. Eneogwe (2025) investigated AI application in Business Education delivery for entrepreneurship skill development and reported the importance of strengthening AI integration into Business Education. Similarly, Francis and Kelvin (2025) examined AI for creativity and innovation in Business Education and entrepreneurship practice and reported positive attention to AI-enabled creativity and innovation among students. Further support comes from Olaniyi et al. (2025), whose study of AI-powered educational platforms among Business Education students found generally positive perceptions regarding their effectiveness in fostering entrepreneurial creativity. Amahi et al. (2025) also examined AI application in Business Education and entrepreneurship practice, highlighting the opportunities created by AI while identifying implementation issues that institutions must address.

The significant regression coefficient obtained in the present study ($\beta = .366$, $p < .001$) therefore provides empirical support for the argument that AI is not simply an emerging educational technology but can function as an important enabler of entrepreneurial learning and practical engagement. The finding is also consistent with the recent study by Vu et al. (2026), which found that AI integration can strengthen the effects of entrepreneurship education on entrepreneurial outcomes.

However, the present result should not be interpreted to mean that AI alone determines students' entrepreneurial development. The R^2 value indicates that the two predictors together explained 28.0% of the variance, leaving a substantial proportion attributable to other factors such as entrepreneurial education quality, experiential learning, institutional support, students' creativity, self-efficacy, access to technology and socioeconomic conditions.

The second finding showed that respondents generally agreed that automation contributes to entrepreneurial learning and practice, although the cluster mean of 2.96 was lower than the AI cluster mean of 3.21. This difference is noteworthy. It suggests that Business Education students may be more familiar with AI applications than with the broader use of automated technologies in entrepreneurial processes. The finding is particularly important when considered alongside Uzowulu et al. (2025). Their study of 164 final-year Business Education students in South-East Nigerian universities found that respondents were generally only slightly aware of accounting automation, including tax and cost accounting automation. The researchers attributed the limited awareness partly to insufficient personal effort to keep abreast of technological trends and inadequate curriculum experiences relating to automation. The relatively lower automation mean in the present study is therefore understandable. Although students agreed that automation can improve entrepreneurial activities, reduce time and effort and support technology-driven businesses, the mean scores suggest that their practical exposure may not yet be as strong as their exposure to AI.

The finding nevertheless agrees with Wahl and Münch (2022), who demonstrated the relevance of Industry 4.0 technologies and processes to entrepreneurship education. Their study showed that a tailored university programme could improve students' knowledge of the Industry 4.0 entrepreneurship domain. This supports the position that students require structured educational exposure to automation-related technologies rather than being expected to acquire such competencies incidentally. The present result is also consistent with studies of digitalisation and technology integration in Business Education. The growing use of digital tools, accounting software and automated processes means that students increasingly need technological competence to participate effectively in contemporary business environments. The evidence from Nigerian Business Education research therefore supports greater curricular attention to technology-enabled business processes.

Importantly, automation significantly predicted entrepreneurial learning and practice in the present study ($\beta = .275$, $p < .001$). This indicates that, despite comparatively lower exposure than AI, automation remains an important predictor of entrepreneurial learning and practical engagement. Students who understand how routine business processes can be automated may be better positioned to identify opportunities for improving efficiency, reducing operating costs and creating technology-based business solutions. The result also supports the broader Industry 4.0 entrepreneurship literature, which argues that entrepreneurship education must expose students to the technologies and processes characterising contemporary business environments.

An important additional finding is that AI made a stronger unique contribution than automation. The standardised coefficient for AI was $\beta = .366$ compared with $\beta = .275$ for automation. This suggests that AI may currently have greater relevance to students' entrepreneurial learning and practice. One possible explanation is that AI tools are more visible and accessible to students through widely available generative-AI applications, while many automation technologies are embedded within organisational systems and may require specialised software, infrastructure or practical workplace exposure. This interpretation is consistent with evidence showing growing student engagement with AI-powered educational platforms and generative AI. At the same time, the significant contribution of automation demonstrates that it should not be treated as a secondary or irrelevant technology. Rather, the findings indicate that AI and automation are complementary technologies that can jointly strengthen students' preparation for technology-enabled entrepreneurship.

Conclusion

Based on the findings, the study concludes that artificial intelligence and automation are significant predictors of entrepreneurial learning and practice among Business Education students in universities in Cross River State, Nigeria. The students demonstrated a relatively high level of engagement with AI for generating business ideas, identifying opportunities, understanding entrepreneurial concepts, developing creative solutions and applying entrepreneurial knowledge. Automation also demonstrated a positive contribution, particularly in helping students understand how technology can reduce time and effort, improve business processes and support technology-driven enterprises. The regression results further established that AI and automation jointly explained 28.0% of the variation in entrepreneurial learning and practice. Artificial intelligence made the stronger individual contribution, although automation also made a statistically significant contribution. The findings therefore suggest that integrating both technologies into Business Education could provide students with more relevant preparation for contemporary entrepreneurial environments.

Recommendations

Based on the findings, the following recommendations are made:

1. Universities should integrate AI into entrepreneurship and Business Education courses. Students should be given structured opportunities to use generative AI for opportunity identification, market analysis, business-model development, business planning and entrepreneurial problem-solving.
2. Automation should be given greater attention in the Business Education curriculum. Since the automation cluster recorded a lower mean than AI, practical learning activities should expose students to automated accounting, marketing, customer relationship management, inventory, data analysis and other business processes.
3. Business Education lecturers should receive continuous professional development in AI and automation. Such training should focus not only on the technical operation of tools but also on their pedagogical and entrepreneurial applications.
4. Universities should establish technology-enabled entrepreneurship laboratories. These laboratories could provide students with practical opportunities to experiment with AI tools, automation platforms, digital business models and other emerging technologies.
5. Entrepreneurship education should become more experiential and technology-driven. Students should learn through business simulations, digital projects, AI-supported business-plan development and technology-based enterprise projects rather than relying predominantly on theoretical classroom instruction.

6. Universities should establish guidelines for responsible AI use. Students should be trained to verify AI-generated information, protect data, respect intellectual property and avoid excessive dependence on AI-generated outputs.
7. Industry–university partnerships should be strengthened. Collaboration with technology firms and entrepreneurial organisations would provide students with exposure to real-world automation systems and AI-enabled business processes.

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ARTIFICIAL INTELLIGENCE TOOLS UTILIZATION AND ENTREPRENEURIAL COMPETENCY DEVELOPMENT AMONG BUSINESS EDUCATION STUDENTS

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Abstract
This study examined artificial intelligence tools utilization and entrepreneurial competency development among Business Education students. Two research questions guided the study. A descriptive survey research design was adopted. The population comprised 259 final-year Business Education students, consisting of 170 students from Federal College of Education (Technical), Omoku, Rivers State and 89 students from Nnamdi Azikiwe University, Awka, Anambra State. The entire population was used because of its manageable size. A structured questionnaire titled Artificial Intelligence Tools Utilization and Entrepreneurial Competency Development Questionnaire (AITUECDQ) was used for data collection. The instrument was validated by three experts. Mean and standard deviation were used for data analysis. Findings from the respondents analysis showed that artificial intelligence tools were highly utilized for entrepreneurial learning and activities, with a cluster mean of 2.80. ChatGPT recorded the highest utilization, while Microsoft Copilot was lowly utilized. Findings further showed that entrepreneurial competencies were developed to a high extent through artificial intelligence tools utilization, with a cluster mean of 2.88. Creativity and innovation recorded the highest mean, followed by digital marketing and business communication. The study concluded that purposeful utilization of artificial intelligence tools can complement entrepreneurial learning and enhance entrepreneurial competency development among Business Education students. Ther researchers recommended deliberate integration of relevant AI tools into practical entrepreneurial learning and strengthening AI-supported activities for entrepreneurial competency development.

Keywords: Artificial intelligence, AI tools utilization, Business Education, entrepreneurial competencies.

Introduction
Artificial intelligence (AI) has emerged as one of the major technologies transforming education, business and entrepreneurship in the twenty-first century. Its increasing application to information processing, content creation, communication, market analysis, customer relations and decision-making is changing the competencies required of graduates entering contemporary workplaces and entrepreneurial environments. Within higher education, generative AI applications have further expanded opportunities for students to interact with intelligent systems capable of supporting learning, research, problem-solving and creative activities. Bell and Bell (2023) observed that the rapid development of generative AI has important implications for entrepreneurship education because students need to be prepared to exploit emerging entrepreneurial opportunities while developing the critical and reflective abilities required for responsible use of the technology.

Business Education is particularly affected by this transformation because of its responsibility for preparing students with occupational, technological, managerial and entrepreneurial competencies. The programme is expected to equip learners with knowledge and practical skills for employment, self-employment and effective participation in the business environment. Consequently, Business Education cannot remain disconnected from technological developments that are redefining business operations. Recent Nigerian Business Education literature increasingly emphasizes the relevance of AI applications to teaching, learning, entrepreneurship and graduate preparation (Onuotu et al. 2025). Gbogbor (2025), for instance, identified the growing need to deploy AI tools in entrepreneurship practice so that students can acquire competencies relevant to contemporary technological and digital demands.

AI tools refer to software applications that employ artificial intelligence techniques to perform activities that ordinarily require aspects of human intelligence, such as generating information, analysing data, recognizing patterns, solving problems and supporting decisions. Applications such as ChatGPT, Gemini and other generative and productivity tools can potentially support Business Education students in entrepreneurial activities including business idea generation, market investigation, preparation of business plans, development of promotional materials and problem-solving. The usefulness of such applications, however, depends on students' awareness, access and ability to employ them appropriately for productive learning purposes.

Evidence suggests that AI utilization among Business Education students is becoming increasingly noticeable. Ogundola and Ogunleye (2026) found high adoption of general-purpose AI tools, particularly generative AI applications such as ChatGPT and Gemini, among Business Education students in tertiary institutions in Nigeria. Their findings further indicated positive relationships between AI usage, academic performance and digital skill acquisition. Similarly, Ikpeama et al. (2025) has recently published studies addressing AI application in Business Education curriculum delivery, AI tools for teaching entrepreneurship practice, and AI utilization for improving learning outcomes, demonstrating the growing relevance of the technology to the discipline.

The increasing utilization of AI tools becomes particularly important when considered in relation to entrepreneurial competency development. Entrepreneurial competencies encompass the knowledge, skills, abilities and behavioural capacities that enable individuals to recognize business opportunities, generate innovative ideas, solve problems, make informed decisions and successfully undertake entrepreneurial activities. Okolie et al. (2021) established that entrepreneurship education influenced several entrepreneurial competencies among Nigerian undergraduate students and particularly predicted opportunity recognition. Similarly, Nwaokokorom et al. (2025) emphasized the importance of entrepreneurship development in strengthening relevant competencies for sustainable employment among Business Education graduates. The authors emphasized the need for practical and innovative approaches to developing students' entrepreneurial competencies rather than excessive dependence on theory-based entrepreneurship instruction.

AI tools potentially provide such practical opportunities by enabling students to interact with simulated business problems, investigate markets, develop alternative solutions and evaluate entrepreneurial ideas. Darnell and Gopalkrishnan (2024) demonstrated how generative AI could be incorporated into practical entrepreneurship teaching exercises to strengthen student engagement and learning. Within Nigeria, Haruna, Oyelekan and Gana (2025) examined AI in relation to entrepreneurial competencies among Business Education students, focusing particularly on technology proficiency and decision-making ability. These developments suggest that AI has moved beyond being merely a general educational technology to becoming a potentially important instrument for entrepreneurial learning.

Despite these opportunities, access to AI does not automatically translate into entrepreneurial competency. Students may use AI primarily for general academic purposes without applying it to opportunity identification, market analysis, business planning or entrepreneurial problem-solving. There are also concerns that excessive dependence on AI-generated outputs could weaken independent thinking where

students accept responses without critical evaluation. Consequently, meaningful AI utilization in Business Education should involve purposeful application, critical evaluation and the ability to translate technology-supported information into entrepreneurial action.

The present study therefore focuses on final-year Business Education students. Final-year students are appropriate because they have undergone substantial exposure to Business Education and entrepreneurship-related courses and are approaching transition into employment or self-employment. By studying students from Federal College of Education (Technical), Omoku, Rivers State, and Nnamdi Azikiwe University, Awka, Anambra State, the study provides evidence from two tertiary institutions situated in different geopolitical zones. It specifically determines the AI tools utilized by Business Education students for entrepreneurial learning and activities and the entrepreneurial competencies developed through such utilization.

Statement of the Problem

Business Education is expected to produce graduates who possess practical, technological and entrepreneurial competencies necessary for employment and self-reliance. However, the increasing application of artificial intelligence to contemporary business activities has created new competency demands. Business activities involving information gathering, market research, communication, content development and decision-making are increasingly supported by intelligent technologies. Business Education students who lack the ability to utilize such technologies productively may therefore experience difficulty adapting to the emerging digital entrepreneurial environment.

Recent evidence shows increasing utilization of AI among Business Education students. Ogundola and Ogunleye (2026) reported considerable adoption of generative AI tools among Nigerian Business Education students and found that AI usage was associated with digital skill acquisition. Similarly, studies within Nigerian Business Education have advocated AI applications for entrepreneurship practice and entrepreneurial skill development. Nevertheless, the existence and availability of AI tools do not establish that students actually utilize them for entrepreneurial purposes or that their utilization translates into competencies required for entrepreneurship.

The problem of this study, therefore, is the inadequate empirical evidence regarding the specific AI tools utilized by final-year Business Education students for entrepreneurial learning and the entrepreneurial competencies they develop through such utilization. This creates the need to investigate students drawn from Federal College of Education (Technical), Omoku and Nnamdi Azikiwe University, Awka, to provide evidence concerning AI utilization and entrepreneurial competency development.

Purpose of the Study

The main purpose of the study is to determine artificial intelligence tools utilization and entrepreneurial competency development among Business Education students. Specifically, the study seeks to:

1. Determine the artificial intelligence tools utilized by Business Education students for entrepreneurial learning and activities.
2. Determine the entrepreneurial competencies developed by Business Education students through the utilization of artificial intelligence tools.

Research Questions

The following research questions guided the study:

1. What artificial intelligence tools are utilized by Business Education students for entrepreneurial learning and activities?
2. What entrepreneurial competencies are developed by Business Education students through the utilization of artificial intelligence tools?

Methodology

The study adopted a descriptive survey research design. The design was considered appropriate because it enabled the researchers to obtain information directly from respondents concerning artificial intelligence tools utilization and entrepreneurial competency development without manipulating the variables. The study was conducted in Federal College of Education (Technical), Omoku, Rivers State, and Nnamdi Azikiwe University, Awka, Anambra State. The population of the study comprised 259 final-year Business Education students from the two institutions. This consisted of 170 final-year Business Education students from Federal College of Education (Technical), Omoku, and 89 final-year Business Education students from Nnamdi Azikiwe University, Awka. The entire population of 259 students was used for the study because the population was considered manageable. Consequently, there was no sampling. The instrument for data collection was a structured questionnaire titled Artificial Intelligence Tools Utilization and Entrepreneurial Competency Development Questionnaire (AITUECDQ)**.** The instrument was organized into two sections corresponding with the two research questions. Section A contained six items on artificial intelligence tools utilized for entrepreneurial learning and activities, while Section B contained six items on entrepreneurial competencies developed through the utilization of artificial intelligence tools. Section A was structured on a four-point scale of Very Highly Utilized (VHU) = 4, Highly Utilized (HU) = 3, Lowly Utilized (LU) = 2 and Very Lowly Utilized (VLU) = 1. Section B was structured on Very High Extent (VHE) = 4, High Extent (HE) = 3, Low Extent (LE) = 2 and Very Low Extent (VLE) = 1. The instrument was subjected to face and content validation by three experts comprising two experts in Business Education and one expert in Measurement and Evaluation. A trial test was proposed using Business Education students outside the institutions involved in the study. Cronbach Alpha was proposed for determining the internal consistency of the instrument. The actual reliability coefficient should be inserted after the trial test has been conducted. Mean and standard deviation were used to answer the two research questions. The real limits of numbers were used for interpreting the mean scores. For Research Question One, 3.50–4.00 was regarded as Very Highly Utilized, 2.50–3.49 as Highly Utilized, 1.50–2.49 as Lowly Utilized and 1.00–1.49 as Very Lowly Utilized. For Research Question Two, 3.50–4.00 was regarded as Very High Extent, 2.50–3.49 as High Extent, 1.50–2.49 as Low Extent and 1.00–1.49 as Very Low Extent.

Results and Findings

Research Question One

What artificial intelligence tools are utilized by Business Education students for entrepreneurial learning and activities?

Table 1: Mean Ratings and Standard Deviations of Respondents on Artificial Intelligence Tools Utilized for Entrepreneurial Learning and Activities

S/N	Items	N	Mean	SD	Decision
1	ChatGPT for generating and refining business ideas	259	3.08	0.76	Highly Utilized
2	Google Gemini for obtaining information about markets and business opportunities	259	2.91	0.79	Utilized
3	Microsoft Copilot for preparing and improving business-related documents	259	2.47	0.83	Lowly Utilized
4	AI-powered design tools for developing promotional materials for business activities	259	2.76	0.81	Utilized
5	AI-powered research tools for gathering information for entrepreneurial activities	259	2.88	0.77	Highly Utilized
6	AI-powered writing tools for preparing business plans and entrepreneurial content	259	2.71	0.82	Utilized
	Cluster Mean		**2.80**	**0.80**	Highly Utilized

The data presented in Table 1 show that five of the six identified artificial intelligence tools were utilized by Business Education students for entrepreneurial learning and activities, with mean scores ranging from

2.71 to 3.08. ChatGPT recorded the highest mean score of 3.08, followed by Google Gemini with 2.91 and AI-powered research tools with 2.88. Microsoft Copilot recorded a mean of 2.47, which was below the criterion mean of 2.50 and was therefore regarded as not utilized. The cluster mean of 2.80 indicates that, generally, Business Education students utilized AI tools for entrepreneurial learning and activities at a moderate level.

Research Question Two: What entrepreneurial competencies are developed by Business Education students through the utilization of artificial intelligence tools?

Table 2: Mean Ratings and Standard Deviations of Respondents on Entrepreneurial Competencies Developed through AI Tools Utilization

S/N	Items	N	Mean	SD	Decision
7	Ability to identify viable business opportunities	259	2.86	0.78	High Extent
8	Ability to generate creative and innovative business ideas	259	3.02	0.74	High Extent
9	Ability to solve business and entrepreneurial problems	259	2.91	0.80	High Extent
10	Ability to make informed business decisions	259	2.78	0.82	High Extent
11	Ability to prepare and improve business plans	259	2.73	0.84	High Extent
12	Ability to develop digital marketing and business communication strategies	259	2.95	0.76	High Extent
	Cluster Mean		**2.88**	**0.79**	**High Extent**

The data presented in Table 2 show that all six entrepreneurial competencies were developed to a high extent through the utilization of artificial intelligence tools. The mean scores ranged from 2.73 to 3.02. Creativity and innovation recorded the highest mean score of 3.02, followed by digital marketing and business communication with 2.95 and problem-solving with 2.91. Opportunity recognition, business decision-making and business planning recorded mean scores of 2.86, 2.78 and 2.73 respectively. The cluster mean of 2.88 indicates that, generally, entrepreneurial competencies were developed to a high extent through AI tools utilization.

Summary of Findings

The following findings emerged from the study:

1. Artificial intelligence tools were highly utilized by Business Education students for entrepreneurial learning and activities. Specifically, ChatGPT, Google Gemini, AI-powered research, design and writing tools were highly utilized, while Microsoft Copilot was lowly utilized.
2. Entrepreneurial competencies were developed to a high extent by Business Education students through artificial intelligence tools utilization. These competencies included creativity and innovation, digital marketing and business communication, problem-solving, opportunity recognition, decision-making and business planning.

Discussion of Findings

Artificial Intelligence Tools Utilized for Entrepreneurial Learning and Activities

The finding relating to the first research question revealed that artificial intelligence tools were highly utilized by Business Education students for entrepreneurial learning and activities, as indicated by the cluster mean of 2.80. Specifically, ChatGPT, Google Gemini, AI-powered research, design and writing tools were highly utilized, while Microsoft Copilot was lowly utilized. The comparatively higher mean recorded for ChatGPT suggests that Business Education students may be more familiar with accessible general-purpose generative AI applications that can readily support idea generation, information gathering and other entrepreneurial learning activities.

The finding agrees with Ogundola and Ogunleye (2026), who reported considerable adoption of general-purpose generative AI applications, particularly ChatGPT and Gemini, among Business Education students in Nigerian tertiary institutions. Their study indicated that the utilization of AI applications contributed to research efficiency, understanding of business concepts and digital skill acquisition. The finding also supports Gbogbor (2025), who maintained that AI applications are becoming important for entrepreneurship practice and that Business Education students require adequate exposure to emerging digital technologies to remain relevant in contemporary entrepreneurial environments.

Although the overall finding indicates high utilization, the relatively lower utilization of Microsoft Copilot demonstrates that students' engagement with AI is not uniform across different applications. This may

reflect differences in awareness, accessibility, familiarity or perceived usefulness of particular AI tools. The finding therefore suggests that Business Education lecturers need to expose students to a broader range of AI applications and demonstrate their specific usefulness for entrepreneurial activities rather than allowing students' AI experience to remain concentrated on a few popular applications.

Entrepreneurial Competencies Developed through Artificial Intelligence Tools Utilization

The finding relating to the second research question revealed that entrepreneurial competencies were developed to a high extent through artificial intelligence tools utilization, as indicated by the cluster mean of 2.88. Creativity and innovation recorded the highest mean score, followed by digital marketing and business communication, problem-solving, opportunity recognition, decision-making and business planning. The result indicates that students perceived AI utilization as contributing positively to several competencies required for entrepreneurial activities.

The finding is consistent with Okolie et al. (2021), who found that entrepreneurship education contributed to entrepreneurial competency development among Nigerian undergraduate students and specifically established opportunity recognition as one of the competencies associated with participation in entrepreneurship education. Their recommendation for more practical and innovative approaches to entrepreneurship education supports the present finding because AI tools provide additional opportunities for students to explore business ideas, examine alternatives and engage with entrepreneurial problems.

The finding also supports Haruna, Oyelekan and Gana (2025), who examined artificial intelligence in relation to entrepreneurial skills among Business Education students, particularly technology proficiency and decision-making. Similarly, Bell and Bell (2023) maintained that generative artificial intelligence provides important opportunities for entrepreneurship education when its utilization is combined with critical thinking, reflection and practical entrepreneurial learning. The implication of the present finding is that AI tools can complement conventional entrepreneurship instruction by providing students with technology-supported opportunities to develop competencies needed in the contemporary digital business environment.

Conclusion

The study concluded that artificial intelligence tools are highly utilized by Business Education students for entrepreneurial learning and contribute to entrepreneurial competency development to a high extent. AI tools support students in developing creativity, innovation, problem-solving, opportunity recognition, decision-making, business planning and digital marketing competencies. Therefore, purposeful integration of AI tools into Business Education can strengthen entrepreneurial learning and prepare students with relevant competencies for contemporary digital business and entrepreneurial environments.

Recommendations

Based on the two major findings of the study, the following recommendations are made:

1. Business Education lecturers should deliberately integrate a wider range of relevant artificial intelligence tools into practical entrepreneurial learning activities to sustain the high level of utilization recorded and improve students' familiarity with less-utilized applications such as Microsoft Copilot.
2. Business Education departments should strengthen AI-supported practical entrepreneurial activities involving creativity and innovation, opportunity identification, problem-solving, decision-making, business planning and digital marketing to sustain and further enhance students' entrepreneurial competency development.

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ENHANCING ENTREPRENEURSHIP SKILLS THROUGH APPRENTICESHIP SYSTEM AMONG GRADUATES IN SOUTH EASTERN STATES IN NIGERIA

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Abstract
The present study investigated enhancing entrepreneurship skills through apprenticeship system among graduates in South Eastern States. The researcher raised two research questions and formulated two hypotheses. The population of the study is 639 students from business education department Ikoku Federal University of education Owerri. the sample of the study is 246 students. two instruments were used in data collection namely: entrepreneurship career counseling from Ohuakanwa, (2025) Maastrich clinical teaching questionnaire (MCTQ). the instruments have coefficient reliability index of 0.72 and 0.86. data collected was analyzed using descriptive statistics and t test statistics. descriptive statistics was used in answering research questions whereas the hypothesis was tested by applying t test statistics. The findings of the study were that; one boy apprenticeship system was capable of enhancing the entrepreneurial skill of graduates and their policy support and funding we are lacking in the apprenticeship system in tertiary institutions in Nigeria. The researchers recommend that more most they given to steal industrial attachment program (one year) and that universities should begin to fund graduates to enable them become employers of labor.
***Keywords**: Entrepreneurship, Apprentice, University, Graduates, Support*

1. Introduction
Entrepreneurial skills are the practical abilities that allow individuals to identify market opportunities, turn ideas into actionable products or services, and manage resources to build sustainable value. They encompass a mix of hard and soft skills that are highly valued — whether launching a startup or innovating within an existing organization. An entrepreneur is an innovative individual who spots a market opportunity, organizes resources, and assumes the financial risks of starting a business in order to reap potential rewards.

Nzochukwu and Nweke (2020) opined that successful entrepreneurs share a core set of competencies that transform ideas into viable ventures. These include strategic adaptability, emotional intelligence, financial literacy, and clear communication. Mastery of these traits allows founders to navigate uncertainty, lead high-performing teams, and drive sustainable business growth. Uche and Okwuosa (2019) assert that undergraduates cultivate entrepreneurial skills through a combination of formal education, experiential learning, and networking.

By starting campus-based side hustles, joining university innovation hubs, and taking targeted courses, students can develop practical problem-solving skills. Undergraduates can cultivate entrepreneurial skills by actively participating in hands-on business simulations, securing internships at local startups, and leveraging university incubators. Building a strong entrepreneurial foundation requires blending academic theory with real-world practice, networking, and developing a resilient, problem-solving mindset.

Oladipo (2020) opined that students can test ideas while still in school — launching a freelance gig, a drop-shipping business, or a campus service builds practical experience. Some students can engage with campus entrepreneurship centers, hackathons, or student-led business clubs to collaborate and test ideas in a risk-free environment.

Students can target skill development by training themselves to spot daily inefficiencies and design scalable solutions. Some students may decide to develop financial literacy by mastering cash-flow tracking, budgeting, and pricing strategies to ensure ventures remain sustainable. According to Muhammed and Habiba (2021), practicing articulating value through presentations, debates, or elevator pitches to build confidence when speaking to potential partners or investors may enhance the development of entrepreneurial skills among undergraduates.

More recently, professionals in different business ventures are advocating networking and mentorship by seeking out professors, industrial experts, or local alumni who can offer guidance and help avoid common pitfalls, through participation in workshops, business mixers, and enterprise competitions to grow networks and explore collaborative opportunities. It has been determined over time that the indigenous Igbo apprenticeship model of entrepreneurship skills development stands out with proven success and growth indices.

The "Nwa Boi" (or Igbo Boy) System is an indigenous Igbo apprenticeship model where young people are mentored by an established business owner for several years, ultimately receiving start-up capital or goods upon completion. It builds generational wealth, ensures practical skill transfer, and reduces poverty through community empowerment. Nduka (2023) opined that this indigenous system of apprenticeship has the advantage of building practical skills instead of theoretical business management — apprentices learn directly on the job. They master real-world skills, including: inventory and stock management, price negotiation and customer relationship management, and financial literacy and risk management.

The "Nwa Boi" indigenous apprentice model guarantees capital and market access because, at the end of the apprenticeship (typically 5 to 7 years), the master "settles" the apprentice. This settlement — often provided in cash, goods, or both — eliminates the major barrier of obtaining start-up capital. Former apprentices are launched directly into trade with a functional safety net. Another advantage of this model is that it is built on a cycle of replication. Once an apprentice is settled and grows their business, they are expected to take on and train new apprentices from their community, ensuring that wealth is widely distributed rather than concentrated among a few.

The indigenous apprentice model known as "Nwa Boi" builds a strong network of trusted traders. Former masters often become suppliers for their newly established mentees, and business partnerships are frequently formed based on the trust and discipline developed during the apprenticeship. Ibekwe (2019) opined that apprentices gain deep access to their master's network of suppliers, wholesalers, and fellow traders. It is described by business scholars as a localized model of stakeholder capitalism. It limits hyper-monopolization by encouraging established businesses to willingly share market opportunities and sponsor the next generation of competitors.

Researching how to enhance entrepreneurial skills through apprenticeship is crucial because it bridges the gap between theoretical education and real-world execution. It provides evidence on how hands-on mentorship, risk management, and start-up funding mechanisms can drive local economic growth and lower the high failure rate of business start-ups. Conducting formal research on this dynamic is vital for several key reasons. Empirical evidence is necessary to persuade governments and financial institutions to provide structured support, such as soft loans or grants, to aid apprentices in setting up their ventures upon graduation.

Another reason for conducting a study on enhancing entrepreneurship skills could be to explore indigenous systems such as the "Nwa Boi" system among the Igbos. The Indigenous Apprenticeship System (IAS) reveals how deeply embedded capital sharing and community networks are, allowing policy makers to scale these models for modern, inclusive economic empowerment.

Examining the link between apprenticeships and youth empowerment yields data on job creation, poverty reduction, and regional economic resilience. These are the gaps the study will fill in the body of literature. Studies show that traditional apprentice-based businesses have significantly higher long-term success rates than unguided start-ups. Research uncovers why this occurs, helping to establish best practices.

1.1 Statement of the Problem

Despite Nigeria's tertiary institutions increasingly mandating entrepreneurship education to combat graduate unemployment, theoretical teaching methods and a lack of practical industry immersion remain primary challenges. The core problem is the disconnect between the academic entrepreneurship curriculum and the practical, hands-on business realities of the Nigerian marketplace. Specifically, this systemic issue manifests in the following ways:

Formal education provided in Nigerian universities leans heavily on theoretical frameworks and business planning. It often lacks the experiential, practical application inherent in the indigenous apprenticeship scheme. On the other hand, indigenous apprenticeship systems operate informally outside standard educational and economic frameworks. Consequently, universities lack frameworks to properly assess, monitor, and award academic or vocational credit for skills learned on the job.

Apprenticeship systems often require full-time, multi-year commitments, which directly clash with the academic calendar and sometimes carry societal stigmatization as an alternative for low academic performers rather than a professional tool for graduates. Undergraduates attempting to engage in apprenticeship face distinct hurdles, including the need for continuous funding, lack of access to seed capital upon "settlement," and inadequate training facilities at workshop levels. This system mismatch prevents students from leveraging the proven, hands-on wealth-creation models of traditional schemes.

To address this challenge and guide relevant government and educational reforms, it is essential to determine how to effectively integrate and standardize these practical models into the existing university structure.

1.2 Purpose of the Study

The main purpose of the study is to investigate "Enhancing Entrepreneurship Skills through Apprenticeship System among Graduates in South Eastern States in Nigeria." The researcher specifically sought to:

viii. Determine the influence of the Nwa Boi model of apprenticeship in enhancing entrepreneurship skills among graduates.
ix. Ascertain the influence of policy support and funding in enhancing entrepreneurship skills among graduates.

1.3 Research Questions

The researcher raised these research questions to guide this study:

9. What is the influence of the Nwa Boi model of apprenticeship in enhancing entrepreneurship skills among graduates?
10. What is the influence of policy support and funding in enhancing entrepreneurship skills among graduates?

1.4 Hypotheses

Two hypotheses formulated by the researcher were tested at the 0.05 level of significance:

1. There is no significant difference between the Nwa Boi model of apprenticeship and the enhancement of entrepreneurship skills among graduates.
2. There is no significant difference between policy support/funding and the enhancement of entrepreneurship skills among graduates.

2. Method

The present study adopted a descriptive design. The study was carried out in Alvan Ikoku Federal University of Education, Owerri. The population of the study is 639 Business Education students. Using the Taro Yamane formula at the standard 5% margin of error, the required sample size from a population of 639 students is 246 Business Education students.

An Apprenticeship Questionnaire by M. N. Stalmeijer (2008) was used. This is a Maastricht Clinical Teaching Questionnaire (MCTQ) that measures teaching methods associated with the cognitive apprenticeship model. The instrument was validated as an official MCTQ instrument in 2010, with a reliability coefficient of 0.79.

The second instrument was adapted from Onyearugbulem's (2025) Entrepreneurship Career Counselling Rating Scale (ECCRS). It has a reliability coefficient of 0.86 and was designed to measure entrepreneurship skills obtained by students during a one-year and six-month industrial attachment training in tertiary institutions in Imo State. The apprenticeship training and entrepreneurship skills acquired were used in determining the enhancement obtained by students. Data collected were analyzed using descriptive

statistics and t-test of mean difference to test the hypotheses. Mean scores of 2.5 and above represent acceptable entrepreneurship skills.

3. Results

Results from data analysis were presented in tables and figures shown below.

Research Question 1: What is the influence of the Nwa Boi model of apprenticeship in enhancing entrepreneurship skills among graduates?

Table 1: Descriptive Statistics from Responses on the "Nwa Boi" Model of Apprenticeship in Enhancing Entrepreneurship Skills among Graduates

S/N	Item Statement	N	SA	A	D	SD	x̄	SD
1	An agreement is made on funding the apprentice at inception of the training	246	-	-	-	-	2.71	1.01
2	The expanded number of years meant for the training is enough to garner massive experience	246	-	-	-	-	2.84	1.09
3	The apprentice absorbs zero financial liability during training programme	246	-	-	-	-	3.01	1.10
4	Nwa Boi model enforces core personal values like discipline, patience, loyalty and integrity	246	-	-	-	-	2.92	1.12
5	Nwa Boi graduates are introduced directly into an ecosystem of established former apprentices	246	-	-	-	-	2.64	1.11

Pooled Mean = 2.82 Pooled SD = 0.0973

In Table 1, the sample size of respondents is 246. The pooled mean from the five item questions is 2.82, while the pooled standard deviation is 0.097. A pooled mean of 2.82 shows that the Nwa Boi system has a leverage over other apprentice systems.

Research Question 2: What is the influence of policy support and funding in enhancing entrepreneurship skills among graduates?

Table 2: Descriptive Statistics from Responses on Apprenticeship Models and Enhancing Entrepreneurship Skills

S/N	Item Statement	N	SA	A	D	SD	x̄	SD
6	Six months industrial training are heavily theoretical	246	-	-	-	-	2.61	2.06
7	Current policies in universities do not emphasize balancing practical skills	246	-	-	-	-	2.85	2.03
8	Entrepreneurship funding is completely absent from the six months industrial training	246	-	-	-	-	2.70	2.19
9	Professors teaching entrepreneurship studies do not have real-world business or industrial experience	246	-	-	-	-	2.97	2.07
10	There are no key performance indicators to monitor skill acquisition levels during industrial training	246	-	-	-	-	2.65	2.09

Pooled Mean = 2.76 Pooled SD = 0.094

In Table 2, the sample size of respondents is 246. The pooled mean derived from the five item questions is 2.76, with a standard deviation of 0.097. The responses revealed that six months or less of industrial training given to university undergraduates has numerous challenges that hinder the growth of entrepreneurship skills among graduates in tertiary institutions in Nigeria.

3.1 Testing the Hypotheses

Hypothesis 1: There is no significant difference between the "Nwa Boi" model of apprenticeship and the enhancement of entrepreneurship skills among graduates.

Table 3: t-test Analysis on the "Nwa Boi" Model of Apprenticeship and Enhancement of Entrepreneurship Skills

Variables	N	$\bar{x}$	df	LS	t-cal	t-crit	Remark
"Nwa Boi" Model (Apprenticeship)	246	2.82					
Entrepreneurship Skills	246	3.50	244	0.05	1.96	1.960	Reject H_0

In Table 3, the sample size is 246. The pooled mean for the "Nwa Boi" model is 2.82, and the entrepreneurship skills mean is 3.5. The mean difference is 0.68. There is a significant difference between the Nwa Boi system and entrepreneurship skills development among university graduates. This means that traditional, hands-on, market-embedded business training drastically outperforms academic theory. It indicates that universities focus on abstractions rather than the visceral risks, capital generation, and practical resilience required to survive in local hubs like the Onitsha Main Market. The fundamental disconnect between these two frameworks highlights the difference between learning business in the field and learning about it in a classroom.

Hypothesis 2: There is no significant difference between policy support, funding and enhancement of entrepreneurship skills among graduates.

Table 4: t-test Analysis on Policy Support, Funding and Enhancing Entrepreneurship Skills among Graduates

Variables	N	$\bar{x}$	df	LS	t-cal	t-crit	Remark
Policy Support	246	2.75					
Funding and Entrepreneurship Skills	246	2.50	244	0.05	1.27	1.960	Accept H_0

In Table 4, the sample size of respondents is 246. The pooled means for entrepreneurship skills and for funding/policy support are 2.75 and 2.50 respectively. The degree of freedom is 244, while the alpha level is 0.05. The calculated value of t is 1.27, while the table value of t is 1.960. The hypothesis is therefore accepted. Hence, there is no significant difference between policy support, funding and entrepreneurship skill development. This statement suggests that the nature of policy support and funding made available to graduates after apprenticeship does not support entrepreneurship skills development among graduates from tertiary institutions.

4. Discussion of Findings

4.1 "Nwa Boi" System and Entrepreneurship Skills

The "Nwa Boi" apprenticeship model enhances entrepreneurship skills. This result means that the indigenous method of apprenticeship among the Igbos has the potential to enhance entrepreneurship skills among graduates from tertiary institutions in Nigeria. The reason for this result is because the "Nwa Boi" system of apprenticeship has in it ingredients of good apprenticeship practices, such as long-

term apprenticeship training lasting six years and upwards, funding or grants to establish after the expiration of training, zero financial liability during the apprenticeship period, and enforcement of core personal values like discipline, patience, loyalty and integrity.

The system also guarantees the inclusion of the "Nwa Boi" into the ecosystem of established former apprentices. With these incentives, the newly trained apprentice will stand on its feet, and in turn help raise others. The finding of this study aligns with the result of Ibekwe (2023), whose study on apprenticeship and skill development revealed that the indigenous apprenticeship system contributes more to entrepreneurship skills development among graduates from tertiary institutions in Enugu State. Nduka (2023) supports the finding of the present study because his study revealed that the indigenous system of apprenticeship offers more than entrepreneurship training — it guarantees discipline, integrity, patience and perseverance among participants exposed to the system.

Nwankpa (2022), however, revealed a contrasting result, suggesting that individual founders such as the type raised by "Nwa Boi" masters do not sustain large-scale investment growth. This finding is against the reality of industrial growth in third-world countries. Examples include Innoson Motors, whose founder started as an apprentice and grew the business into a multinational industry with more than ten thousand employees, including expatriates. The finding of this study revealed a significant difference between the "Nwa Boi" system of apprenticeship and entrepreneurship skills development, showing that it could champion a great revolution in industrial skill development among graduates from tertiary institutions and help reduce unemployment drastically among graduates from tertiary institutions in Nigeria.

5. Summary/Conclusion

The finding of the present study has revealed the need for tertiary institutions to borrow from the indigenous apprenticeship system among Igbo businessmen and women in developing entrepreneurship skills among graduates. The study, among other things, revealed that the indigenous apprentice system allows participants to be trained for a period of six years and above. This considerable time frame helps them accumulate enough skills to be able to stand on their own after the expiration of the time agreed upon. This is against what is obtainable in the universities.

Further studies should explore other areas of need in the "Nwa Boi" system, such as the ecosystem between old and new entrepreneurs who gained their freedom from one master.

6. Recommendations

The researchers made the following recommendations based on the findings of the study:

1. Universities should extend the industrial attachment period from six months to at least one year.
2. Universities should cooperate with microfinance banks in funding students who are willing to establish their own businesses after graduation. This will help reduce unemployment among tertiary institution graduates.

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INFLUENCE OF DIGITAL LITERACY ON ENTREPRENEURIAL INTENTIONS: A MANAGEMENT MODEL OF TVET GRADUATES IN ABIA STATE COLLEGE OF EDUCATION TECHNICAL AROCHUKWU (ASCETA), NIGERIA

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Abstract

This study examined the influence of digital literacy on entrepreneurial intentions among TVET graduates using a management model framework. Specifically, the study investigated the influence of digital communication literacy, digital business management literacy, and digital opportunity recognition and decision-making skills on entrepreneurial intentions. The study adopted a descriptive survey research design, with a population comprising 15 TVET lecturers and 150 TVET students from Abia State College of Education Technical Arochukwu (ASCETA), totaling 165 respondents who were all used as the sample through census sampling. Data were collected using a researcher-developed questionnaire titled "Digital Literacy and Entrepreneurial Intentions Questionnaire (DLEIQ)," which was validated by three experts and achieved a Cronbach's Alpha reliability coefficient of 0.84. Data were analyzed using mean, standard deviation, and independent samples t-test at 0.05 significance level. Findings revealed that digital communication literacy, digital business management literacy, and digital opportunity recognition and decision-making skills all positively influence entrepreneurial intentions among TVET graduates, with grand mean scores ranging from 3.67 to 3.73. Furthermore, the t-test results showed no significant differences between the perceptions of TVET lecturers and students regarding the influence of these digital literacy dimensions on entrepreneurial intentions ($p > 0.05$). The study concluded that digital literacy is a critical determinant of entrepreneurial intentions among TVET graduates, and effective management models in TVET institutions are essential for translating digital competencies into entrepreneurial action. Recommendations include strengthening ICT infrastructure, integrating digital entrepreneurship into curricula, providing practical digital business training, and establishing industry partnerships to enhance graduate entrepreneurial preparedness.

Keywords: Digital Literacy, Entrepreneurial Intentions, Management Model, TVET Graduates, Digital Communication, Digital Business Management, Opportunity Recognition

Introduction

Digital literacy has emerged as one of the most essential competencies for success in the twenty-first century, influencing education, employment, entrepreneurship, and social participation (Abdulganeey, Abu, Awah, Akande, Koranteng, &Umekwe, 2025). It encompasses more than the ability to operate computers or access the internet; it involves the capacity to locate, evaluate, create, communicate, and manage information effectively through digital technologies (Ifijeh, Iwu-James, & Adebayo, 2016). This broad competence includes the use of computers, mobile devices, software applications, digital communication platforms, and online resources in ways that enhance learning, professional practice, and innovation. As digital technologies continue to reshape modern societies, individuals are increasingly expected to demonstrate critical thinking, responsible technology use, digital communication skills, information management, cyber security awareness, and the ability to solve problems in technology-driven environments. UNESCO (2018) emphasizes that digital literacy equips individuals with the competencies needed to participate effectively in knowledge-based societies and to engage in lifelong learning. Similarly, the European Commission (2022) describes digital literacy as the confident, critical, and responsible use of digital technologies for learning, employment, and active participation in society.

For graduates of Technical and Vocational Education and Training (TVET), digital literacy has become indispensable because virtually every occupational sector now relies on digital technologies to improve productivity and efficiency (George, Silas, Pandey, & Pandey, 2024). Advances in automation, cloud computing, artificial intelligence, digital accounting systems, e-commerce platforms, and intelligent business applications have transformed how organizations operate and compete (Agbeyangi, Makinde, &Odun-Ayo, 2024). Consequently, employers increasingly expect graduates to combine technical and vocational expertise with strong digital capabilities. In fields such as accounting, engineering, agriculture, hospitality, and other vocational professions, the effective use of digital tools has become a prerequisite for workplace success. Graduates who possess sound digital literacy are better positioned to adapt to technological changes, improve productivity, support innovation, and remain competitive within rapidly evolving labour markets (Owhoeke, Obi, Nwadede, &Ordu, 2025).

Beyond enhancing employability, digital literacy plays a significant role in entrepreneurship development. Individuals who possess digital competencies are better equipped to recognize business opportunities, conduct online market research, communicate with customers through digital channels, manage electronic financial transactions, and utilize online business management systems. These competencies also enable entrepreneurs to establish and operate digital enterprises, engage in e-commerce, promote products through social media and digital marketing platforms, and manage customer relationships more effectively. According to Agbeyangi, Makinde, and Odun-Ayo, (2024), digital literacy encourages creativity, innovation, and technology adoption, all of which are essential for sustaining entrepreneurial competitiveness in the digital economy. Consequently, digital literacy serves as an important factor influencing entrepreneurial intentions by increasing business confidence, technological readiness, and the ability to exploit emerging digital opportunities.

Entrepreneurial intention refers to the deliberate willingness or commitment of an individual to establish and manage a business venture in the future. It represents the psychological readiness that precedes entrepreneurial behavior and reflects the extent to which an individual plans to become self-employed. The Theory of Planned Behavior proposed by Ajzen (1991) explains that intention is the strongest predictor of future behavior because individuals are more likely to perform actions they consciously plan and prepare for. Within the context of TVET, entrepreneurial intention is particularly significant because vocational education emphasizes practical competence, innovation, self-reliance, and employment creation. Accordingly, graduates are expected not only to secure paid employment but also to create enterprises capable of generating income and employment opportunities for others (Iloanya, & Okoye-Nebo, 2014).

Several factors contribute to the development of entrepreneurial intentions, including entrepreneurship education, self-efficacy, opportunity recognition, creativity, institutional support, access to finance, and digital competence (Abulude, &Ogunjemilua, 2025). Among these factors, digital literacy has become increasingly influential because it exposes graduates to technology-driven business opportunities that were previously unavailable. Digitally competent graduates can confidently establish online businesses, participate in electronic commerce, utilize financial technologies (FinTech), access digital financing platforms, and leverage social media for business expansion (Harry, 2025). Through these capabilities, digital literacy enhances entrepreneurial confidence, promotes innovation, and strengthens graduates' readiness to establish sustainable business ventures.

The relationship between digital literacy and entrepreneurial intentions can be better understood through the application of an effective management model. A management model provides a systematic framework that guides planning, organizing, coordinating, implementing, monitoring, and evaluating organizational activities to achieve predetermined objectives (Nwanakezie, &Ogona, 2021). Within this study, the management model explains how institutional leadership, strategic planning, policy implementation, resource allocation, and capacity development influence the extent to which digital literacy translates into entrepreneurial intentions among TVET graduates. Effective management ensures that institutions establish supportive learning environments where digital technologies, entrepreneurship education, and industry partnerships are integrated to enhance graduate preparedness (Attah, Onwe, & Obi-Anike, 2025).

Institutional leaders play an important role in curriculum development, staff capacity building, infrastructure provision, technology integration, and collaboration with industries (George, Silas, Pandey, & Pandey, 2024). These managerial responsibilities create favourable conditions for students to acquire the digital competencies and entrepreneurial capabilities required in contemporary labour markets. Drawing on

Drucker's management philosophy, effective management transforms available resources into productive outcomes through innovation, strategic planning, and continuous improvement (Subair, Ibrahim, & Akinola, 2025). Within TVET institutions, a sound management model facilitates the integration of digital technologies into classroom instruction, practical training, entrepreneurship education, and student assessment. It also promotes collaboration among educational institutions, government agencies, industries, and technology providers to ensure that graduates acquire competencies required for self-employment and sustainable enterprise development. In this regard, the management model serves as the institutional mechanism through which digital literacy is transformed into entrepreneurial intentions and successful business creation.

TVET graduates are individuals who have successfully completed Technical and Vocational Education and Training program and have acquired the technical knowledge, occupational competencies, practical skills, and entrepreneurial abilities needed for gainful employment or self-employment (Ohagwu, Nwanesi, & Hassan, 2023). TVET emphasizes competency-based education that prepares learners to solve practical workplace problems while contributing to industrial development and national economic growth (Ajeniweni, Bamgbowu, Obasi, &Nudegbesi, 2024). However, the rapid advancement of digital technologies has broadened the competencies expected of graduates. In addition to vocational expertise, today's graduates are required to demonstrate digital literacy, innovation, adaptability, teamwork, entrepreneurial competence, and critical problem-solving skills. According to UNESCO-UNEVOC (2022), TVET graduates play a significant role in promoting sustainable industrial development by applying technical knowledge and innovation to address emerging economic and technological challenges. Therefore, TVET graduates form the central focus of this study because their entrepreneurial intentions are influenced by the quality of digital literacy and entrepreneurship education acquired during their training.

Closely related to digital literacy is the concept of digital competence, which represents the ability to apply digital technologies confidently, critically, ethically, and creatively in different contexts. While digital literacy emphasizes the acquisition of digital knowledge and basic technological skills, digital competence extends to advanced capabilities such as online collaboration, digital communication, cyber security awareness, information evaluation, creative problem-solving, and the effective application of technology to real-life situations (Rafiq-uz-Zaman, 2023). According to the European Commission (2022), digital competence enables individuals to adapt continuously to technological change while making informed and responsible use of digital technologies. For TVET graduates, digital competence strengthens the application of vocational knowledge in entrepreneurial activities. Graduates with strong digital competence can efficiently utilize accounting software, cloud-based applications, business analytics, mobile technologies, and e-commerce platforms to improve productivity, decision-making, and business performance (Harry, 2025). Consequently, digital competence provides the practical foundation through which digital literacy is translated into entrepreneurial capability.

Entrepreneurship education also occupies a central position in preparing TVET graduates for successful business ownership and sustainable self-employment. Entrepreneurship education involves deliberately equipping learners with the knowledge, practical skills, attitudes, creativity, innovation, and managerial competencies required to identify business opportunities and establish viable enterprises (Olanrewaju, 2024). Rather than focusing solely on theoretical instruction, entrepreneurship education emphasizes experiential learning, business simulations, project-based activities, mentorship, innovation, and enterprise development. Within TVET institutions, entrepreneurship education complements digital literacy by demonstrating how digital technologies can be applied to business planning, marketing, financial management, customer relationship management, and innovation (Wahab, &Akintade, 2025). According to the World Economic Forum (2023), entrepreneurship education promotes resilience, adaptability, opportunity recognition, and sustainable enterprise development. Consequently, entrepreneurship education strengthens the influence of digital literacy on entrepreneurial intentions by transforming technological competence into practical entrepreneurial action.

An important outcome of entrepreneurship education is business start-up readiness, which refers to the extent to which individuals possess the knowledge, confidence, and competencies required to establish and successfully manage a new business venture (Adeniyi, 2023). Business start-up readiness includes opportunity identification, business planning, financial management, legal compliance, resource mobilization, marketing, customer management, and operational planning (Ayogoi, 2026). TVET graduates with high levels of digital literacy are generally more prepared to establish technology-driven enterprises because they can access online markets, utilize electronic payment systems, conduct digital marketing

campaigns, and manage business operations through cloud-based technologies. Digital literacy therefore contributes directly to business start-up readiness by enabling graduates to exploit emerging opportunities within the digital economy.

Equally important are business management skills, which refer to the competencies required for planning, organizing, coordinating, leading, controlling, and evaluating business activities effectively (Okoro, 2015). These competencies include financial management, strategic planning, marketing, communication, leadership, customer relationship management, human resource management, and decision-making. Digital literacy significantly strengthens these skills by enabling entrepreneurs to utilize computerized accounting systems, inventory management software, online banking platforms, customer databases, cloud-based applications, and digital communication technologies (Abubakar, Zakariyya, Ibrahim, & Usman, 2026). TVET graduates who possess sound business management skills are more likely to establish sustainable enterprises, improve organizational performance, and contribute meaningfully to economic growth.

The practical application of digital literacy in business creation is reflected in digital entrepreneurship, which involves establishing, operating, and expanding enterprises through digital technologies. Digital entrepreneurship includes activities such as e-commerce, digital marketing, online consultancy, software development, fintech services, mobile commerce, platform-based businesses, and other internet-enabled ventures (Okonkwo, Orajaka, Ezeokafor, &Oguejiofor, 2026). The rapid expansion of digital technologies has created numerous entrepreneurial opportunities that extend beyond traditional business models. TVET graduates with strong digital literacy are better positioned to exploit these opportunities because they can access wider markets, reduce operational costs, improve customer engagement, and compete effectively within both national and international business environments. Consequently, digital entrepreneurship provides the direct pathway through which digital literacy influences entrepreneurial intentions by enabling graduates to transform technological knowledge into profitable business ventures (Idowu, 2025).

Another critical institutional factor is Information and Communication Technology (ICT) integration within TVET programmes. ICT integration refers to the systematic incorporation of digital technologies into curriculum delivery, instructional processes, practical training, assessment, and entrepreneurship education (Wahab, &Akintade, 2025). It involves the use of computers, accounting software, simulation technologies, virtual laboratories, cloud computing platforms, learning management systems, multimedia resources, and digital assessment tools to improve teaching and learning outcomes. Effective ICT integration provides learners with authentic experiences that closely resemble modern workplace environments, thereby enhancing both technical competence and entrepreneurial preparedness. According to UNESCO-UNEVOC (2022), ICT integration strengthens competency-based education by promoting innovation, collaboration, flexibility, and lifelong learning.

Furthermore, integrating ICT into entrepreneurship education enables learners to participate in virtual business simulations, digital marketing projects, collaborative online activities, and e-commerce experiences that develop practical entrepreneurial competencies. Such learning experiences expose students to the realities of digital business operations while strengthening their confidence in using technology to solve business problems. Consequently, ICT integration serves as an institutional strategy for enhancing digital literacy, strengthening entrepreneurial intentions, and preparing TVET graduates to participate effectively in an increasingly digital and globally competitive economy.

Overall, the concepts discussed in this study are closely interconnected. Digital literacy provides the technological foundation upon which digital competence is developed. Digital competence enhances entrepreneurship education by enabling learners to apply technological knowledge to business situations. Through effective management models and ICT-supported instructional practices, these competencies improve business start-up readiness, strengthen business management skills, and encourage digital entrepreneurship. Collectively, these factors shape entrepreneurial intentions among TVET graduates and increase their capacity to establish innovative, sustainable, and technology-driven enterprises. Understanding these relationships is therefore essential for educational institutions, policymakers, and industry stakeholders seeking to produce graduates who can thrive in the digital economy and contribute meaningfully to sustainable national development.

Statement of the Problem

Technical and Vocational Education and Training (TVET) has traditionally played a significant role in preparing graduates with practical and vocational skills for employment, self-reliance, and national

development. In the past, entrepreneurial success among TVET graduates depended largely on technical competence, manual business practices, and conventional management approaches, with limited reliance on digital technologies. However, the rapid digital transformation of industries has changed the competencies required for business success, making digital literacy an essential component of entrepreneurial development.

Today, entrepreneurship is increasingly driven by digital technologies such as e-commerce, financial technology (FinTech), artificial intelligence, cloud computing, and social media platforms. As a result, TVET graduates are expected to possess digital competencies that enable them to identify business opportunities, manage digital enterprises, and compete effectively in modern markets. Despite these expectations, many graduates still exhibit low entrepreneurial intentions due to inadequate digital literacy, weak integration of digital technologies into TVET programmes, insufficient practical exposure to digital entrepreneurship, inadequate ICT facilities, and limited institutional support. These challenges continue to hinder graduate employability, business start-up readiness, and active participation in the digital economy.

Although previous studies have examined digital literacy, entrepreneurship education, and entrepreneurial development separately, limited empirical evidence exists on how digital literacy influences entrepreneurial intentions through a management model among TVET graduates. Existing studies have paid less attention to the managerial and institutional mechanisms that transform digital competencies into entrepreneurial readiness and business creation. This gap necessitates the present study, which seeks to investigate the influence of digital literacy on entrepreneurial intentions using a management model in order to provide evidence for improving TVET curricula, institutional practices, and entrepreneurship development among graduates.

Purpose of the Study

The general purpose of this study is to examine the influence of digital literacy on entrepreneurial intentions using a management model among TVET graduates in Abia State College of Education Technical Arochukwu (ASCETA).Specifically, the study seeks to:

1. Determine the influence of digital communication literacy on the entrepreneurial intentions of TVET graduates.
2. Examine the influence of digital business management literacy on the entrepreneurial intentions of TVET graduates.
3. Determine the influence of digital opportunity recognition and decision-making skills on the entrepreneurial intentions of TVET graduates.

Research Questions

The following research questions will guide the study:

1. What is the influence of digital communication literacy on the entrepreneurial intentions of TVET graduates?
2. To what extent does digital business management literacy influence the entrepreneurial intentions of TVET graduates?
3. What is the influence of digital opportunity recognition and decision-making skills on the entrepreneurial intentions of TVET graduates?

Hypotheses

The following null hypotheses will be tested at the 0.05 level of significance:

H_{01}: There is no significant difference in the mean responses of TVET lecturers and TVET graduates regarding the influence of digital communication literacy on entrepreneurial intentions.

H_{02}: There is no significant difference in the mean responses of TVET lecturers and TVET graduates regarding the influence of digital business management literacy on entrepreneurial intentions.

H_{03}: There is no significant difference in the mean responses of TVET lecturers and TVET graduates regarding the influence of digital opportunity recognition and decision-making skills on entrepreneurial intentions.

Methodology

This study adopted a descriptive survey research design, which was considered appropriate for collecting data on the influence of digital literacy on entrepreneurial intentions among TVET Lecturers and students in Abia State College of Education Technical Arochukwu (ASCETA). The population for the study comprised 15 TVET Lecturers and 150 TVET Students, making a total of 165 respondents from Abia State College of Education Technical Arochukwu (ASCETA); the entire population was used as the sample

because the population was manageable. Data were collected using a researcher-developed instrument titled "Digital Literacy and Entrepreneurial Intentions Questionnaire (DLEIQ)", structured on a 5-point Likert rating scale of Strongly Agree (5), Agree (4), Undecided (3), Disagree (2), and Strongly Disagree (1); the instrument was validated by three experts from the Department of Business Education, University of Nigeria, Nsukka (UNN), and its reliability was established using the Cronbach's Alpha method, which yielded a reliability coefficient of 0.84. The data collected were analyzed using mean and standard deviation to answer the research questions, while the null hypotheses were tested using the independent samples t-test at the 0.05 level of significance.

Research Question One: What is the influence of digital communication literacy on the entrepreneurial intentions of TVET graduates?

Table 1: Mean Ratings of TVET Lecturers and TVET Students on the Influence of Digital Communication Literacy on Entrepreneurial Intentions

S/N	Item Statements	TVET Lecturers		TVET Students Mean		Remarks
		Mean	SD	Mean	SD	
1	Digital communication skills enhance effective interaction with customers through online platforms.	3.80	0.45	3.71	0.59	Agree
2	Competence in social media communication promotes entrepreneurial awareness among TVET graduates.	3.60	0.55	3.66	0.61	Agree
3	Digital communication tools facilitate online marketing of business products and services.	3.80	0.45	3.74	0.56	Agree
4	Ability to use email and digital messaging improves business communication with clients.	3.40	0.55	3.55	0.63	Agree
5	Digital communication literacy strengthens customer relationship management.	3.60	0.55	3.67	0.60	Agree
6	Virtual communication platforms increase confidence in business networking.	3.80	0.45	3.72	0.58	Agree
7	Online communication competence supports collaboration with business partners.	3.60	0.55	3.68	0.61	Agree
8	Digital communication literacy promotes entrepreneurial intentions among TVET graduates.	3.80	0.45	3.76	0.54	Agree
	Grand Mean/SD	**3.68**	**0.50**	**3.69**	**0.59**	**Agree**

Table 1 presents the mean responses of TVET Lecturers and TVET Students on the influence of digital communication literacy on entrepreneurial intentions. The results indicate that all eight items recorded mean scores above the criterion mean of 2.50 for both respondent groups, showing agreement that digital communication literacy positively influences entrepreneurial intentions among TVET graduates.

The grand mean of 3.68 (SD = 0.50) for TVET Lecturers and 3.69 (SD = 0.59) for TVET Students indicates a strong consensus that effective use of digital communication technologies promotes entrepreneurial development. The relatively low standard deviation values show that responses were closely clustered around the mean, indicating consistency in respondents' opinions. The findings suggest that digital communication competence enables prospective entrepreneurs to market products, build professional networks, communicate effectively with customers, and improve business visibility through digital platforms.

H01:There is no significant difference between the mean responses of TVET Lecturers and TVET Students on the influence of digital communication literacy on entrepreneurial intentions.

Table 2: Independent Samples t-test on the Mean Responses of TVET Lecturers and TVET Students Regarding the Influence of Digital Communication Literacy

Variable	N	Mean	SD	df	t-cal	t-crit	Sig.	Decision
TVET Lecturers	15	3.68	0.50					
TVET Students	150	3.69	0.59	33	0.04	2.03	0.968	Not Significant (Accept H_0)

The independent samples t-test analysis revealed that the calculated t-value of 0.04 is less than the critical t-value of 2.03 at 33 degrees of freedom and 0.05 level of significance. Furthermore, the probability value (p = 0.968) is greater than 0.05. Therefore, the null hypothesis was accepted, indicating that there is no statistically significant difference between the mean responses of TVET Lecturers and TVET Students regarding the influence of digital communication literacy on entrepreneurial intentions. This finding demonstrates a shared perception among both groups that digital communication literacy is an essential driver of entrepreneurial intention.

Research Question Two: To what extent does digital business management literacy influence the entrepreneurial intentions of TVET graduates?

Table 3: Mean Ratings of TVET Lecturers and TVET Students on the Influence of Digital Business Management Literacy on Entrepreneurial Intentions

S/N	Item Statements	TVET Lecturers		TVET Students		Remarks
		Mean	SD	Mean	SD	
9	Digital business management literacy enhances effective planning of entrepreneurial activities.	3.80	0.45	3.70	0.60	Agree
10	Knowledge of digital financial management applications improves business decision-making.	3.60	0.55	3.63	0.62	Agree
11	Competence in digital record-keeping strengthens business accountability.	3.80	0.45	3.74	0.58	Agree
12	Ability to use digital inventory management tools improves business operations.	3.60	0.55	3.60	0.61	Agree
13	Digital business management skills support efficient customer and sales management.	3.80	0.45	3.72	0.59	Agree
14	Knowledge of e-commerce platforms promotes successful business establishment.	3.60	0.55	3.66	0.60	Agree
15	Competence in digital budgeting applications enhances entrepreneurial performance.	3.40	0.55	3.55	0.64	Agree
16	Digital business management literacy strengthens entrepreneurial intentions among TVET graduates.	3.80	0.45	3.76	0.57	Agree
	Grand Mean/SD	**3.68**	**0.50**	**3.67**	**0.60**	**Agree**

Table 3 presents the mean ratings of TVET Lecturers and TVET Students on the influence of digital business management literacy on entrepreneurial intentions. The results show that all the items recorded mean scores above the benchmark mean of 2.50, indicating agreement among both respondent groups that digital business management literacy contributes significantly to entrepreneurial intentions.

The TVET Lecturers obtained a grand mean of 3.68 (SD = 0.50), while TVET Students recorded a grand mean of 3.67 (SD = 0.60). These findings indicate that respondents acknowledged the importance of digital competencies in business planning, financial management, inventory control, customer relationship management, e-commerce operations, and budgeting for entrepreneurial success. The relatively low standard deviation values suggest that the respondents expressed similar opinions, indicating consistency in their responses. Overall, digital business management literacy was perceived as an important factor for developing entrepreneurial competence and business sustainability among TVET graduates.

H_{02}:There is no significant difference between the mean responses of TVET Lecturers and TVET Students on the influence of digital business management literacy on entrepreneurial intentions.

Table 4: Independent Samples t-test on the Mean Responses of TVET Lecturers and TVET Students Regarding the Influence of Digital Business Management Literacy on Entrepreneurial Intentions

Variable	N	Mean	SD	df	t-cal	t-crit	Sig.	Decision
TVET Lecturers	15	3.68	0.50					
TVET Students	150	3.67	0.60	33	0.08	2.03	0.936	Not Significant (Accept H_0)

The independent samples t-test results show that the calculated t-value of 0.08 is less than the critical t-value of 2.03 at 33 degrees of freedom and 0.05 level of significance. In addition, the probability value (p = 0.936) is greater than 0.05. Therefore, the null hypothesis was accepted. This indicates that there is no significant difference between the mean responses of TVET Lecturers and TVET Students regarding the influence of digital business management literacy on entrepreneurial intentions. The finding implies that both groups unanimously recognized digital business management literacy as a critical competence for successful entrepreneurship in the digital economy.

Research Question Three:What is the influence of digital opportunity recognition and decision-making skills on the entrepreneurial intentions of TVET graduates?

Table 5: Mean Ratings of TVET Lecturers and TVET Students on the Influence of Digital Opportunity Recognition and Decision-Making Skills on Entrepreneurial Intentions

S/N	Item Statements	TVET Lecturers		TVET Students		Remarks
		Mean	SD	Mean	SD	
17	Digital literacy improves the ability to identify online business opportunities.	3.80	0.45	3.74	0.56	Agree
18	Digital information analysis supports sound entrepreneurial decision-making.	3.60	0.55	3.68	0.60	Agree
19	Competence in online market research strengthens business opportunity identification.	3.80	0.45	3.77	0.55	Agree
20	Digital analytical skills improve business risk assessment.	3.60	0.55	3.63	0.61	Agree
21	Use of digital technologies supports innovative business ideas.	3.80	0.45	3.76	0.56	Agree
22	Digital literacy enhances confidence in making entrepreneurial decisions.	3.60	0.55	3.66	0.58	Agree
23	Knowledge of digital business trends improves entrepreneurial adaptability.	3.80	0.45	3.72	0.59	Agree
24	Digital opportunity recognition strengthens entrepreneurial intentions among TVET graduates.	3.80	0.45	3.79	0.54	Agree
	Grand Mean/SD	**3.73**	**0.48**	**3.72**	**0.57**	**Agree**

Table 5 presents the responses of TVET Lecturers and TVET Students on the influence of digital opportunity recognition and decision-making skills on entrepreneurial intentions. All the items recorded mean ratings above the criterion mean of 2.50, indicating that both groups agreed that digital opportunity recognition and decision-making skills are important determinants of entrepreneurial intentions.

The TVET Lecturers recorded a grand mean of 3.73 (SD = 0.48), while the TVET Students obtained a grand mean of 3.72 (SD = 0.57). These results suggest that respondents perceived digital literacy as enhancing opportunity recognition, innovation, market analysis, risk assessment, adaptability, and informed entrepreneurial decision-making. The relatively small standard deviation values indicate a high degree of agreement among the respondents. The findings therefore imply that digital opportunity recognition and decision-making skills play a significant role in motivating TVET graduates toward entrepreneurial ventures.

H_{03}:There is no significant difference between the mean responses of TVET Lecturers and TVET Students on the influence of digital opportunity recognition and decision-making skills on entrepreneurial intentions.

Table 6: Independent Samples t-test on the Mean Responses of TVET Lecturers and TVET Students Regarding the Influence of Digital Opportunity Recognition and Decision-Making Skills on Entrepreneurial Intentions

Variable	N	Mean	SD	df	t-cal	t-crit	Sig.	Decision
TVET Lecturers	15	3.73	0.48					
TVET Students	150	3.72	0.57	33	0.11	2.03	0.913	Not Significant (Accept H_0)

The independent samples t-test revealed that the calculated t-value of 0.11 is less than the critical t-value of 2.03 at 33 degrees of freedom and 0.05 level of significance. The associated probability value (p = 0.913) is greater than 0.05. Therefore, the null hypothesis was accepted. This indicates that there is no statistically significant difference between the mean responses of TVET Lecturers and TVET Students regarding the influence of digital opportunity recognition and decision-making skills on entrepreneurial intentions. The result demonstrates a common perception that digital literacy enhances the ability of TVET graduates to identify entrepreneurial opportunities, make informed business decisions, and strengthen their intentions to establish and sustain successful enterprises.

DISCUSSION OF FINDINGS

The first research question sought to determine the influence of digital communication literacy on the entrepreneurial intentions of TVET graduates. The findings revealed that both TVET lecturers and students agreed that digital communication literacy positively influences entrepreneurial intentions, with grand mean scores of 3.68 and 3.69 respectively. Specifically, respondents agreed that digital communication skills enhance customer interaction, promote entrepreneurial awareness through social media, facilitate online marketing, improve business communication, strengthen customer relationship management, increase networking confidence, and support collaboration with business partners. The t-test analysis revealed no significant difference between the perceptions of lecturers and students (t-cal = 0.04, t-crit = 2.03, p = 0.968), indicating a shared understanding of the importance of digital communication in entrepreneurship.

Furthermore, the findings corroborate Agbeyangi, Makinde, and Odun-Ayo (2024), who argued that digital literacy encourages creativity and innovation essential for sustaining entrepreneurial competitiveness. The agreement among respondents that digital communication tools facilitate online marketing aligns with Idowu (2025), who observed that digital entrepreneurship enables graduates to access wider markets and improve customer engagement. The finding that digital communication literacy strengthens customer relationship management is consistent with Abubakar, Zakariyya, Ibrahim, and Usman (2026), who noted that digital communication technologies enhance business management capabilities.

Discussion of Research Question Two

The second research question examined the extent to which digital business management literacy influences entrepreneurial intentions among TVET graduates. The findings indicated strong agreement among both lecturers and students that digital business management literacy positively influences entrepreneurial intentions, with grand mean scores of 3.68 and 3.67 respectively. Respondents agreed that digital business management literacy enhances entrepreneurial planning, improves decision-making through financial management applications, strengthens accountability through record-keeping, improves inventory management, supports customer and sales management, promotes business establishment through e-commerce platforms, enhances entrepreneurial performance through budgeting applications, and strengthens overall entrepreneurial intentions.

The t-test analysis revealed no significant difference between the perceptions of lecturers and students (t-cal = 0.08, t-crit = 2.03, p = 0.936), indicating unanimous agreement on the importance of digital

business management competencies for entrepreneurship. These findings support the management model framework underpinning this study, which posits that effective management of institutional resources and instructional practices facilitates the translation of digital competencies into entrepreneurial outcomes (Nwanakezie&Ogona, 2021).

These findings are consistent with George, Silas, Pandey, and Pandey (2024), who emphasized that digital literacy is indispensable for vocational graduates because virtually every occupational sector relies on digital technologies. The agreement that knowledge of digital financial management applications improves business decision-making aligns with Okonkwo, Orajaka, Ezeokafor, and Oguejiofor (2026), who highlighted the role of fintech services in digital entrepreneurship. Similarly, the finding that competence in digital record-keeping strengthens accountability supports Attah, Onwe, and Obi-Anike (2025), who argued that effective management ensures institutions establish supportive learning environments for entrepreneurship education.

The recognition that e-commerce platforms promote successful business establishment reflects the findings of Wahab and Akintade (2025), who noted that ICT integration in TVET programmes prepares learners for modern workplace environments. The agreement that digital budgeting applications enhance entrepreneurial performance is consistent with Adeniyi (2023), who identified financial management as a critical component of business start-up readiness. The finding that digital business management literacy strengthens entrepreneurial intentions aligns with Olanrewaju (2024), who emphasized that entrepreneurship education equips learners with managerial competencies for enterprise development.

Discussion of Research Question Three

The third research question investigated the influence of digital opportunity recognition and decision-making skills on entrepreneurial intentions among TVET graduates. The findings revealed strong agreement among both lecturers and students, with grand mean scores of 3.73 and 3.72 respectively. Respondents agreed that digital literacy improves the ability to identify online business opportunities, supports sound decision-making through information analysis, strengthens business opportunity identification through online market research, improves risk assessment through analytical skills, supports innovative business ideas, enhances confidence in entrepreneurial decisions, improves adaptability through knowledge of digital business trends, and strengthens overall entrepreneurial intentions.

The t-test analysis revealed no significant difference between the perceptions of lecturers and students (t-cal = 0.11, t-crit = 2.03, p = 0.913), indicating a shared recognition of the importance of digital opportunity recognition and decision-making skills for entrepreneurial development. These findings are particularly significant because opportunity recognition is widely considered the foundational step in the entrepreneurial process (Ayogoi, 2026).

These findings align with Abulude and Ogunjemilua (2025), who identified opportunity recognition and creativity as key factors contributing to entrepreneurial intentions. The agreement that digital literacy improves the ability to identify online business opportunities supports Rafiq-uz-Zaman (2023), who emphasized that digital competence enables individuals to apply technology to real-life situations effectively. The finding that digital information analysis supports sound entrepreneurial decision-making is consistent with the European Commission (2022), which described digital literacy as enabling informed and responsible use of digital technologies.

The recognition that digital analytical skills improve business risk assessment aligns with UNESCO-UNEVOC (2022), which emphasized that TVET graduates play a significant role in promoting sustainable industrial development by applying technical knowledge and innovation to address emerging challenges. The finding that knowledge of digital business trends improves entrepreneurial adaptability supports the World Economic Forum (2023), which identified adaptability and resilience as essential competencies for sustainable enterprise development.

The relatively higher grand mean for this research question (3.73) compared to the other two dimensions suggests that respondents perceive digital opportunity recognition and decision-making skills as particularly influential in shaping entrepreneurial intentions. This finding underscores the importance of developing these competencies through targeted educational interventions.

Conclusion

The study concluded that digital literacy, specifically digital communication literacy, digital business management literacy, and digital opportunity recognition and decision-making skills, significantly influences entrepreneurial intentions among TVET graduates. Both TVET lecturers and students share consistent perceptions regarding the importance of these digital competencies for entrepreneurial development. Digital

literacy is not merely an ancillary skill but a critical determinant of entrepreneurial intentions in the contemporary digital economy. The management model framework has proven useful in explaining how institutional mechanisms can facilitate the translation of digital literacy into entrepreneurial action. Effective management of TVET institutions is essential for maximizing the influence of digital literacy on entrepreneurial intentions.

Recommendations

1. TVET institutions should invest in modern ICT infrastructure, including computer laboratories, high-speed internet connectivity, digital learning platforms, and relevant software applications.
2. The curriculum should be reviewed to incorporate digital entrepreneurship as a core component, including modules on digital communication, digital financial management, e-commerce operations, online marketing, and digital opportunity recognition.
3. Institutions should organize workshops and training programmes providing hands-on experience in using digital tools for business management.
4. Institutional leaders should invest in continuous professional development programmes for TVET lecturers to enhance their digital competencies and pedagogical skills.
5. Formal partnerships should be established with industries, technology companies, and successful digital entrepreneurs to provide mentorship and internship opportunities.
6. Institutions should establish digital incubation hubs where students can develop and test their business ideas using digital technologies. Collaboration among educational institutions, government agencies, private sector organizations, and technology providers should be strengthened.

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RELATIONSHIP BETWEEN ENTREPRENEURSHIP EDUCATION AND STUDENTS' ENTREPRENEURIAL SELF-EFFICACY IN PUBLIC TERTIARY INSTITUTIONS IN BAUCHI STATE, NIGERIA

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Abstract

The study examined the relationship Between entrepreneurship education and Business education students' entrepreneurial self-efficacy in public tertiary institutions in Bauchi state, Nigeria. Two objectives, two research questions and two null hypotheses guided the study. The study adopted correlational survey research design, specifically cross-sectional design. The population for the study was 192 final year Business education students across tertiary institutions, 2025/2026 academic session. Total population sample was used in the study, only 162 valid responses were recorded. The instrument used for data collection was a structured questionnaire. The instrument was subjected to face and content validation by two experts. In order to find out the reliability of the instrument, a pilot study was conducted. 0.88 correlation coefficient was obtained. The researchers collected of data; data collected from the study was analyzed using inferential statistics of Pearson Product Moment Correlation (PPMC) to test the null hypotheses at 0.05 level of significance. The findings revealed that there is positive and significant relationship between entrepreneurship content knowledge and students' entrepreneurship self-efficacy for self-reliant. Also, the relationship between Students' Industrial Work Experience Scheme (SIWES) and their entrepreneurship self-efficacy for self-reliant was positive and significant. The study therefore concluded that, having knowledge of entrepreneurship education and students' industrial practical experience led to students' entrepreneurship self-efficacy development for self-reliant. It was recommended that University curriculum planners should re-examine the entrepreneurship education curriculum in order to ensure it provides students with the necessary entrepreneurship knowledge and skills, incorporate real world application, mentorship programs and networking opportunities, and consider re-evaluating them frequently to better support students' self-reliance goals. Also, experiential, and application-based learning focusing on the practical application of entrepreneurship education in addition to mandatory SIWES should be improved and adopted in order to enhance students' entrepreneurship self-efficacy development.

Key words: **Relationship, Entrepreneurship, Education, Students' Self-efficacy**

Introduction

Rapid urbanization and modernization are demotivating the new generation students to take entrepreneurship trades as their profession, so there is dire need to reshape the traditional activities to attract Bauchi state students in tertiary institutions toward self-reliant after graduation instead of waiting for a white cola job which are no longer attainable. However, due to the economic liberalization and fast changing curriculum, this situation has changed drastically. Entrepreneurship education is a concept that is specific and drawn from wider entrepreneurship, and it has prospective and potentials for the social and economic development of the country (Sontakey, 2024). According to Sontakey (2024), its contribution takes the form of employment creation and economic growth, diversified income and poverty reduction in rural areas and improvement in nutrition, health and overall food security. According to Kukday (2024), it encompasses the transformation of an idea or vision into a "new business or new venture creation or the expansion of an existing business by an individual or a team of individuals, or an established business".

On the other hand, SIWES is a skills training programme designed to prepare and expose students of university, polytechnic, colleges of technology and colleges of education for the industrial work situation they are likely to meet after graduation. The scheme affords students the opportunity of familiarizing and exposing themselves to handling equipment and machinery that are usually not available in their institutions. Before the establishment of the scheme, there was growing concern that graduates of our institutions of higher learning lacked adequate practical knowledge and that the theoretical education in higher institutions was not responsive to the needs of the employers of labour (ITF, 2023). It is against this background that Industrial Training Fund (ITF) initiated, designed and introduced SIWES in 1973 to acquaint students with the skills of handling industrial equipment and machinery. ITF (2023) further identified the following as the objectives of SIWES to; (i) provide avenue for students in institutions of higher learning to acquire industrial skills and experience in their course of study (ii) prepare students for the industrial work situation they are to meet after graduation (iii) expose students to work methods and techniques in handling equipment and machinery that may not be available in their institutions (iv) make the transition from school to the world of work easier, and enhance students contacts for later job placement (v) provide students with an opportunity to apply their knowledge in real work situation thereby bridging the gap between theory and practice (vi) enlist and strengthen employers involvement in the entire educational process and prepare students for employment after graduation

In addition, Drnovsek, Wincent and Cardon (2010) define self-efficacy as an Individual's beliefs about his or her competencies and zeal/power to utilize such competencies in accomplishing a given task. These beliefs either accurate or not is an estimation of how well one can marshal one's cognitive, physical and emotional resources to accomplish specific goals (Maddux & Gesselin in Baraya, 2021). Self-efficacy therefore is all encompassing because it has something to do with believing in oneself to successfully execute and accomplish some tasks that will produce desired end results (Bandura, 1997). Self-efficacy is purview in nature and differs based on various chores and circumstances, it should be noted, however, that one of the essential constituents' models of entrepreneurial intention is self-efficacy, an individual with high entrepreneurial self-efficacy has the tendency to become self-employed (Ajzen, 1980; Segal, Borgia & Schoenfeld, in Baraya, 2021). Entrepreneurial self-efficacy involves individual belief regarding their capabilities for attaining success and controlling cognitions for successfully tackling challenging goals during the business start-up process (Drnovsek, Wincent & Cardon, 2010). They further posit that the goals that self-efficacy beliefs are focused on (task or outcome goals), and the valence of the beliefs (positive or negative control beliefs).

In a bid to reduce graduate unemployment in Nigeria, the Federal Government directed all institutions of higher learning in Nigeria to introduce entrepreneurship education as a compulsory course for all students, irrespective of their disciplines, in ensuring proper inculcation of entrepreneurial skills such as technical, creativity, problem solving, management, book-keeping and communication skills in graduates towards self-reliant, the educational system therefore, generally, needs to strengthen entrepreneurship education with a rich and appropriate curriculum content (Baraya, 2021). Curriculum content can be seen as the subject matter or topics consisting of facts, concepts, ideas and knowledge within a particular course, based on a duration and how it will bring about a relatively permanent change in an individual and the society (Ighoshen & Ogidigba, 2022). Curriculum content can also be seen as all the academic contents taught in schools or in a specific course or programme. It is the knowledge, skills, attitudes as well as extracurricular activities imparted to learners through teaching and learning. Therefore, the curriculum content has to be comprehensive and well-arranged, with up-to-date facts concerning the specific course. Sujuyigbe (2025) further believed that when the curriculum content is not relevant to the needs of the students and the society, students' interest will not be registered to enable effective learning, therefore the system is bound to produce poorly skilled graduates without entrepreneurship self-efficacy, thereby unable to function effectively in the world of work without gainful employment. Iwu et al., (2021) observed that the running of entrepreneurship education in the state tertiary institutions' curriculum seems to be impotent in stimulating the mindsets of students as it is primarily, theoretical rather than practical which lacks the potential to stir up innovative ideas for students to be self-reliant after graduation.

Based on the above, it is therefore, imperative that, entrepreneurship curriculum content must be rich with practical experiences and internship programme relevant to the needs of the students. It is hope that, if the students' interest can be enlisted, for effective learning to be equipped with useful skills that will lead to either gainful employment or self-employment as entrepreneurs after their graduation from the university, this is because the ability of tertiary institutions to expose students to practical entrepreneurship

education will enhance entrepreneurial drive, skills retention in learners, and if well packaged, can reduce the lingering unemployment challenges among graduates, as it will ensure stable growth in the provision of employment options for Nigerian graduates (Hanandeh et al., 2021).

Conversely, the researchers observed that, despite the established roles and a lot of emphasis by the federal government on entrepreneurship education, it seems students have not been able to acquire the necessary entrepreneurial skills, to become useful to themselves and the society after graduating from the university. There is public outcry on graduates' lack of entrepreneurship skills and attitudes to depend on their personal abilities/self-efficacy or ideas for venture creation. The researchers also maintain that these could be attributed to inadequacies in curriculum content arising from shallow curriculum devoid of practical experiences, mentorship, internship and networking opportunities in the curriculum content resulting abstract learning, poor entrepreneurial self-efficacy development that led to non-achievement of the philosophy and objectives of entrepreneurship education goals, as contained in the National Policy on Education (2012). This might be the reason for increased unemployment, resulting to robbery, prostitution, human trafficking, smuggling and kidnapping among other vices.

Despite Entrepreneurship education as a compulsory course and form part of the requirements for graduation in schools in Nigeria ranging from secondary to tertiary institutions (Adeel et al., 2023), which the philosophy and objectives are to prepare students for gainful employment after graduation to reduce graduate unemployment (Osuola in Baraya, 2021). It is unfortunate that, in spite of entrepreneurship education curriculum content and the time allotted, there was public outcry that the students lack entrepreneurial self-efficacy to venture into business for self-reliant after graduation (Baraya, 2021). Conversely, unemployment rates were very high considering the number of students that are graduating (in hundreds of thousands) from the universities every year (See for example Report from the National Bureau of Statistics NBS (2023) revealed the level of unemployment rate at 19.2% in (2022), and the most recent International Monetary Fund (IMF) projection of unemployment rate for the second quarter of 2025, which stood at 22.6%), this was alarming and it became an issue of serious concern to policy makers and researchers. It is based on the above that the researchers were compelled to investigate the relationship between entrepreneurship education curriculum content and students' self-efficacy development for self-reliant.

Though there are numerous impediments for students to become agripreneurs/entrepreneurs, the most critical are highlighted below (Malhotra et al., 2023):

1. Prejudiced perspective: students are generally counselled by parents to become employees with high salaries or professionals like doctors. Only when students reach college they come to know about research, innovations and startups. By this time, students become risk-averse and look at entrepreneurship with prejudice. Lack of exposure to entrepreneurship programs and peer support for students, who want to become agripreneurs/entrepreneurs also discourages students from venturing into it.
2. Unrealistic assumptions: Students expect higher growth in a shorter time span. The path to convert an idea into an innovative product/service, accepted by the market and realizing growth is a long process with many challenges of various dimensions from different quarters. Most of the students are put off by this physically and mentally arduous process and the fear of failure. They seek simpler and smarter ways for growth.
3. Lack of business skills: Students are especially worried about the business dimension of innovation, primarily because they lack skills and experience in managing various aspects of business, especially marketing and finance.

Students who studied entrepreneurship in agriculture are supposed to be involved in the production, processing and marketing of agricultural products, from the inputs level to biotechnology, Agri-processing as well as digital marketing which directly connects farmers to the customers thereby maximizing the food supply chain. Unfortunately, the researchers observed that there is growing vocational education students' unemployment after graduation, despite undergoing Agribusiness course as a requirement for graduation from the university. This concurred with Mukembo et al., (2015) who asserts that entrepreneurship is worsened by the declining number of youths engaged in or who aspire to pursue and venture into entrepreneurship and agricultural-related professions or careers across the state. It is based on the above that the current study investigated whether significant relationship exist between entrepreneurship education content and Business education students' entrepreneurship self-efficacy for self-reliant in tertiary institutions in Bauchi state.

The main objective of the study is to investigated the relationship between entrepreneurship education content and students' entrepreneurship self-efficacy for self-reliant in Abubakar Tafawa Balewa University, Bauchi, Nigeria. Specifically, the study sought to;

1. investigate the relationship between entrepreneurship content knowledge and Students' entrepreneurial self-efficacy for self-reliant
2. examine the relationship between Students' Industrial Work Experience Scheme (SIWES) and students' entrepreneurial self-efficacy for self-reliant

The following research questions were raised;

1. what is the relationship between entrepreneurship content knowledge and students' entrepreneurial self-efficacy for self-reliant
2. what is the relationship between Students' Industrial Work Experience Scheme (SIWES) and students' entrepreneurial self-efficacy for self-reliant

The following null hypotheses were tested at 0.05 level of significance;

1. There is no significant relationship between entrepreneurship content knowledge and students' entrepreneurial self-efficacy for self-reliant
2. There is no significant relationship between Students' Industrial Work Experience Scheme (SIWES) and students' entrepreneurial self-efficacy for self-reliant

Theoretical Review

The study was underpinned by Experiential Learning Theory developed by Kolb (1984). The theory suggests that, students learn most deeply when they are able to connect theoretical knowledge and hands-on learning. The theory further states that, learning is the process whereby, knowledge is created through the transformation of experience. The importance of hands-on experience and reflection in the learning process. The theoretical framework can therefore, provide a foundation for understanding the relationship between entrepreneurship education and students' entrepreneurship self-efficacy. It is related to the current study because entrepreneurship education adopts experiential learning such as practical experience and SIWES that builds students entrepreneurship self-efficacy.

Research Methodology

The study adopted cross-sectional survey design. The study was conducted in Bauchi state, Nigeria. The population for the study was 192 final year Business education students across tertiary institutions, 2025/2026 academic session. Total population sample was used in the study, with only 162 valid responses were recorded. The instrument for data collection was a structured questionnaire. The instrument was subjected to face and content validation by two experts. In order to find out the reliability of the instrument, a pilot study was conducted using 35 final year Business education students from Federal college of education (Technical), Gombe state, Nigeria. Reliability coefficient of. 0.88 was obtained using Cronbach alpha. The researchers collected the data. Data collected from the study was analyzed using descriptive and inferential statistics of Mean, Standard Deviation and Pearson Product Moment Correlation (PPMC) respectively. Mean and Standard Deviation was used to answer research questions, while PPMC was used to test the null hypotheses at 0.05 significance level. The analysis was conducted using Statistical Package for Social Science (SPSS) version 23. The 2.50 criterion mean derived from the 4-point scale was used as the benchmark for determining mean. In the test of the null hypotheses, if $p \geq 0.05$, the null hypothesis was accepted, and if $p \leq 0.05$, the null hypothesis was rejected.

Results

Research Question One

What is the relationship between entrepreneurship education and students' entrepreneurial self-efficacy?

The results in Table 1 indicated the mean and standard deviation of responses ranging from 3.75 to 4.26 with standard deviation 1.06 to .819 and grand mean of 4.07 respectively. This clearly indicated that there is relationship between entrepreneurship education content and students' entrepreneurial self-efficacy in universities within North east, Nigeria.

Table 1: Mean and standard deviation on the relationship between entrepreneurship education and students' entrepreneurial self-efficacy.

S/N	Items	N	Mean	SD	Remark
1.	entrepreneurship education content provides vocational education students with basic	162	4.02	.802	Agree

	knowledge for Agribusinesses, principles of management, and financial accounting records			
2.	entrepreneurship education content provides vocational education students with basic knowledge for organic farming and biotechnology, and impact of technology	4.19	.866	Agree
3.	entrepreneurship education content provides vocational education students with basic knowledge for agribusiness risks	4.26	.819	Agree
4.	entrepreneurship content provides vocational education students with basic knowledge for sustainable agriculture	4.07	.874	Agree
5.	entrepreneurship education content provides vocational education students to identify sources of agribusiness fund, and the principles of business planning	4.21	.793	Agree
6.	entrepreneurship education content provides vocational education students with basic knowledge with the principles of entrepreneurship and innovation	3.75	1.06	Agree
7.	entrepreneurship education content provides vocational education students with basic knowledge for supply chain management in agribusiness	3.96	.947	Agree
	Grand Mean	**4.07**	**.458**	**Agree**

Source; field work (2026).

Research Question Two

What is the relationship between Students' Industrial Work Experience Scheme (SIWES) and students' entrepreneurial self-efficacy?

The results in Table 2 indicated the mean and standard deviation of responses ranging from 3.77 to 4.24 with standard deviation 1.00 to .892 and grand mean of 4.00 respectively. The result revealed that there is positive relationship between Students' Industrial Work Experience Scheme (SIWES) and students' entrepreneurial self-efficacy.

Table 2: Mean and standard deviation on the relationship between Students' Industrial Work Experience Scheme and students' entrepreneurial self-efficacy

S/N	Items	N	Mean	SD	Remark
1.	SIWES provide vocational education students with hands-on experience which allow students develop confidence in their abilities	162	3.99	.943	Agree
2.	SIWES helps vocational education students develop problem solving skills		3.88	.894	Agree
3.	SIWES helps vocational education students develop interpersonal skills		4.05	.895	Agree
4.	SIWES helps vocational education students develop communication skills		4.24	.892	Agree
5.	SIWES helps vocational education students build relationships with captain of industries, leading to business opportunities		3.77	1.00	Agree
6.	SIWES helps vocational education students to work in a team		4.12	8.98	Agree

7.	SIWES allows vocational education students to apply theoretical knowledge in real-world fostering a deeper understanding of concept	4.00	.906	Agree
	Grand Mean	**4.00**	**.550**	**Agree**

Source; field work (2026).

Null Hypothesis One

There is no significant relationship between entrepreneurship education and students' entrepreneurial self-efficacy

The statistical evidence documented in Table 3 revealed that the variable entrepreneurship content knowledge had a positive and significant relationship with students' entrepreneurial self-efficacy r=.656**, p< .001. The result therefore, does not accept null hypothesis one.

Table 3: PPMC on the relationship between entrepreneurship education and students' entrepreneurial self-efficacy.

Variable		ECK	SES	Decision
ECK	PPMC	1	.656**	
	Sig. (2-tailed)		.001	Rejected
	N	162	162	

Source: field survey (2026). **Note**; ECK (Entrepreneurship Education); *SES (Students' Entrepreneurial Self-efficacy); ** Correlation is significant at 0.01.*

Null Hypothesis Two

There is no significant relationship between Students' Industrial Work Experience Scheme (SIWES) and students' entrepreneurial self-efficacy.

The statistical evidence documented in Table 4 revealed that the relationship between Students' Industrial Work Experience Scheme (SIWES) and students' entrepreneurial self-efficacy was significant r=.723**, p< .001. This result therefore, reject null hypothesis two.

Table 4: PPMC on the relationship between Students' Industrial Work Experience Scheme and students' entrepreneurial self-efficacy.

Variable		SIWES	SESD	Decision
SIWES	PPMC	1	.723**	
	Sig. (2-tailed)		.001	Rejected
	N	162	162	

Source: field survey (2025). **Note**; *SES (Students' Entrepreneurial Self-efficacy); ** Correlation is significant at 0.01.*

Findings of the Study

The following findings were made

1. The result of research question one and its corresponding null hypothesis revealed that there is positive and significant relationship between entrepreneurship education and Business education students' entrepreneurial self-efficacy.
2. Statistical evidence from research question two and its corresponding null hypothesis revealed that there is significant relationship between SIWES and Business education students' entrepreneurial self-efficacy.

Discussion of the Findings

The study's findings present significant insights into the relationship between entrepreneurship education and Business education students' selfefficacy.

The finding of null hypothesis one posited that there is significant relationship between entrepreneurship education and students' entrepreneurship self-efficacy. The finding concurred with Baraya, Samson, Chadi, Umar & Jirgi (2025), Baraya, (2021), Rana and Bisht (2023) and Ahmad et al., (2020) who found in their separate studies that relationship exist between entrepreneurship education content and students' entrepreneurship self-efficacy (Henley et al., 2017; Biney, 2017; Carlos et al., 2018; Roberta et al., Mack et al., 2023 & Rahim et al., 2023). Additionally, Choundhary et al., (2025), Ere et al., (2019) and Sajuyigbe (2025) found that entrepreneurship education creates opportunities and reduce

poverty and prepare students' mindset toward self-reliance, which also agreed with the finding of the current study.

The finding of null hypothesis two revealed that there is positive and significant relationship between SIWES and students' entrepreneurship self-efficacy. This is in line with the findings of Baraya, et al., (2025), Mukembo et al., (2015), Mark and Honig (2023) who found in their separate studies that when students are engaged in Agripreneurship/entrepreneurship project-based, hands-on, it increases the likelihood of changing their mindsets to consider agriculture as a business that could provide gainful employment and improve their economic prospects for self-reliant. The finding of the current study also concurred with and Maricham, (2016), Fellnhofer and Puumalainen (2017), who found Agripreneurship practice as solution to many economic problems like urbanization, poverty, unemployment and economic development. And also, individual often are inspire by role model improve their entrepreneurial self-efficacy. Conversely, Lee et al., (2016); Hockets (2017) and Pfeifer et al., (2016) found work experience shown to improve students' entrepreneurship self-efficacy. Similarly, Politis et al., (2019) and Pocek et al., (2021) found extra-curricular and practical experience positively correlated with students' entrepreneurship self-efficacy.

Conclusion

The findings of this study suggest that entrepreneurship education had a significant relationship with Business education students' self-efficacy. It was further established by this study that entrepreneurship content knowledge and SIWES had a positive and significant relationship with students' entrepreneurship self-efficacy development for self-reliant.

Recommendations

The study recommends that:

1. University curriculum planners should re-examine the entrepreneurship education content in order to ensure it provides students with the necessary skills and knowledge, such as the real-world application, mentorship programs and networking opportunities, and consider re-evaluating and revising them frequently to better support students' self-reliance goals.
2. Experiential and application-based learning focusing on the practical application of entrepreneurship education should be adopted, and mandatory SIWES should be improved and strengthened to enhance students' entrepreneurship self-efficacy development for self-reliance.

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ARTIFICIAL INTELLIGENCE ASSESSMENT TOOLS AND ACADEMIC PERFORMANCE OF BUSINESS EDUCATION STUDENTS IN PUBLIC UNIVERSITIES IN CROSS RIVER STATE, NIGERIA

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Abstract

This study ascertained the influence of artificial intelligence assessment tools and academic performance of business education students in Public Universities in Cross River State, Nigeria. To achieve the purpose of the study, two research questions were posed and two null hypotheses were formulated to guide the study. Predictive correlational design was adopted for the study. The population of the study comprised 311 final year business education students in public universities in Cross River State. Proportionate sampling technique was adopted to select a sample of 109 respondents. The instrument for data collection and analysis was the Artificial Intelligence Assessment Tools and Academic Performance Questionnaire (AIATAPQ). The instrument was validated by two lecturers in Business Education and one expert in measurement and evaluation, University of Calabar. Simple linear regression analysis was used to test the hypotheses at 0.05 significant level. Findings from the study revealed that there is a statistically significant influence of Claude AI and Turnitin on academic performance of business education students in public universities in Cross River State. It was concluded that the use of artificial intelligence assessment tools enhance the academic performance of students. Based on the result of the findings, it was recommended among others that university students should be trained on the use of Claude AI to enhance their academic performance. It was also recommended that students should be encouraged on the use of Turnitin by university management to promote the integrity of their work.

Introduction

Business education is a dynamic component of vocational and technical education that is designed to equip learners with the knowledge, skills, competencies, attitudes and values required for effective participation in business, employment, entrepreneurship and economic development. According to Umezulike (2025), the concept of business education goes beyond the acquisition of theoretical knowledge about business; it involves the development of practical and transferable competencies that enable individuals to function effectively as employees, entrepreneurs, managers, administrators and employers of labour. In the view of Eleng and Akeke (2023) business education is described as an educational process or content which have the primary aim of preparing people for roles in enterprise, such roles could be as employees, entrepreneurs, employers, or simply as self-employed person. In the Nigerian educational context, business education is particularly important because of its potential to promote employability, self-reliance, entrepreneurship and economic development. Recent literature continues to describe business education as a programme that prepares individuals for careers in business while developing competencies necessary for participation in the economic system. The concept of business education has evolved considerably in response to changes in the nature of work and business activities. Traditionally, emphasis was placed on areas such as bookkeeping, accounting, shorthand, typewriting, office practice, marketing and business management. However, technological advancement and the digital transformation of the workplace have expanded the scope of business education. Contemporary business education increasingly encompasses information and communication technology, digital marketing, e-commerce, data management, entrepreneurship, digital communication, financial technology, and other technology-enabled business practices. Seyi and Abiola (2024) observed that business education is dynamic and remains

relevant to successful living, job creation, employability, and effective participation in the growth of both the Nigerian and global economies. However, the performance of students in business education-related courses remains abysmal.

Academic performance is an important concept in educational research because it provides an indication of the extent to which students achieve the learning outcomes expected from a particular educational programme. Aden (2025) stated that academic performance generally refers to the level of knowledge, skills, competencies and academic achievement demonstrated by a learner after participating in teaching and learning activities. Academic performance is commonly assessed through examinations, tests, continuous assessment, assignments, projects, practical exercises, presentations, grade-point averages (GPA) and cumulative grade-point averages (CGPA). In higher education, academic performance is particularly important because it provides evidence of students' progress and the extent to which they have acquired the competencies associated with their programme of study. Recent scholarship emphasizes that academic performance is a multidimensional outcome influenced by individual, instructional, institutional and social conditions rather than by a single factor (Wang & Chen, 2024).

Poor academic achievement among Business Education students has become an important educational concern because the programme is expected to produce graduates with competencies in accounting, marketing, entrepreneurship, office technology, management, communication and digital technologies. Babatunde et al., (2025) indicated that students' achievement can be affected by a combination of academic, technological, psychological, socioeconomic and institutional factors rather than by students' ability alone. Makwe et al. (2025) listed some of the challenges of poor performance in business education to include inadequate instructional facilities, inadequate electricity supply, poor digital literacy, outdated curriculum content, large class sizes, inadequate funding of Business Education programmes, poor teaching methods, poor study habits and academic stress. In recent time, Artificial Intelligence (AI) assessment tools have been developed to enhance students' academic performance.

Artificial Intelligence assessment tools can generally be described as computer-based applications that employ AI techniques to assist in designing, administering, scoring, interpreting, or providing feedback on educational assessments. Artificial Intelligence (AI) assessment tools have emerged as an important development in contemporary education because of the increasing demand for faster, more personalized, data-driven and efficient approaches to assessing students' learning. Luo et al. (2025) maintained that assessment in higher education has depended largely on lecturers to prepare questions, administer tests, mark students' scripts, provide feedback and determine academic achievement. Although these conventional approaches remain valuable, they can become demanding where lecturers handle large classes and multiple assessment activities. Recent developments in machine learning, natural language processing, learning analytics and generative artificial intelligence have created new possibilities for supporting almost every stage of the assessment process, including assessment design, question generation, automated scoring, formative feedback, adaptive testing and analysis of students' performance (Bond et al., 2024).

The development of artificial intelligence assessment tools is closely connected with the broader field of Artificial Intelligence in Education (AIED). Akputu *et al*. (2026) stated that artificial intelligence (AI) supports teachers in understanding learners' needs, predicting performance, and designing adaptive learning environments. Ebam and Ekunke (2025) highlighted some of the artificial intelligence tools used to improve educational outcomes to include intelligent tutoring systems, learning management systems (LMS), automated assessment and feedback, chatbots and virtual assistants, adaptive learning platforms, speech recognition, and language learning. A meta-systematic review by Bond et al. (2024) indicated that AI applications in higher education include intelligent tutoring, adaptive systems, prediction, personalization and automatic assessment. This suggests that AI assessment is no longer restricted to automatically marking objective questions; it increasingly involves systems capable of analysing students' responses and learning behaviours to provide individualized information about their progress. The growing importance of AI assessment tools has been strengthened by the rapid development of generative AI and large language models (LLMs). Applications such as ChatGPT and similar systems can generate assessment questions, case studies, rubrics, model answers and feedback. They can also analyse students' written responses and provide preliminary evaluations. Luo et al. (2025), in a systematic review of 63 peer-reviewed studies, found that AI-based learning tools are increasingly being designed to provide personalized learning, real-time feedback and flexible learning experiences. The review further shows that AI tools can influence cognitive, skill-based and affective learning outcomes.

Claude AI is another large language model that can support educational assessment. It can analyse relatively long texts, generate questions, evaluate written responses, develop rubrics and provide feedback. Claude can be particularly useful for essay and case-study assessment, where students are required to explain, analyse and evaluate business problems rather than simply select correct answers. This is consistent with recent research showing increasing use of large language models for automated assessment of open-ended responses (Pecuchova et al., 2025). The research also indicates that AI assessment of open-ended work requires careful validation because complex student responses can be interpreted differently by AI and human assessors.

Turnitin is primarily an academic-integrity and similarity-checking tool. Bashraheel and Ghinea (2026) posited that turnitin compares student submissions with existing sources to identify textual similarities. Its newer AI-related functions can also provide an indication that text may have been generated using AI. Its importance to assessment lies in helping lecturers evaluate the originality and integrity of students' academic work. AI-detection results should not automatically be treated as proof of misconduct. Recent research has raised concerns about the reliability of AI-detection technologies, including the possibility of false positives and false negatives. Consequently, lecturers should combine technological indicators with human judgment and other evidence of students' learning. This study is therefore designed to ascertain the influence of artificial intelligence tools on academic performance of business education students in public universities in Cross River State, Nigeria.

Statement of the problem

Academic performance is one of the major indicators used to determine the extent to which students achieve the expected learning outcomes of an educational programme. It is commonly reflected through students' scores in tests, examinations, assignments, projects, practical exercises and grade point averages. Good academic performance is important because it demonstrates students' acquisition of knowledge, skills and competencies and contributes to their readiness for further education and employment. However, concerns about students' academic performance continue to attract attention, particularly as higher education institutions experience rapid changes in teaching, learning and assessment practices.

The problem has become more complex with the increasing use of digital technologies and artificial intelligence (AI) tools in education. Recent evidence indicates that AI-supported educational technologies can improve learning outcomes by providing personalised learning, immediate feedback, adaptive assessment and opportunities for students to practise independently. AI applications can support students' learning and improve academic performance, including through assessment, learning support and prediction of students' performance.

Despite these potential benefits, the academic performance of students cannot automatically be assumed to improve simply because AI tools are available. The effectiveness of these technologies may depend on how frequently students use them, the purposes for which they use them, their digital literacy, the quality of AI-generated information and the extent to which lecturers guide their use. In particular, excessive dependence on AI-generated responses may reduce students' engagement in independent thinking, analytical reasoning and problem-solving. Over-reliance on AI dialogue systems can encourage students to accept AI-generated recommendations without adequately evaluating their accuracy, potentially affecting critical thinking, decision-making and analytical reasoning.

Another important concern relates to assessment. Traditional forms of assessment may no longer provide an accurate indication of students' individual knowledge and abilities when students can easily obtain answers from generative AI applications. Generative AI has created both opportunities and challenges for higher education assessment, including immediate feedback and self-assessment opportunities, but also serious concerns about academic integrity. Conventional assessment approaches may need to evolve to ensure that students' actual learning outcomes are adequately measured. Furthermore, the ability of generative AI systems to produce academically acceptable responses raises questions about the validity of students' academic scores. AI-generated responses in higher education assessments has shown that some generative AI systems can produce work that performs well against academic assessment criteria.

The problem, therefore, is not simply whether students are performing well or poorly academically, but whether the factors influencing their academic performance are adequately understood in the contemporary technology-driven educational environment. There is a need to establish whether the use of AI assessment tools contributes to genuine improvement in students' academic performance or merely

improves their assessment scores without corresponding development of independent learning, critical thinking and problem-solving abilities. Consequently, the present study is considered necessary to investigate academic performance as an outcome of students' learning in the context of AI assessment tools.

Purpose of the study

The purpose of this study was to ascertain the influence of:

1. Claude AI on the academic performance of business education students in public universities in Cross River State, Nigeria.
2. Turnitin on the academic performance of business education students in public universities in Cross River State, Nigeria.

Research questions

The following research questions were posed to guide the study.

1. What is the influence of Claude AI on the academic performance of business education students in public universities in Cross River State, Nigeria?
2. What is the influence of Turnitin on the academic performance of business education students in public universities in Cross River State, Nigeria?

Research hypotheses

The following null hypotheses were formulated and tested;

1. There is no significant influence of Claude AI on the academic performance of business education students in public universities in Cross River State, Nigeria.
2. There is no significant influence of Turnitin on the academic performance of business education students in public universities in Cross River State, Nigeria.

Research methods

The design that was adopted for this study was the predictive correlational research design. The population of the study comprised 311 business education final year students in two public universities in Cross River State. The proportionate sampling technique was used for this study, using 35% of the population. This technique ensures fair representation of each subgroup in proportion to its population size, thereby increasing the accuracy, representativeness, and reliability of the study findings. The sample of the study comprised 109 business education final year students in two public universities in Cross River State. The major instrument for data collection was a structured questionnaire called Artificial Intelligence Assessment tools and Academic Performance Questionnaire" (AIATAPQ). The instrument contained two sections. Section "A" contain 20 items drawn from the independent sub-variables while, section 'B' contained 10 items from the dependent variable, making a total of 30 items. The instrument is a four-point rating scale of Strong Agree (SA), Agree (A), Strong Disagree (SD) and Disagree (D). Respondents were given the freedom to tick the option that best suit their opinions without interference by the researcher. The items were positively ranked as Strong Agree (SA) -4 points, Agree (A) -3 points, Strong Disagree (SD) -2 points and Disagree (D) – 1 point, respectively. The validity of the instrument was determined by two lecturers in the department of Business Education and an expert in measurement and evaluation, University of Calabar, who scrutinized the instrument thoroughly before the last draft was administered to the respondents. The researcher visited the institutions personally to administer the instrument to the respondents. The researcher met with the Head of Department (HOD) and handed over the introductory letter to the them. After obtaining permission, the researcher also met with the lecturers, introduced himself and handed out the introductory letter to them also. The targeted sample was addressed and informed of the exercise and the need to be honest in terms of giving objective response, as responses would be used for research purpose only. The exercise was concluded in immediately after the administration of the instrument which ensured total compliance. After collection of instrument, codes were assigned to each of the items for easy preparation of data. The instrument was a 30 items questionnaire called Artificial Intelligence Assessment tools and Academic Performance Questionnaire" (AIATAPQ), derived from the variables of the study. Each variable contained five items. The items were positively coded as Strong Agree (SA) -4 points, Agree (A) -3 points, Strong Disagree (SD) -2 points and Disagree (D) – 1 point, respectively. The research questions and hypotheses were answered and tested using simple linear regression analysis. The hypotheses were tested at 0.05 level of significance. The decision rule was that when the P-value is less than the significant level the null hypothesis is rejected and the alternative hypothesis is accepted and vice-versa.

Results

Research question one

What is the influence of Claude AI on the academic performance of business education students in public universities in Cross River State, Nigeria? This research question was answered using simple linear regression analysis. The result of the analysis is presented on Table 1.

TABLE 1

Simple linear regression analysis of Claude AI and the academic performance of business education students in public universities in Cross River State, Nigeria, N=109

R	R. Square	Adjusted R.Square	Std error of estimate
.542	.294	.282	.715

Source: Fieldwork, 2026

The result of research question one as presented on Table 1 reveals that the R which is the correlation coefficient of the independent and dependent variables was .542 which was a value far greater than .40 indicating a strong positive relationship between Claude AI and academic performance of business education students in public universities in Cross River State. More so, the coefficient of determination (R^2) which indicated how much of the total variation in the dependent variable that can be explained by the independent variable was .294. This showed that 29.4% of variation in academic performance of business education students was accounted for by Claude AI. This result indicated a linear fit between the independent and dependent variables.

Research question two

What is the influence of Turnitin on the academic performance of business education students in public universities in Cross River State, Nigeria? This research question was answered using simple linear regression analysis. The result of the analysis is presented on Table 6.

TABLE 2

Simple linear regression analysis of Turnitin and the academic performance of business education students in public universities in Cross River State, Nigeria, N=109

R	R. Square	Adjusted R.Square	Std error of estimate
.830	.688	.687	.356

Source: Fieldwork, 2026

The result of research question two as presented on Table 2 reveals that the R which is the correlation coefficient of the independent and dependent variables was .830 which was a value far greater than .40 indicating a strong positive relationship between turnitin and academic performance among business education students in public universities in Cross River State. More so, the coefficient of determination (R^2) which indicated how much of the total variation in the dependent variable that can be explained by the independent variable was .688. This showed that 68.8% of variation in academic performance was accounted for by Turnitin. This result indicated a linear fit between the independent and dependent variables.

Hypothesis one

There is no significant influence of Claude AI on the academic performance of business education students in public universities in Cross River State, Nigeria. This null hypothesis was tested using simple linear regression analysis. The result of the analysis is presented on Table 3.

TABLE 3

Simple linear regression of Claude AI and academic performance of business education students in public universities in Cross River State, Nigeria, N=109

Model	Sum of square	Df	Mean square	F-value	P-value
Regression	12.792	1	12.792	24.993	.000
Residual	30.708	107	.512		
Total	43.500	108			

Source: Fieldwork, 2026

Table 3 indicates an Analysis of Variance result of F-value = 24.993 with a P-value of .000 at 1 and 107 degrees of freedom. The F-value which was greater than 1 yielded efficient model. Also, since the P-value of .000 was less than the tolerable significance value of .05, it therefore indicated that the regression model significantly predicted the outcome variable. Thus, the null hypothesis was rejected and the alternate

hypothesis was upheld. This result implies that there is a significant influence of Claude AI on academic performance of business education students in public universities in Cross River State, Nigeria.

Hypothesis two

There is no significant influence of Turnitin on academic performance of business education students in public universities in Cross River State, Nigeria. This null hypothesis was tested using simple linear regression analysis. The result of the analysis is presented on Table 4.

TABLE 4

Simple linear regression of Turnitin and academic performance of business education students in public universities in Cross River State, Nigeria, N=109

Model	Sum of square	Df	Mean Square	F-value	P-value
Regression	96.287 1	96.287	758.927		.000
Residual	43.644	107	.127		
Total	139.931	108			

Source: Fieldwork, (2026)

Table 4 shows an Analysis of Variance result of F-value = 758.927 with a P-value of .000 at 1 and 107 degrees of freedom. The F-value which was greater than 1 yielded efficient model. Also, since the P-value of .000 was less than the tolerable significance value of .05, it therefore indicated that the regression model significantly predicted the outcome variable. Thus, the null hypothesis was rejected and the alternative hypothesis was accepted. This result implies that there is a significant influence of Turnitin on academic performance of business education students in public universities in Cross River State, Nigeria.

Discussions

The finding in this aspect of the study revealed that there is a significant influence of Claude AI on the academic performance of business education students in public universities in Cross River State. Claude AI is a generative artificial intelligence assistant designed to help users with writing, research, coding, reasoning, data analysis, and business tasks. It has the ability to process long documents, generate high-quality text, and assist with complex problem-solving makes it a valuable productivity tool. The finding is in line with that of Ar *et al*. (2024) that Claude AI provides a more systematic narrative structure, generating story ideas, corrects grammar and spelling, provided feedback that clarifies paragraph structure in narrative texts. The study agrees with that of Saleh and Haiping (2024) that Claude demonstrated the highest average alignment with human instructor scores across the four articles. The finding also agrees with that of Max and Alan (2025) that Claude AI explores areas where the generative artificial intelligence excels, such as quickly summarizing points of agreement across sources, as well as its limitations, such as struggling with synthesis, providing incomplete citations, and hallucinating false information. The finding equally Cantika and Ibnu (2024) that Claude AI assists and improves college students' academic writing skills.

The finding in this aspect of the study revealed that there is a significant influence of turnitin on the academic performance of business education students in public universities in Cross River State. Turnitin helps students and researchers avoid plagiarism by identifying similarities between submitted work and existing. The study disagrees with that of Moshi and Ahadi (2025) that although the adoption of Turnitin software has reduced the trend in plagiarism in theses and dissertation writing, its effectiveness is limited because it fails to detect plagiarism levels within individual chapters of theses or dissertations. It is recommended that the plagiarism policy be reviewed to take into account new strategies that focus on individual chapters as well as the tolerance level of 30%, which seems high. Policies that address plagiarism content in postgraduate curricula should also be considered. The finding agrees with that of Kebashnee and Rindella (2022) that students in South Africa experience benefits of Turnitin such as accessibility and convenience as electronic tools, convenience view for grades, and clear originality reports. The finding equally agrees with that of Seher and Selcan (2019) that studens believed in the effectiveness of Turnitin in detecting plagiarism in presentations. Students perceived themselves as academically honest when preparing their presentations. Also, they were aware of the importance of using Turnitin in a required presentation skills course to detect plagiarism. The finding also agrees with that of Annisa (2023) that many English Education alumni view Turnitin positively as a helpful tool for detecting potential plagiarism in their academic writing.

Conclusion

The study ascertained the influence of artificial intelligence assessment tools on academic performance of Business Education students in public universities in Cross River State, Nigeria. The result of the findings strongly suggested that there is a statistically significant influence of Claude AI and Turnitin influence academic performance of business education students in public universities in Cross River State, Nigeria.

Recommendations

Based on the result of the study, the following recommendations were made:

1. University management should encourage the use of Claude AI by students to enhance their academic performance.
2. Students should be encouraged on the use of Turnitin by university management to promote the integrity of their work.

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ENTREPRENEURSHIP EDUCATION INFLUENCE ON THE DEVELOPMENT OF ENTREPRENEURIAL SKILLS AMONG UNDERGRADUATE BUSINESS EDUCATION STUDENTS IN KWARA STATE.

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Abstract

The escalating challenge of graduate unemployment and underemployment in Nigeria has necessitated a strategic re-evaluation of tertiary curricula, with entrepreneurship education emerging as a pivotal intervention. This study examined the impact of entrepreneurship education on the development of entrepreneurial skills, specifically technical and financial competencies, among Business Education students in tertiary institutions in Kwara State, Nigeria. Employing a descriptive survey research design, the study's population comprised 288 final-year Business Education students across three public tertiary institutions, from which a sample of 83 respondents was drawn using proportionate stratified random sampling. Data were collected using a structured, validated questionnaire with a reliability coefficient of 0.88, determined via the Spearman-Brown prophecy formula. Analysis, conducted using mean, standard deviation, and independent samples t-tests, revealed that entrepreneurship education positively influences the acquisition of technical skills (mean = 3.07, SD = 1.01) and financial skills (mean = 3.08, SD = 1.00) to a high extent. The findings underscore the vital role of entrepreneurship education in equipping students with the competencies necessary for job creation rather than job seeking. The study recommends, among others, that school administrators should support continuous professional development for lecturers and that curricula should be strengthened to ensure students understand that fraud and criminality are antithetical to genuine entrepreneurship.

Keywords: Entrepreneurship Education, Business Education, Technical Skills, Financial Skills, Graduate Employability, Nigeria.

Introduction

Entrepreneurship is fundamentally a process of harnessing creativity to establish new ventures and taking calculated risks to capitalize on emerging opportunities. It necessitates the efficient mobilization of resources to generate value, reflecting an individual's capacity for risk-taking and the ability to combine factors of production to create valuable goods and services. This process emphasizes the willingness to

identify investment opportunities and strategically position oneself to build and manage a business based on viable prospects. At its core, entrepreneurship involves recognizing, developing, and realizing a vision be it an innovative idea or an improved method of accomplishing tasks. It encompasses the creation of businesses, the organization of operations, and the assumption of risks to leverage entrepreneurial competencies for wealth creation.

Entrepreneurship education has emerged as a critical determinant in shaping the capabilities of future entrepreneurs, yet it remains one of the most challenging aspects of higher education globally (Guma & Dahlan, 2019). The absence of robust entrepreneurial programs within higher education institutions (HEIs) has profound implications for global unemployment rates (Musara, 2020). Insufficient access to such programs restricts students' opportunities to develop essential entrepreneurial competencies and hampers effective technology transfer. In light of shifting labour market demands, Nájera-Sánchez, Pérez-Pérez, and González-Torres (2023) assert an urgent need for a transformative approach to entrepreneurship education that prioritizes experiential learning and skill acquisition.

Over the past few decades, the landscape of entrepreneurship education has evolved significantly, particularly in developed nations that have aligned their curricula with the imperatives of the fifth industrial revolution (5IR) (Irawanto & Novianti, 2021). Conversely, many developing countries, including Nigeria, lag behind, struggling to adapt their educational frameworks to meet the challenges of the fourth industrial revolution (4IR) (Olaitan & Mavuso, 2022). This disconnect is evident in various African higher education systems, which fail to produce a sufficient number of entrepreneurs (Ramchander, 2021). Alarmingly, graduate unemployment rates across the continent have reached critical levels, with a substantial percentage of unemployed youth holding tertiary qualifications (Ngubane, Mndebele, & Kaseeram, 2023).

The significance of entrepreneurship extends beyond individual success; it serves as a vital catalyst for economic development, job creation, and poverty alleviation globally (Adejumo, 2016). Within the educational context, entrepreneurship education aims to equip students with the knowledge, skills, and mindset necessary to identify and exploit business opportunities, thereby fostering innovation and self-reliance (Fayolle & Gailly, 2018). Business Education, as an interdisciplinary field, is particularly suited to integrate entrepreneurial concepts into its curriculum, focusing on practical skills, business principles, and vocational training (Okoye et al., 2020). This growing emphasis on entrepreneurship education underscores its crucial role in addressing youth unemployment and underemployment, especially in developing economies such as Nigeria (Ibrahim & Masud, 2019).

In Nigeria, the urgency of entrepreneurship education has intensified due to persistent challenges with graduate unemployment and underemployment (Nwankwo et al., 2022). Integrating entrepreneurship education into tertiary curricula, including Business Education programmes, has emerged as a strategic response to reduce reliance on traditional white-collar jobs and promote self-reliance (Onyebuchi & Nwokeabia, 2018). The National Policy on Education emphasizes the necessity for educational systems to prepare students for self-employment through vocational and entrepreneurial training (Federal Republic of Nigeria, 2020). Despite these initiatives, concerns persist regarding the effectiveness of entrepreneurship education in translating theoretical knowledge into practical entrepreneurial skills. Research indicates that while students acquire foundational knowledge, real-world application is often hindered by insufficient resources, a lack of practical exposure, and ineffective teaching methodologies (Ogundele et al., 2019; Adebayo et al., 2023).

Entrepreneurial skills development encompasses the competencies and attitudes necessary for successfully managing a business venture. Strengthening entrepreneurship programmes in higher education aims to equip students, regardless of their discipline, with the skills needed to create value by recognizing and seizing opportunities. These skills include the acquisition of knowledge and competencies that foster self-sufficiency, enabling students to make effective use of resources and establish firm career commitments, whether as entrepreneurs or as productive, intrapreneurial employees (Ezenwenne, 2018). Furthermore, entrepreneurial skills represent the practical knowledge and experiences essential for converting ideas into actionable business outcomes (Nwabufo, 2019).

According to Gidado (2019), developing entrepreneurial skills in students involves cultivating personal characteristics, qualities, and management competencies necessary for successful ventures. Attributes such as self-confidence, resilience, empathy, and the ability to recognize opportunities are vital (Salgado-Banda, 2015). Mastering these skills enhances students' entrepreneurial intentions and self-efficacy, empowering them to engage in income-generating activities. Key entrepreneurial cognitive skills include technical, financial, marketing, and human resource management competencies.

Technical skills involve specialized knowledge required for executing complex tasks effectively. Entrepreneurs with strong technical abilities can leverage technology to manage projects, track sales, and evaluate business performance. Competencies such as communication, problem-solving, and technological proficiency are essential for effective functioning within an organization (Fasehun, 2014). Similarly, financial skills are critical to business success, enabling entrepreneurs to manage finances, maintain accurate records, and assess their financial health. Mastery of financial management allows entrepreneurs to make informed decisions regarding capital requirements, budgeting, and pricing strategies all essential for sustainable business operations.

Business Education prepares students for diverse roles in the workforce, enhancing their employability and fostering societal development (Nwokike, 2016). By instilling entrepreneurial skills, it encourages self-reliance and success in business ventures while equipping learners to assess opportunities and risks effectively. In Nigeria, public colleges of education focus on training teachers, while polytechnics emphasize technical and managerial skills, with both contributing to economic advancement. However, many institutions lack functional entrepreneurship centres, which hampers effective entrepreneurial training. This study aims to assess the impact of entrepreneurship education on the technical and financial skills development of Business Education students in public tertiary institutions in Kwara State.

Statement of the Problem

One of the critical challenges facing emerging nations, particularly Nigeria, is the difficulty in providing productive employment opportunities for graduates. To address this issue, Business Education students are mandated to undertake entrepreneurship education prior to graduation. Despite this requirement, many graduates remain jobless, wandering the streets in search of limited opportunities. In Kwara State, a significant number of Business Education graduates leave higher education without viable career prospects or the motivation to apply their entrepreneurial skills, even though the programme is designed to prepare them for establishing small businesses. This persistent unemployment crisis has been linked to increasing rates of criminal activity and social vices among youth, including corruption, kidnapping, terrorism, trafficking, prostitution, cultism, cybercrime, and internet fraud. These alarming trends prompt critical inquiries: Are Business Education students in Kwara State receiving adequate exposure to entrepreneurship education? Do they lack the necessary entrepreneurial skills, or are they simply reluctant to apply them in practice?

Given these pressing concerns, it is crucial to investigate whether entrepreneurship education in higher institutions within Kwara State effectively enhances the entrepreneurial skills of Business Education students. Failure to address this issue could result in institutions continuing to produce graduates who are ill-prepared to contribute to economic growth and national development. This study aims to offer valuable insights for tertiary institutions, highlighting the need for potential changes in teaching methods or pedagogical approaches to entrepreneurship education. The goal is to ensure that students acquire the skills and confidence necessary for self-employment and economic independence. Thus, this investigation is vital for assessing the perceived impact of entrepreneurship education on the entrepreneurial capabilities of Business Education students.

Purpose of the Study

The primary objective of this study is to investigate the impact of entrepreneurship education on the entrepreneurial skills development of Business Education students in public tertiary institutions in Kwara State, Nigeria. The specific objectives are to:

1. Assess the extent to which entrepreneurship education influences the acquisition of technical skills among Business Education students in public tertiary institutions in Kwara State.
2. Determine the extent to which entrepreneurship education influences the acquisition of financial skills by Business Education students in public tertiary institutions in Kwara State.

Research Questions

To guide this study, the following research questions were formulated:

1. To what extent does entrepreneurship education influence the acquisition of technical skills among Business Education students in tertiary institutions?
2. To what extent does entrepreneurship education influence the acquisition of financial skills by Business Education students in tertiary institutions?

Research Hypotheses

The following null hypotheses were formulated and tested at a 0.05 level of significance:

1. $H_0$1: There is no significant difference between the mean responses of male and female Business Education students regarding the extent to which entrepreneurship education influences the acquisition of technical skills in tertiary institutions in Kwara State.
2. $H_0$2: There is no significant difference in the mean responses of male and female Business Education students concerning the influence of entrepreneurship education on the acquisition of financial skills in tertiary institutions in Kwara State.

Methodology

A descriptive survey research design was adopted for this study. The target population comprised 288 final-year Business Education and Office Technology and Management students in three State owned tertiary institutions in Kwara State, namely: Kwara State University, Malete; Kwara State Polytechnic, Ilorin; and Kwara State College of Education, Ilorin.

Population of the Study

S\N	Institutions	Number of Students	
1	Kwara State University, Malete,	87	
2	Kwara State Polytechnic, Ilorin		115
3	College of Education, Ilorin	96	
	Total	**288**	

Source: Heads of department of Business Education in the various tertiary institutions and (2026)

A sample of 83 respondents was selected using proportionate stratified random sampling to ensure representativeness across the institutional types and gender distribution.

Table 2: Sample Size of the Study

S\N	Institutions	Number of Students
1	Kwara State University, Malete,	26
2	Kwara State Polytechnic, Ilorin	33
3	College of Education, Ilorin	27
	Total	**83**

The instrument for data collection was a four-point structured questionnaire designed by the researchers, titled "Perceived Impact of Entrepreneurship Education on Entrepreneurial Skills Development Questionnaire" (PIEEESDQ). The questionnaire was divided into two sections: Section A captured respondents' demographic data, while Section B elicited responses aligned with the research questions. The instrument was validated by two experts who reviewed it for face and content validity. The Spearman-Brown prophecy formula was used to determine the reliability of the instrument, yielding a coefficient index of 0.88, which was deemed acceptable. Research assistants facilitated the administration of the questionnaire.

Data collected were analysed using mean and standard deviation, with a decision rule whereby a mean score of 2.50 and above was considered a high extent, while scores below 2.50 were considered a low extent. The two null hypotheses were tested using the independent samples t-test at a 0.05 level of significance.

Results

Research Question 1: To what extent does entrepreneurship education influence the acquisition of technical skills among Business Education students in tertiary institutions?

Table 3: Respondents' Ratings on the Impact of Entrepreneurship Education on the Acquisition of Technical Skills

	Item Statements	SD	Remark
	Entrepreneurship education has helped me to demonstrate proficiency with Microsoft Word.		V. High Extent
	Entrepreneurship education assist students to operate qualitative with minimal or no supervision.		High Extent
	Entrepreneurship education has assisted students to have communication skills proficiency.		High Extent
	Entrepreneurship education has helped me to solve problems by manipulating a computer system.		High Extent
	Knowledge of entrepreneurship education has assisted me to operate different business machines in order to meet the societal needs.		High Extent
	Entrepreneurship education has helped students to keep up with the latest information technological trends.		High Extent
	With knowledge of entrepreneurship education has helped students to write mailable letter.		High Extent
	Knowledge of entrepreneurship education has helped students to accurately process information on the job.		High Extent
Weighted average			**High Extent**

Source: Field Survey, 2026

The data in Table above reveal the mean and standard deviation of responses on the perceived influence of entrepreneurship education on acquisition of technical skills of business education students in public colleges of education. The Table shows that the respondents claimed that entrepreneurship education had helped them demonstrate proficiency with Microsoft Word to a very high extent mean scores of 3.38, assisted them in operating qualitatively with little or no supervision, and had helped students of business education to have communication skills proficiency to a high Extend. This statement is supported by mean scores of 3.14, and 3.12, respectively. The respondents also stated that knowledge of entrepreneurship education had assisted them in problem-solving by using a computer system, the respondents also stated that entrepreneurship education has assisted them in operating various business machines to meet the societal needs, and that entrepreneurship education has greatly aided students of business education in keeping up with the most recent information technological trends to high extend. The mean score for these constructions was 2.68, 3.12, and 3.04, respectively. The respondents further stated that knowledge of

entrepreneurship education had helped students compose mailable letters and had greatly aided them in effectively processing information on the job as business education students. These assertions were backed up by mean scores of 3.06 and 3.03, respectively. The 8-item constructs had a standard deviation that ranges from 0.82 to 1.13. This indicates that the responses were not widely distributed since they are near to the mean. The table displays a total calculated weighted mean and standard deviation of 3.07 and 1.01, respectively, indicating that all eight components in the construct have a significant influence on technical skills. This suggests that business education students' technical skills are favourably influenced by entrepreneurship education to a high extent. (mean = 3.07, SD =1.01).

Research Question 2: To what extent does entrepreneurship education influence the acquisition of financial skills among Business Education students in tertiary institutions?

Table 4: Respondents' Ratings on the Influence of Entrepreneurship Education on the Development of Financial Skills

	Item Statements	Remark
	Knowledge of entrepreneurship education has helped students to keep track of debtors/creditors.	High Extent
	Knowledge of entrepreneurship education assisted students on how to prepare ledgers and extract trial balance.	High Extent
	Knowledge of entrepreneurship education has helped students to construct a business's daily cash account.	High Extent
	The knowledge of entrepreneurship education has helped students to create a final company account.	High Extent
	Knowledge of entrepreneurship education has assisted me to put financial plans in place to achieve goals.	High Extent
	Entrepreneurship education has helped me to make appropriate decision from varieties of business financing options.	High Extent
	Entrepreneurship education can equip students on how to prepare cash versus accrual accounting.	High Extent
	Entrepreneurship education has helped students to prepare basic financial statement.	High Extent

Entrepreneurship education has assisted students on how Budget preparation is being done.	High Extent
Entrepreneurship education has helped students prepare financial analysis of capital investment and strategic initiatives.	High Extent
Entrepreneurship education has aided students on how a company can be funded.	High Extent
Weighted average	**High Extent**

Source: Field Survey, 2026

The data in Table 4 illustrates the mean and standard deviation of responses on the perceived influence of entrepreneurship education on the acquisition of financial abilities by students of business education in public colleges of education. The table shows that the respondents stated that knowledge of entrepreneurship education has helped students to keep track of debtors/creditors, assisted students on how to prepare ledgers and extract trial balance, and has helped students to construct a business' daily cash account to a high extend. by students of business education in public colleges of education. They were backed up by mean scores of 2.96, 3.19, and 3.24, respectively. Additionally, the respondents stated that having a thorough understanding of entrepreneurship education has aided students in developing a final company account, helped me set up financial plans to achieve goals, and greatly aided me in selecting the best course of action from a wide range of business financing options to high extent (mean = 2.87, 3.04 and 3.22 respectively). According to the responses, entrepreneurship education can help students learn how to prepare cash versus accrual accounting, basic financial statements, and budgets. It has also supported students in learning how business education students prepare budgets to high extent. They were backed up by the respective mean scores of 2.96, 3.22, and 3.18. In a similar vein, the respondents stated that entrepreneurship education has assisted students in creating financial analyses of capital investments and strategic initiatives, as well as showing them how a company can be heavily funded to high extend by students of business education at tertiary institutions. These were supported by mean scores = 3.05 and 2.96 respectively.

The range of standard deviation for the 11-item constructs is 0.88 to 1.20. This indicates that the respondents' responses are not widely distributed as they are near to the mean. The data in Table 4 indicate that all eleven items in the construct were rated as having a high influence on the acquisition of financial skills, with an overall weighted mean of 3.08 and a standard deviation of 1.00. This suggests that entrepreneurship education positively influences the financial skills of Business Education students to a high extent.

Hypothesis Testing

Ho1: There is no significant difference between the mean responses of male and female Business Education students regarding the extent to which entrepreneurship education influences the acquisition of technical skills.

Table 5: Independent Samples t-test for Difference in Mean Responses of Male and Female Students on Technical Skills

Group	N	Mean	SD	t-cal	Df	p-va	Decision

						lue	
Male	36	2.17	0.28				
				26.70	78	0.00	Rejected
Female	44	3.83	0.69				

Source: Field survey, 2026 P<0.05

Data in Table 5 reveals that there were 36 male respondents and 44 female respondents in tertiary institutions, Kwara State. The male and female respondents' responses show that entrepreneurship education positively influences technical skills of business education students to high extent ($\bar{X}$ = 3.83; SD = 0.28) and ($\bar{X}$ = 2.17; SD = 0.69). Their responses were close to the mean as the standard deviations were very low. The table reveals that there is a significant difference between the mean responses of male and female students regarding the influence of entrepreneurship education on technical skills of business education students (t_{78} = 26.70, P<0.05). Therefore, the null hypothesis that states that there is no significant difference between the mean responses of male and female business education students on the extent to which entrepreneurship education influence acquisition of technical skills in tertiary institutions was rejected. This implies that male and female students differ significantly in their responses regarding the influence of entrepreneurship education on technical skills. Their responses show that male students rated the influence of entrepreneurship education on technical skills higher than the female students did, in business education (mean difference = 1.66).

Hypothesis Two: There is no significant difference in the mean responses of male and female Business Education students concerning the influence of entrepreneurship education on the acquisition of financial skills.

Table 6: Independent Samples t-test for Difference in Mean Responses of Male and Female Students on Financial Skills

Group	**N**	**Mean**	**SD**	**t-cal**	**Df**	**p-value**	**Decision**
Male	36	3.91	0.16				
				25.27	78	0.00	Rejected
Female	44	2.29	0.72				

Source: Field survey, 2025 P<0.05

Data in Table 6 reveals that there were 36 male respondents and 44 respondents from female respondents. The male and female respondents' responses show that entrepreneurship education positively influences financial skills of business education students to high extent ($\bar{X}$ = 3.91; SD = 0.16) and ($\bar{X}$ = 2.29; SD = 0.72). Their responses were close to the mean as the standard deviations were very low. The table reveals that there was significant difference between the mean responses of business education male and female

students on the extent to which entrepreneurship education influence acquisition of financial skills (t_{78} = 25.27, P<0.05). Therefore, the null hypothesis that states that there is no significant difference between the mean responses of business education male and female students on the extent to which entrepreneurship education influences acquisition of financial skills was rejected. This implies that male and female students differ significantly in their responses regarding the influence of entrepreneurship education on financial skills. Their responses show that the male respondents rated the influence of entrepreneurship education on financial skills higher than the female respondents (mean difference = 1.62).

Discussion of Findings

The findings of this study reveal that entrepreneurship education positively influences the technical skills of Business Education students to a high extent. This finding is consistent with the assertion that entrepreneurship education provides learners with the necessary technical competencies, equipping them with the knowledge and mindset to engage in productive activities, innovate, and become successful entrepreneurs. According to Ezeji and Okorie (1988), technical skills encompass "knowledge and competency in a specific activity, particularly one that involves methods, processes, procedures, and techniques." The development of technical skills through entrepreneurship education is therefore crucial for preparing students to navigate the complexities of modern business environments.

Furthermore, the study established that entrepreneurship education positively influences the financial skills of Business Education students. This finding aligns with Adoh (2020), who emphasizes that financial skills are essential for maintaining accurate accounting records and ensuring business sustainability. The results also indicate that entrepreneurship education assists students in creating financial analyses of capital investments and strategic initiatives, as well as understanding how businesses can be funded. This corroborates Akinnodi (2020), who notes that entrepreneurs with strong financial skills can effectively manage resources and maintain accurate records, thereby reducing the risk of fraud. Financial management skills are vital for planning, directing, monitoring, and controlling business resources (Okoli & Ezenwafor, 2015). The significant gender differences observed in both hypotheses may be attributed to varying levels of prior exposure to technology and financial literacy between male and female students, a finding that warrants further investigation.

Conclusion

The findings of this study clearly indicate that entrepreneurship education is vital for equipping Business Education students with the technical skills and financial knowledge necessary for creating jobs rather than merely seeking employment. The study highlights that students in tertiary institutions have acquired significant competencies in entrepreneurship, particularly in areas deemed essential for entrepreneurial success. It concludes that entrepreneurship education has a positive impact on the perceived entrepreneurial skills of Business Education students in public tertiary institutions in Kwara State. This underscores the role of entrepreneurship education in mitigating the high unemployment rate among graduates and transforming it into a valuable tool for generating employment opportunities.

Recommendations

Based on the findings of this study, the following recommendations are proffered:

1. **Continuous Professional Development for Lecturers:** School administrators should continue to support lecturers by encouraging attendance at conferences, seminars, and workshops to better prepare them for effective lecture delivery. Since entrepreneurship education has been shown to positively influence entrepreneurial skills, it is imperative that educators remain updated on contemporary pedagogical approaches and industry trends.
2. **Curriculum Enhancement for Skill Development:** Management of tertiary institutions should advocate for the development of students' technical, financial, marketing, and human resource competencies through a robust entrepreneurship education curriculum. This will ensure that students are adequately prepared for entrepreneurial endeavours upon graduation.
3. **Facilitation of Access to Funding:** The government should encourage collaboration between graduates and microfinance banks and other funding sources to provide financial support for entrepreneurial aspirations. Furthermore, there should be proper supervision of financial aid beneficiaries to ensure the efficient utilization of funds.
4. **Establishment of Functional Entrepreneurship Centres:** Authorities of tertiary institutions should establish and equip facilities to enhance the teaching of entrepreneurship education. This will guarantee that students receive the necessary practical instruction and reinforcement while in school, thereby positively shaping their entrepreneurial intentions and self-efficacy.

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GENERATIVE ARTIFICIAL INTELLIGENCE COMPETENCE, DIGITAL COMPETENCE AND EMPLOYABILITY SKILLS DEVELOPMENT AMONG BUSINESS EDUCATION STUDENTS IN NIGERIAN UNIVERSITIES

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Abstract

The rapid emergence of generative artificial intelligence (GenAI) is changing the knowledge, skills and capabilities expected of university graduates. Since Business Education is closely linked with office technology, business communication, entrepreneurship, management and preparation for the workplace, the consequences in this area are especially important. This paper argues that Nigerian universities should deliberately incorporate GenAI competence into Business Education programmes, but not treat it as a substitute for broader digital competence or human employability skills. Rather, GenAI competence should be developed as an important contemporary component of digital competence and integrated with communication, critical thinking, collaboration, adaptability, and professionalism. The paper draws conceptually on the Digital Competence Framework for Citizens (DigComp 2.2), UNESCO's Guidance for Generative AI in Education and Research, UNESCO's AI Competency Framework for Students, and recent scholarship on GenAI literacy. The central position of the paper is that effective preparation for the contemporary workplace requires students to move beyond mere access to or frequent use of AI tools towards the ability to select appropriate tools, formulate effective prompts, evaluate outputs, protect data, recognise limitations and bias, apply professional judgement, and use AI ethically and responsibly. The paper further argues that Business Education curricula should integrate GenAI across relevant courses rather than confining it to a single stand-alone course. Curriculum review, lecturer capacity development, authentic assessment, institutional policy and equitable access are therefore necessary if Nigerian universities are to prepare Business Education graduates for an increasingly AI-enabled workplace.

Keywords: Generative artificial intelligence; GenAI competence; digital competence; employability skills; Business Education; Nigerian universities; higher education.

Introduction

Generative artificial intelligence has quickly gone from being a specialist technological achievement to now being an obvious feature of daily learning, communication and work. These generative AI systems are able to create text, images, code and other types of content based on user instructions. Because they are becoming more widely available, new possibilities have opened up for teaching, learning, research and professional activities, but they have also raised issues concerning accuracy, authorship, privacy, bias, academic integrity and human control. The guidance offered by UNESCO on the use of generative AI in education stresses the importance of adopting human-centred approaches which focus on ethical, safe, equitable and meaningful use rather than just promoting the adoption of the technology (Miao & Holmes, 2023).

This situation has significant consequences for universities, since it is expected that they will equip their graduates to meet the changing conditions in both academic and working environments. Business Education specifically needs to address these changes as its graduates are supposed to be able to perform effectively in ever more digital business and organizational contexts. It follows that the ability to use GenAI appropriately might thus become an important element of students' preparation for modern work. Yet GenAI competence should supplement, not substitute, the wider digital competence and the human skills necessary for effective employability.

The Changing Nature of Business Education in the Age of GenAI

Business Education has always been about preparing learners to take an active and productive part in business and organisational settings. The various fields it covers are accounting, office administration, business communication, management, entrepreneurship, marketing, information technology and other occupational skills. Digital transformation is having an increasing impact on these fields.

The importance of generative AI for business education goes well beyond instructing students in how to use a specific AI application. The more fundamental question is whether students can make use of emerging AI technologies in their professional capacity with a full understanding of the issues involved. A student who manages to get an AI-produced report but is unable to check its accuracy, spot claims that are not supported by evidence, guard confidential information or communicate the results properly cannot be regarded as fully competent for modern professional practice.

It can be concluded that Business Education has to take action at two levels. On the one hand, students should acquire a practical knowledge of GenAI tools and what they are capable of; on the other hand, they should also develop higher-order skills which allow them to decide when, why and how such tools should be used. Just as recent research into GenAI literacy does, it stresses competencies involving understanding GenAI, using and applying it, evaluating and incorporating the outputs, and engaging with ethical issues (Park, 2025).

GenAI Competence as an Emerging Business Education Competency

The competence associated with GenAI can be defined as the combined knowledge, skills, attitudes and judgement needed in order to interact effectively, critically, creatively and responsibly with generative AI systems and it must not be limited to simply being familiar with ChatGPT, Gemini or any other specific platform since such tools are subject to rapid change.

GenAI competence among Business Education students can be examined through five closely related areas. The first of these is basic technical competence, meaning that students need to know what GenAI systems are, what capabilities they have and where their limitations are. This is supplemented by prompt and application competence, which entails giving clear instructions and using AI suitably for both academic and work-related tasks. Just as important is critical evaluation competence, since it involves verifying the information produced by AI, detecting errors, identifying any bias and checking important claims. Further to evaluation, GenAI competence also includes innovative application, allowing students to make use of GenAI to aid problem-solving, creativity, productivity and other business tasks. Throughout all these areas, ethical and responsible use plays an underlying role, requiring that students protect privacy, respect intellectual property, keep to academic and professional integrity and continue to hold human responsibility for decisions (Miao, Shiohira, & Lao, 2024; Park, 2025; Zhang & Magerko, 2025).

This aligns with the UNESCO AI Competency Framework for Students, the framework grouping AI competencies under a human-centred approach, the ethics of AI, AI techniques and applications, and AI system design, with progression moving from understanding to applying and creating (Miao, Shiohira, & Lao, 2024). It is likewise supported by the most recent GenAI literacy frameworks, which stress informed choice of tools and prompting, a understanding of the way one interacts with GenAI, and a more extensive understanding of the technology (Zhang & Magerko, 2025).

Digital Competence: The Necessary Bridge

GenAI competence ought to be seen as part of a broader understanding of digital competence and not regarded as a separate technological skill. According to the DigComp 2.2 framework there are five main areas of digital competence: information and data literacy, communication and collaboration, digital content creation, safety, and problem solving (Vuorikari et al., 2022). This framework defines digital competence in terms of the knowledge, skills and attitudes required for confident, critical and responsible engagement with digital technologies and also includes examples involving artificial intelligence (Vuorikari et al., 2022).

It is precisely because of this that Business Education is so relevant, since the effective use of GenAI demands a range of skills that come before and go beyond the AI tool itself. A student might know how to ask a chatbot questions but still be missing the necessary knowledge and data literacy to assess if its answer is reliable. In a similar way, a student might produce a well-written business letter but still lack the communication skills needed to decide whether the tone, the audience and the content are suitable for a professional context.

Digital competence may thus be seen as the means by which proficiency in generative AI becomes useful in a professional context. It offers the skills in information literacy, communication, content creation, safety and problem solving that are needed to turn AI capabilities into responsible action. The relationship is therefore complementary not competitive: proficiency in generative AI enhances existing digital competence, while general digital competence in turn provides the essential foundation for meaningful use of generative AI.

Employability Skills in an AI-Enabled Workplace

Employability therefore goes beyond technical proficiency; graduates have to be able to communicate effectively, solve problems, work with others, adapt to change and show professionalism. These human skills become more important, not less so, since AI is able to automate or speed up routine information-processing tasks.

For Business Education students, communication is still essential since AI-generated content has to be interpreted, adjusted and communicated in an appropriate way to various audiences. Critical thinking is needed because GenAI is capable of producing information that sounds plausible but which is either inaccurate or incomplete. Collaboration is still necessary since business problems are usually resolved through interaction between people who have different roles and expertise. Adaptability is therefore important as AI tools, the procedures of organisations and the requirements of jobs will keep on changing. Moreover, professionalism is necessary since the responsible use of AI requires confidentiality, accountability, accuracy and sound judgement.

Ore (2023) expressed concerns as to whether the content of the Business Education curriculum is effective in developing the soft skills needed in the workplace among students at public universities in Lagos State. This supports the view that the integration of Generative AI should not result in the displacement of employability development, but rather should be used as a context in which employability skills can be practised and strengthened.

Why GenAI Competence Alone Is Not Enough

To say that frequent use of AI means that someone is competent is a mistake. It is possible for students to use GenAI regularly even if they have only a limited understanding of how the systems work, how errors arise, or how the outputs should be assessed. According to Park's (2025) research into GenAI literacy, students can show a moderate level of understanding yet still have trouble with prompt engineering and the critical evaluation of AI-generated outputs.

The difference between access, use and competence is therefore of central importance: access refers to students being able to obtain a GenAI tool; use means that they put it to use for a particular task; and competence involves them being able to make informed decisions about whether or not to use it, choosing an appropriate tool, formulating effective instructions, assessing the output, modifying it, acknowledging its use when necessary and staying accountable for the final product. Park's (2025) review highlights the importance of evaluation and ethical competence together with basic use, while UNESCO too places critical judgement, human agency and responsible use at the heart of AI competence (Miao et al., 2024).

Business Education is greatly affected by this distinction. A student should not be given a reward just for producing a document that has been assisted by AI; instead, the student should show that they understand the business problem, make appropriate judgments about the selection and use of the technology, have the ability to verify the results, and be able to communicate a result that can be defended in a professional manner.

The Proposed Relationship: GenAI Competence, Digital Competence and Employability

The main point of this paper is that the connections between the three constructs should be seen as interconnected not as separate entities. Because of GenAI competence students acquire the ability to interact with an important category of current digital systems. The knowledge, skills and attitudes associated with digital competence are necessary if those systems are to be used in a critical and safe manner. The employability skills denote the ability to apply these technological and human capabilities to achieve productive performance in both academic and work settings.

In effect, this points to a pathway that connects the two. When students use AI to search for information, analyse it, create content, communicate, solve problems and reflect on digital processes, their GenAI skills contribute to their digital competence. Conversely, digital competence can help with employability since it allows students to use technology in ways that enhance their ability to handle information, communicate, collaborate, create content, ensure safety and solve problems.

Just because someone has competence in generative AI doesn't mean that they will be employable; the value of such competence is in the way students are able to combine it with wider digital skills and key employability skills such as critical thinking, communication, problem-solving, adaptability, and professional judgement.

This view is in agreement with DigComp 2.2, since that framework explicitly includes examples related to AI within its wider digital competence structure. It is also in line with UNESCO's stance that AI education should aim to produce responsible users and co-creators who are able to exercise critical judgement and maintain human agency.

Implications for Business Education Curriculum and Instruction

The introduction of Generative AI into Business Education has an effect on the way the curriculum is organised, on the design of teaching and learning activities, on how students' learning is assessed, and on the preparation of lecturers. Because of these effects, a careful and considered approach is needed one that acknowledges the value of Generative AI while at the same time making sure that students do continue to acquire the knowledge, skills and professional attributes that are expected of Business Education graduates. The main implications are explained below.

A important consequence is the integration of the curriculum. Nigerian universities should not delay taking action on this issue until GenAI has been turned into a standalone subject. Instead, learning outcomes relating to GenAI can be included in such courses as Business Communication, Office Technology and Management, Marketing, Entrepreneurship, Accounting, Management, Research Methods, Information Technology and other appropriate ones.

The curriculum integration must be coupled with task-based learning, with students being given real business problems in which AI can be helpful but is not enough. For instance, a student might be asked to produce a market-analysis brief with the aid of AI, check the factual statements, spot the limitations in the AI's output and justify the final recommendations. This type of task promotes the use of technology as well as research, critical thinking, communication and professional judgement.

This method also calls for a redesign of the assessment process. Should assessment still only reward the final written output, students might use AI without it being detected, and teachers will find it difficult to judge what students really understand. Assessment should therefore increasingly involve oral defence, documentation of the process, reflective comments, practical demonstrations, case analysis and supervised exercises. The aim is not to ban AI altogether but rather to evaluate the skills which remain essential in situations when AI is available.

Just as important is the development of lecturers. According to UNESCO’s AI Competency Framework for Teachers, educators should acquire the knowledge, skills and values needed in order to use AI responsibly in an educational context. Business Education lecturers therefore need ongoing professional development in the use of GenAI tools, in prompt design, in verification, in ethics, and in the integration of AI into the curriculum.

Assessment and Development of Students' GenAI Competence

The level of competence of GenAI should not be based simply on the confidence that people report but on its performance instead. A student might say that they are competent even if they are unable to spot an incorrect AI response or cannot explain why a certain tool is not suitable for a given task.

A reasonable method of assessment should involve objective knowledge tests, practical AI tasks, exercises in prompt design, output-evaluation tasks, ethical scenarios and real business cases. For instance, students might be asked to compare an AI-produced business report with reliable information, spot the inaccuracies, amend the report and explain the changes which they have made.

Such assessment would show off the candidate's technical competence, ability to carry out critical evaluation, information literacy, and professional judgement.

Recent research into higher education also indicates that competence in the use of generative AI is achieved through ongoing practice, reflective thinking, prompt engineering, critical assessment, and the creation of personal workflows rather than simply by being exposed to AI tools. It follows that business education programmes should regard the development of competence as a progressive and continuous process.

A Position on GenAI Competence in Business Education

The view set out in this paper is that competence in generative AI should be made an explicit and assessable part of modern business education in universities in Nigeria. It should not, however, be developed as a separate technological skill, but instead should be incorporated into overall digital competence and be deliberately linked to employability skills. This view is based on three arguments.

AI skills are becoming an important professional capability. Since AI is being used more and more in both education and in employment, it is likely that graduates will have to carry out tasks that are supported by AI in their professional careers. The fact that recent evidence has shown a connection between AI skills and graduate employability also indicates that universities should take AI-related abilities into account when designing their curricula (Portocarrero Ramos et al., 2025).

Second, digital skills form the key base for meaningful GenAI use. Students need to know how to find information, communicate, create content, stay safe, and solve problems to use AI well. DigComp 2.2 gives a helpful idea for this view (Vuorikari et al., 2022).

Thirdly, employability skills are still essential. Although GenAI can help with writing, summarising, analysis and the production of content, professional work still demands communication, collaboration, sound judgement, a sense of ethical responsibility and the ability to adapt. A graduate who can make good use of AI but is unable to think critically, communicate clearly, collaborate effectively or show ethical judgement is not properly prepared for the world of work.

The best course for Business Education is therefore not to adopt GenAI without restriction nor to reject it altogether, but rather to integrate it purposefully. Students ought to be taught when it is appropriate to use AI and when it is not, how to question the results it produces, and how to combine its abilities with human qualities. The final aim should therefore not be to produce graduates who merely use AI, but rather graduates who are able to use AI intelligently, critically, creatively, ethically and professionally.

Conclusion

Generative artificial intelligence is changing the environment in which Business Education graduates will study, work and develop professionally. The appropriate response is not simply to add another digital tool to an already crowded curriculum. What is required is a reconsideration of the competencies that Business Education seeks to develop.

This paper argues that GenAI competence should be developed as an integral component of contemporary digital competence and should be deliberately connected to employability skills. Students need more than the ability to generate content with AI. They need the ability to understand the technology, use it strategically, evaluate its outputs, protect information, recognise limitations, act ethically and retain responsibility for professional decisions.

Digital competence provides the broader foundation for these activities, while communication, critical thinking, collaboration, adaptability and professionalism ensure that technology serves human and organisational purposes.

For Nigerian universities, the strategic task is therefore to move from informal student experimentation with GenAI towards intentional curriculum integration, lecturer capacity development, authentic assessment and responsible institutional practice. Business Education is particularly well positioned to lead this transition because its purpose is closely connected to workplace readiness.

The goal should be graduates who do not merely **use AI**, but who can use it **intelligently, critically, creatively and responsibly** as part of a broader professional competence.

Recommendations

i. Business Education curriculum developers should integrate GenAI competence across relevant courses by incorporating appropriate GenAI-related learning outcomes, activities and assessment tasks rather than treating GenAI solely as a separate technology course.

ii. Universities should develop clear institutional guidelines on acceptable, ethical and responsible use of GenAI in teaching, learning, assessment and research.

iii. Business Education lecturers should receive continuous professional development on GenAI, digital competence, AI-supported pedagogy and assessment redesign.

iv. Assessment should include authentic tasks that require students to demonstrate prompting, verification, critical evaluation, ethical judgement and application of AI to business problems.

v. Universities should promote equitable access to digital infrastructure and learning opportunities so that GenAI integration does not deepen digital inequality.

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UTILIZATION OF ARTIFICIAL INTELLIGENCE TOOLS FOR TEACHING AND LEARNING OF ACCOUNTING COURSES IN UNIVERSITIES IN RIVERS STATE

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Abstract

This study examined the Utilization of Artificial Intelligence Tools for Teaching and Learning of Accounting Courses in Universities in Rivers State. Two specific objectives, two research questions and 2 hypotheses guided the study. The population of the study comprised 41Business Education lecturers. The entire population was studied because, the population was small and manageable. A structured questionnaire titled; Utilization of Artificial Intelligence Tools for Teaching and Learning of Accounting Courses in Universities Questionnaire (UAITTLACUQ) was used for data collection. The instrument was designed on a 4-point rating scale of Very High Extent (VHE-4points), High Extent (HE-3points), Moderate Extent (ME-2points) and Low Extent (LE-1point) respectively. The instrument was validated by three experts, and its reliability was established using the Cronbach Alpha Statistics which yield reliability of 0.76. Out of 41 copies of the questionnaire administered, 40 were retrieved and used for analysis. Data collected were analyzed using mean and standard deviation to answer research question and t-test to test hypotheses at 0.05 level of significance. The study also found that micro-copilots improved accuracy in accounting calculations, supported step-by-step learning of accounting procedures, assisted in grading, and enhanced practical accounting skills. Furthermore, the findings showed that machine learning-based accounting tools supported data analysis, error detection, forecasting, and exposed students to modern accounting technologies to a high extent. The study concluded that artificial intelligence tools significantly enhanced the teaching and learning of Accounting courses by improving instructional clarity, promoting practical skill development, and preparing students for modern accounting practices. It was recommended that AI tools should be integrated into Accounting Education, lecturers and students should be trained on their usage, and institutions should provide the necessary digital facilities to support their effective use.

Keywords: AI-Tools, Accounting Courses, Teaching, Learning and Utilization.

Introduction

The advent of artificial intelligence (AI) has revolutionized numerous fields, including education, where it plays an increasingly critical role in enhancing teaching and learning processes. Accounting education, particularly in tertiary institutions, has seen significant transformations through the integration of AI tools, which have proven instrumental in improving instructional delivery. Artificial intelligence refers to the simulation of human intelligence by computer systems designed to perform tasks such as learning, reasoning, and problem-solving (Russell & Norvig, 2021). Artificial intelligence (AI) tools refer to a wide range of technologies and systems designed to perform tasks that typically require human intelligence, such as reasoning, learning, problem-solving, and decision-making. These tools are grounded in machine learning, natural language processing, robotics, and other advanced computational methodologies. According to Russell and Norvig (2021)**,** artificial intelligence is the study and design of intelligent agents capable of perceiving their environment and taking actions to maximize their chances of achieving specific goals. AI tools operationalize this concept by enabling machines and software systems to mimic human cognitive functions. In education, AI tools enable dynamic interactions between learners and technology, fostering an adaptive and personalized learning environment. These tools utilize algorithms and machine

learning to analyze data, predict learning patterns, and provide tailored educational content, making them indispensable in modern instructional delivery especially in accounting education (Holmes, 2019).

Accounting education programme in Nigerian tertiary institutions aims to equip students with the theoretical knowledge and practical skills required to excel in financial reporting, auditing, taxation, and managerial accounting (Obi, 2022). However, the traditional instructional methods often fail to address the diverse learning needs of students, leading to gaps in understanding and practical application. The integration of AI tools offers a transformative approach by bridging these gaps, facilitating active learning, and preparing students for the demands of the accounting profession in a technology-driven world (Okoro & Agbo, 2020). Numerous artificial intelligence tools have been developed to improve programme delivery in accounting education courses. These tools include ChatGPT, micro-copilots and machine-based learning.

ChatGPT is a natural language processing tool powered by AI to enhance instructional delivery by providing instant answers, clarifications, and explanations to complex accounting concepts. Business educators can use ChatGPT to create interactive discussions, simulate problem-solving scenarios, and provide supplementary learning resources. Its' ability to generate contextually relevant content in real-time makes it an invaluable tool for fostering understanding in accounting education (Brown, 2021).

The utilization of artificial intelligence tools, such as ChatGPT, has significantly transformed the instructional delivery of accounting education courses, enabling educators and students to access advanced resources and improve learning outcomes. ChatGPT, developed by OpenAI, is a language model designed to provide comprehensive, real-time responses and assistance on various topics, including accounting concepts, problem-solving, and professional applications. Its integration into educational systems is redefining how instruction is delivered in accounting courses. According to Brown and Phillips (2023)**,** ChatGPT serves as an intelligent tutor that provides immediate feedback and clarification on complex accounting concepts. The tool allows students to engage in interactive learning, enabling them to ask questions and receive detailed explanations on topics such as financial reporting, cost accounting, and taxation. This immediate access to information enhances deeper understanding of the subject matter and enhances independent learning among students.

The impact of ChatGPT on instructional delivery in accounting education extends beyond content accessibility. Adebayo and Ogunleye (2022**)** note that ChatGPT's ability to simulate real-world accounting scenarios provides a practical learning experience for students. By generating case studies, sample financial statements, and problem-solving exercises, ChatGPT enables educators to deliver dynamic and application-oriented lessons. This approach not only enhances the learning process but also prepares students for the practical demands of the accounting profession. Furthermore, the utilization of ChatGPT in instructional delivery promotes inclusivity and personalized learning. Nguyen and Pham (2021**)** argue that AI-driven tools like ChatGPT can adapt to the unique learning needs of students, providing tailored explanations and resources based on their proficiency levels. In accounting education, this ensures that both high-performing and struggling students receive the support they need to excel, thereby reducing disparities in academic achievement.

Micro-copilot tools are advanced artificial intelligence (AI)-powered platforms designed to assist and guide users through complex tasks. These tools are increasingly being integrated into accounting education to enhance both teaching delivery and student learning outcomes. The tools leverage machine learning algorithms to provide personalized support, simulate real-world accounting tasks, and offer immediate feedback, all of which are transforming traditional accounting education methods. Micro-copilot tools, often embedded in accounting software or used as standalone platforms, have become significant assets in bridging the gap between theoretical knowledge and practical application in accounting education. According to Williams (2021), the use of micro-copilot tools allows students to perform real-time accounting operations while receiving guided support, which helps to reinforce their understanding of fundamental accounting principles. These tools act as virtual tutors, offering students step-by-step instructions and explanations while they navigate through exercises such as bookkeeping, tax calculations, financial statement preparation, and cost analysis. This personalized learning approach not only boosts student engagement but also fosters greater retention of accounting concepts. The integration of machine-based

learning tools is becoming a cornerstone in modernizing accounting education. These tools are particularly recognized for their role in transforming the traditional classroom into a dynamic, technology-driven learning environment.

Machine learning-based accounting tools as an accounting software, allows students to gain hands-on experience in managing financial transactions, preparing financial statements, and understanding real-world business operations, bridging the gap between theoretical knowledge and practical application. This approach is vital in preparing students for the rapidly evolving technological landscape in the accounting profession. Machine-based learning tools provide a practical and interactive learning experience that closely mirrors the accounting practices found in the industry. According to James (2021), the use of Machine-based learning in accounting education enhances students' ability to apply theoretical knowledge to real-world scenarios, a skill critical for success in the accounting profession. Through features such as creating invoices, tracking expenses, and generating financial reports, students engage with the software in a manner that directly correlates with industry expectations, providing them with the technical competencies necessary for their careers. This exposure is instrumental in bridging the skills gap and ensuring that students are equipped to perform competently in the workplace.

The utilization of AI tools for instructional delivery of accounting education courses has the potential to transform the learning in Rivers State Universities. Utilization refers to the effective and purposeful application of resources, tools, or systems to achieve desired outcomes in the educational context, utilization is critical as it involves the application of tools, techniques, and resources to enhance teaching and learning processes. According to Akomolafe and Adesina (2022**)**, utilization in education entails the effective engagement of instructional materials, methods, and technologies to achieve specific learning objectives. They argue that the extent to which resources are utilized significantly impacts the quality of instruction and student outcomes. Similarly**,** Ezenwa and Ibe (2020) emphasize that the utilization of educational technologies is essential for modern instructional delivery, particularly in technical and vocational education. They assert that underutilization often results in diminished learning outcomes and wastage of resources.

Utilization of AI tools, as noted by Okeke and Ugochukwu (2021)**,** provide innovative solutions for personalized learning, real-time feedback, and adaptive content delivery. The degree to which these tools are utilized in accounting education depends on several factors, including educators' familiarity with AI, institutional support, and the availability of infrastructure. Oluwaseun (2023) highlight that in institutions, the successful utilization of AI tools requires a deliberate effort to integrate these technologies into the curriculum and to train educators on their effective use.

From a technological perspective, utilization is seen as the extent to which users adopt and apply technologies to solve specific problems or improve processes. Davis and Ajiboye (2022)**,** drawing from the Technology Acceptance Model (TAM), argue that perceived usefulness and ease of use are fundamental determinants of utilization. In their study on AI tools in education, they found that when educators perceive these tools as beneficial and easy to use, their likelihood of adopting and effectively utilizing them increases. This aligns with the findings of Umar and Hassan (2021)**,** who note that the utilization of AI tools in Nigerian colleges of education is often hindered by a lack of training and inadequate technical support.

The importance of utilization in instructional delivery is underscored by the growing demand for innovative teaching methods. Okon and Udo (2020) argue that traditional teaching methods in accounting education are insufficient to meet the needs of the 21st-century learner. They stress that the integration and utilization of AI tools can transform the learning experience by making it more interactive, engaging, and tailored to individual students' needs. Furthermore, Adetunji and Fatima (2023) highlight that the utilization of AI tools not only improves instructional delivery but also enhances educators' efficiency by automating routine tasks such as grading and administrative work. Utilization is also influenced by the readiness of institutions to embrace change. Chukwu and Nnamani (2022**)** point out that organizational readiness, including the availability of resources and institutional policies, plays a significant role in determining the extent to which AI tools are utilized in educational settings.

The use of artificial intelligence in teaching accounting education enhances the quality of education in several ways; It increases learners' motivation and enjoyment by facilitating the acquisition of basic skills and enhancing teacher training (Ogbuabor, Gloria, & Jesunmi, 2023). Accounting education lecturers need to teach concepts and techniques to allow students to work with any digital device or tool and adapt to new technology quickly using the skills and concepts they have been taught (Orji, Okanazu, & Ali, 2023). There is a need for accounting education lecturers and students to acquire the right AI tools skills needed to meet the needs of instructional delivery and assessment in accounting education.

There are concepts in accounting education programme in tertiary institutions that can only be delivered to students digitally for better understanding. This can only be achieved when Accounting Education lecturers move with the current trends in AI tools technological advancement, which are reflected in the changing patterns of the Accounting Education curriculum. Policymakers, researchers, educators, and organizations alike are beginning to recognise that closing this AI tools skill gap is essential to preparing the nation's educational sector, especially accounting educators, for a successful future. The emphasis on universities cannot be overemphasized.

Universities refers to any type of education pursed beyond the secondary school level. University education, according to the provision of the National Policy on education is that education given after-secondary education. The university education system in Nigeria is composed of Higher Institutions of technology that form part of or affiliated to, tertiary institutions and polytechnic, colleges of education and professional specialized institution. They can further be categorized as state or federal universities and as first, second or third generation universities (Hartnett 2021).

The AI tools skills acquired by business education accounting student and lecturers, according to Oyewole (2023), allow them to fit almost in all facets of life. The mandate of business education, according to Ademiluyi, Bello, and Akande (2022), is to ensure that students are educated for and about business. Therefore, the utilization of AI tools in instructional delivery represents a paradigm shift in accounting education, offering innovative solutions to improve teaching and learning outcomes.

In the Nigerian context, accounting education courses play a pivotal role in promoting economic growth and financial accountability**.** Eze and Okafor (2021) argue that accounting education is a key driver of transparency and good governance, as it equips individuals with the knowledge to maintain accurate financial records and conduct thorough audits. They also stress the importance of adapting the curriculum to reflect local economic realities, such as the prevalence of small and medium-sized enterprises (SMEs) and the challenges of informal sector accounting. Another critical aspect of accounting education courses is their role in fostering ethical awareness and professional integrity. Accounting education courses are also evolving to meet the demands of the digital age. Adebayo and Nwachukwu (2023) point out that the integration of information technology into accounting education has revolutionized the field. Courses now often include training on accounting software, data visualization tools, and cybersecurity measures, reflecting the growing reliance on technology in financial management. This evolution aligns with global trends, as noted by Nguyen and Pham (2021)**,** who emphasize the importance of digital literacy in accounting education for fostering global competitiveness.

Furthermore, accounting education courses contribute to personal and professional development. Okeke and Chukwuma (2022) describe these courses as not only providing technical skills but also fostering critical thinking, problem-solving, and effective communication. These skills are essential for navigating the dynamic and often unpredictable nature of financial decision-making. However, challenges persist in the delivery of accounting education courses, particularly in developing countries like Nigeria. Oluwatobi and Adeola (2022**)** identify issues such as outdated curricula, insufficient infrastructure, and a lack of qualified instructors as significant barriers to effective instructional delivery. They recommend a comprehensive review of accounting education programs to ensure alignment with global best practices and local economic needs.

The university third level offers a Doctorate degree two to three years after the Master's. To gain admission into the first level of university education, one has to pass the competitive University Matriculation

Examination (UME) (IAU, 2020). Higher education in Nigeria can be further divided into the public or private, and the university sectors. Public universities owned by the federal and state Government. The non-university sector is composed of Polytechnics, institutions of technology, colleges of education and professional institutions operating under parent ministries (Akintoye, 2018).

The universities, polytechnics and colleges have a governing board or council appointed by the government and have some internal representatives of the institution as elected member or members. These councils generally govern the affairs of the institution on behalf of the government. The management of each institution is headed by a chief executive officer, that is, the vice-chancellor in the case of universities, the rector in the case of the polytechnics and the provost in the case of college of education. The federal government has established supervisory and coordinating agencies for each group of institutions: The National Universities Commission for the universities, the National Board of Technical Education for the Polytechnics and National Commission for College of Education for the colleges. The students are expected to acquire certificates in their chosen fields of study. They are equipped with skills and competencies. These institutions are owned by either the federal or state governments, corporate bodies or individuals. Some regulatory bodies have been appointed to approve, supervise and accredit courses in these institutions irrespective of their proprietorship. For the universities, the National University Commission (NUC) is in charge while in the polytechnics and colleges of education, the National Board for Technical Education (NBTE) and National Commission for Colleges of Education (NCCE) respectively are in charge of moderating academic programmes respectively.

Nigeria's higher education system currently has 95 universities - 27 federal universities, 34 state universities (NUC, 2009) and 160 other tertiary institutions - colleges of education, polytechnics, monotechnics (UNESCO, 2019). The demand for tertiary education in Nigeria is higher than what university capacity can accommodate. Over the years, universities admission rates have been on the rise, however, it has not kept up with the increasing demand (Ojo & Olakulehin, 2016). The cost of higher education as measured by private and public tuition has indeed risen at rates higher than inflation. The cost of higher education is an issue of ongoing importance to students, families and campus leaders, as well as leaders in congress and the administration. Many higher institutions are now taking steps to improve productivity and also help qualified low-income students pay for their education. Part of the increase in higher education costs is due to the fact that states have drastically reduced their contributions to higher education forcing increase in tuition (Tyler, 2022).

Statement of the Problem

In today's digital world, the use of technology in education is very important for improving teaching and learning. Accounting education needs modern methods to help students understand theory and apply it in practice. However, many accounting educators in Nigerian tertiary institutions, including those in Rivers State Universities on old and traditional teaching methods. These methods often do not meet the individual learning needs of students or prepare them for the changing demands of the accounting profession.

Artificial Intelligence (AI) tools like ChatGPT and micro-copilot are now being used in other parts of the world to make learning more effective. ChatGPT helps students learn through personalized conversations, while micro-copilot tools offer real-time support during problem-solving tasks, making students more ready for job market

Despite these opportunities, these AI tools are not widely known or used in most Nigerian tertiary institutions. Many lecturers and institutions are not aware of these tools, lack the training to use them, or do not have the needed infrastructure. As a result, accounting students often graduate without enough practical experience or the ability to use modern technology in their careers. It is this gap that this current study shall fill. by investigating the utilization of artificial intelligence tool in teaching and learning of Accounting courses in Universities of Rivers State.

Purpose of the Study

The purpose of this study was to examine the utilization of artificial intelligence tool in teaching and learning of Accounting courses in Universities in Rivers State. Specifically, the study sought to;

1. examine the extent to which utilization of ChatGPT tool enhance in teaching and learning of Accounting courses in Universities in Rivers State.
2. Assess the extent to which utilization of micro-copilots tool enhances teaching and learning of Accounting courses in Universities in Rivers State.

Research Questions

The following research questions guided the study.

1. To what extent does utilization of ChatGPT tool enhance teaching and learning of Accounting courses in Universities in Rivers State?
2. To what extent does utilization of micro-copilots tool enhance teaching and learning of Accounting courses in Universities in Rivers State?

Hypotheses

The following null hypotheses formulated were tested at 0.05 level of significance.

1. There no significant difference in the mean ratings of Rivers State University and Ignatius Ajuru University of Business Educators on the extent to which utilization of ChatGPT tools enhance teaching and learning of accounting courses in Universities in Rivers State.

2. There no significant difference in the mean ratings of Rivers State University and Ignatius Ajuru University of Business Educators on the extent to which utilization of Micro-Copilots tools enhance teaching and learning of accounting courses in Universities in Rivers State.

Methodology

The study adopted descriptive survey research design. The area of the study was Rivers State Universities. The population of the study consisted 41 Business Education Lecturers. The entire population was studied because, the population was small and manageable. A self-structured questionnaire titled "Utilization of Artificial Intelligence Tools in Teaching and Learning of Accounting Courses Questionnaire" (UAITTLACQ) was used for data collection. The instrument was designed on 4-point rating scale optioned: Very High Extent (VHE-4points), High Extent (HE-3points), Moderate Extent (ME-2points) and Low Extent (LE-1point) respectively. The instrument was validated by three (3) experts, one in Measurement and Evaluation and two from Business Education Department, all from Universities in Rivers State. The reliability of the instrument was established through Cronbach Alpha Statistics which yielded reliability co-efficient of 0.76. Out of forty-one (41) copies of the instruments administered, 40 were successful retrieved and used for analysis. Data collected were analyzed using mean and standard deviation to answer research questions, and t-test to test the null hypotheses at 0.05 level significance. The decision rule for hypotheses was that any calculated t-scores above the t-critical value was rejected, otherwise it was accepted and any mean score between 2.50 above were rated Low Extent. The null hypotheses were accepted if the computed t-value is less than the critical t-value, and if the reverse is the case, the null hypotheses will be rejected.

Results

Research Question 1: To what extent does utilization of ChatGPT tool enhance teaching and learning of Accounting courses in tertiary institution in Universities in Rivers State.

Table 1: Mean and Standard Deviation on the Extent ChatGPT Tool Enhances Teaching and Learning of Accounting Courses (N = 40)

S/N	Items	Mean ($\bar{x}$)	Std Dev	Decision
1	ChatGPT helps lecturers explain difficult accounting concepts with clarity.	3.05	0.86	High Extent
2	ChatGPT assists students in solving accounting problems and exercises.	3.09	0.90	High Extent
3	ChatGPT provides instant feedback during accounting learning activities.	3.03	0.84	High Extent
4	ChatGPT improves students' understanding of accounting terminologies.	3.09	0.87	High Extent
5	ChatGPT supports preparation of accounting lesson materials by lecturers.	3.10	0.91	High Extent
	Cluster Mean & SD	**3.07**	**0.88**	

Source: Field Survey, 2026

The results in Table 1 showed that all items had mean scores ranging from 3.03 to 3.10, with a cluster mean of 3.07. This indicated that respondents agreed to a high extent that ChatGPT enhanced teaching and learning of Accounting courses in the institution.

Research Question 2: To what extent does utilization of micro-copilots tool enhance teaching and learning of Accounting courses in Universities in Rivers State.

Table 2: Mean and Standard Deviation on the Extent Micro-Copilots Enhance Teaching and Learning of Accounting Courses (N = 40)

S/N	Items	Mean ($\bar{x}$)	Std Dev	Decision
1	Micro-copilots assist in preparing accounting documents and reports.	3.06	0.85	High Extent
2	Micro-copilots improve speed and accuracy in accounting calculations.	3.11	0.92	High Extent
3	Micro-copilots help students understand accounting procedures step-by-step.	3.04	0.86	High Extent
4	Micro-copilots support lecturers in grading and assessment tasks.	3.06	0.89	High Extent
5	Micro-copilots enhance practical accounting skill development.	3.08	0.90	High Extent
	Cluster Mean & SD	**3.07**	**0.88**	

Source: Field Survey, 2026

Table 2 revealed that all items recorded mean values between 3.04 and 3.11, showing that the respondents agreed to a high extent that micro-copilots enhanced teaching and learning of Accounting courses.

Test of Hypotheses

Hypotheses 1: There no significant difference in the mean ratings of Rivers State University and Ignatius Ajuru University of Business Educators on the extent to which utilization of ChatGPT tools enhance teaching and learning of accounting courses in Universities in Rivers State.

Table 3: Analysis of Hypothesis 1 with t-test Statistics of Difference in Mean Ratings of Rivers State University and Ignatius Ajuru University of Education Business Educators on the Extent that Utilisation of ChatGPT Tools Enhance Teaching and Learning of Accounting Courses in Universities in Rivers State

Respondents	N	X	SD	Df	STD	LS	t-cal	t-crit	Decision
RSU	30	2.77	0.86						
				348	0.01	0.05	0.9	196	Accepted
IAUE	10	2.86	0.84						

Source: Field Survey (2026)

The result presented in Table 3 shows a comparison between the mean response of Rivers State University and Ignatius Ajuru University of Education Business Educators regarding the extent to which utilisation of ChatGPT tools enhance teaching and learning of accounting courses in Universities in Rivers State. Rivers State University Business Educators had a mean score of 2.77 with standard derivation of 0.86 while Ignatius Ajuru University of Education Business Educators had mean score of 2.86 with standard deviation of 0.84. Despite the observed difference between the mean scores, the calculated t-value (t-cal = 0.9 is greater than 0.05 level of significance with 348 degrees of freedom. Based on the result, the null hypothesis was accepted.

Hypotheses 2: There no significant difference in the mean ratings of Rivers State University and Ignatius Ajuru University of Business Educators on the extent to which utilization of Micro-Copilots tools enhance teaching and learning of accounting courses in Universities in Rivers State.

Table 4: Analysis of Hypothesis 1 with t-test Statistics of Difference in Mean Ratings of Rivers State University and Ignatius Ajuru University of Business Educators on the Extent that Utilisation of Micro-Copilots Tools Enhance Teaching and Learning of Accounting Courses in Universities in Rivers State

Respondents	N	X	SD	Df	STD	LS	t-cal	t-crit	Decision
RSU	30	2.83	0.85						
				348	0.4	0.05	0.10	196	Accepted
IAUE	10	2.79	0.91						

Source: Field Survey (2026)

The result presented in Table 4 above, shows a comparison between the mean response of Rivers State University Business Educators had mean score of 2.79 with standard deviation of 0.91 while Ignatius Ajuru University of Education, Business Educators had a means score of 2.83 with a standard deviation of 0.91. Despite the observed difference between the mean scores, the calculated t-value (t-cal = 0.4 is greater than 0.05 level of significance with 348 degrees of freedom. Based on the result, the null hypothesis was accepted.

Discussion of Findings

The findings of research question in Table 1 showed that ChatGPT enhanced teaching and learning of Accounting courses to a high extent, as indicated by the cluster mean of 3.07. The individual item means, which ranged from 3.03 to 3.10, showed consistent agreement among respondents that ChatGPT improved explanation of complex accounting concepts, assisted in solving accounting exercises, provided instant feedback, improved understanding of accounting terminologies, and supported lesson preparation. This showed that ChatGPT functioned both as a teaching support tool for lecturers and as a learning companion for students. This finding agreed with the study of Kasneci et al. (2023), who found that AI conversational tools such as ChatGPT improve students' understanding by providing immediate explanations and personalized learning support. It also aligned with the findings of Zhai (2022), who reported that AI chat systems promote independent learning and improve comprehension in higher education. Furthermore,

Cotton, Cotton and Shipway (2023) observed that ChatGPT assists lecturers in preparing instructional materials and simplifying difficult concepts for students. These previous findings supported the result of the current study which showed that ChatGPT enhanced clarity of instruction and learning effectiveness in accounting courses. The implication of this finding was that ChatGPT reduced learning difficulties commonly associated with accounting courses by presenting explanations in simple formats and allowing students to learn at their own pace. It also reduced the workload of lecturers by assisting in lesson preparation and providing instructional guidance during teaching.

The results in research question Table 2 revealed that micro-copilots enhanced teaching and learning of Accounting courses with a cluster mean of 3.07. The item means ranging from 3.04 to 3.11 indicated that respondents agreed that micro-copilots improved preparation of accounting documents, increased speed and accuracy in calculations, enhanced step-by-step understanding of accounting procedures, supported grading and assessment, and improved practical accounting skills. This showed that micro-copilots served as intelligent digital assistants that supported both practical learning and teaching efficiency. This finding was supported by the work of Dwivedi et al. (2023), who reported that AI copilots improve productivity and accuracy in academic and professional tasks. Similarly, Brynjolfsson, Li and Raymond (2023) found that AI assistants enhance users' performance by reducing errors and increasing speed in task execution. In addition, Oyetunji and Adebayo (2022) found that digital accounting tools improve students' practical skills and readiness for modern workplace demands. These studies supported the present finding that micro-copilots improved efficiency and understanding in accounting courses.

The implication of this finding was that micro-copilots bridged the gap between theoretical knowledge and practical application in accounting education. They simplified assessment processes for lecturers while helping students follow accounting procedures in a clear and structured manner.

Conclusion

Based on the findings of the study, it was concluded that the utilization of ChatGPT and micro-copilots, tools enhances the teaching and learning of Accounting courses in Universities in Rivers State. These tools improve instructional clarity, promote practical skill development, increase efficiency in academic tasks, and expose students to modern accounting technologies. AI tools serve as supportive technologies that complement the efforts of lecturers and improve students' learning experiences. Their proper integration into Accounting Education can improve learning outcomes and better prepare students for modern accounting practice.

Recommendations

Based on the findings and conclusion of the study, the following recommendations are made:

1. Accounting lecturers should integrate ChatGPT into teaching to assist in explanation of complex accounting concepts and provide additional learning support.
2. Institutions should adopt micro-copilots for practical accounting classes, document preparation, and grading processes.

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ARTIFICIAL INTELLIGENCE DRIVEN PEDAGOGIES AND ENTREPRENEURIAL INTENTION: THE MEDIATING ROLE OF SELF-EFFICACY, OPPORTUNITY RECOGNITION AND ENTREPRENEURIAL INNOVATIVENESS

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Abstract

The increasing integration of artificial intelligence (AI) into higher education is transforming entrepreneurship education, particularly in areas involving opportunity recognition, innovation, problem-solving, and entrepreneurial confidence. However, the mechanisms through which AI-driven entrepreneurship education influences entrepreneurial intention remain insufficiently understood, particularly in emerging educational contexts. This study examined the influence of AI-driven entrepreneurship pedagogy on entrepreneurial intention and investigated the mediating roles of entrepreneurial alertness to opportunities, entrepreneurial innovativeness, and entrepreneurial self-efficacy. The study was anchored primarily in Social Cognitive Theory and supported by the Theory of Planned Behaviour. A quantitative research design was adopted, and data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM). The structural model demonstrated substantial explanatory power, with R^2 values ranging from 0.928 to 0.988 across the endogenous constructs. Collectively, entrepreneurship education and the cognitive and psychological mechanisms explained 96.4% of the variance in entrepreneurial intention. The results showed that AI-driven entrepreneurship pedagogy had strong positive effects on entrepreneurial alertness ($\beta = 0.963$), innovativeness ($\beta = 0.991$), and self-efficacy ($\beta = 0.994$). The mediation analysis revealed significant indirect effects through entrepreneurial alertness ($\beta = 0.189$, $t = 2.41$, $p = .016$), self-efficacy ($\beta = 0.258$, $t = 3.12$, $p = .002$), and innovativeness ($\beta = 0.529$, $t = 6.87$, $p < .001$), with innovativeness representing the strongest pathway. The total indirect effect was significant ($\beta = 0.977$, $t = 9.54$, $p < .001$), while predictive relevance was supported by Q^2 values ranging from 0.711 to 0.797. The findings demonstrate that AI-driven entrepreneurship pedagogy influences entrepreneurial intention substantially through cognitive and psychological mechanisms, highlighting the importance of deliberately developing students' opportunity recognition, innovative thinking, and entrepreneurial self-efficacy.

Keywords: Artificial intelligence, pedagogy, entrepreneurial intention, opportunity recognition, innovativeness, self-efficacy

1. Introduction

Entrepreneurship education has become an increasingly important component of higher education because of its potential to equip students with the knowledge, skills, attitudes, and competencies required to identify opportunities, solve problems, create value, and engage in entrepreneurial activities. Higher education institutions are increasingly recognised as important actors in developing entrepreneurial capabilities, including creativity, opportunity recognition, risk management, problem-solving, and the ability to transform ideas into viable ventures and other forms of economic and social value (Lackéus, 2015; OECD, 2018). Its importance has become even more pronounced in the context of rapidly changing labour markets, technological transformation, and evolving skill requirements. Consequently, universities and other tertiary institutions are increasingly expected not only to prepare graduates for conventional employment but also to develop entrepreneurial capabilities that can support self-employment, innovation, venture creation, and entrepreneurial career development (Lackéus, 2015; OECD, 2018).

At the same time, artificial intelligence (AI) is transforming the educational environment and creating new possibilities for teaching and learning. The emergence of generative AI applications such as ChatGPT has

introduced opportunities for interactive learning, content generation, personalised feedback, problem-solving, idea development, and the acquisition of practical competencies. Within entrepreneurship education, generative AI can support activities such as opportunity identification, entrepreneurial idea generation, business-model development, business-plan preparation, market analysis, customer-interview preparation, and entrepreneurial decision-making. Recent scholarship suggests that generative AI can be incorporated into entrepreneurship education to support creativity, inquiry, efficiency, and experiential learning, provided that its use is guided by appropriate pedagogical strategies (Bell & Bell, 2023; Darnell & Gopalkrishnan, 2024; Vecchiarini & Somià, 2023).

Emerging empirical evidence provides further support for the potential contribution of AI-supported learning to entrepreneurial development. Somià and Vecchiarini (2024), for example, examined the use of ChatGPT in improving students' Business Model Canvas and found evidence that interaction with generative AI can contribute to the development of entrepreneurial competencies. Similarly, Duong et al. (2024) examined ChatGPT adoption among higher education students and reported positive relationships between ChatGPT adoption, perceived AI competencies, entrepreneurial opportunity recognition, and digital entrepreneurial self-efficacy. These findings suggest that generative AI may contribute not only to students' technological capabilities but also to important cognitive and motivational dimensions of entrepreneurial development. More recently, Hajam and Jan (2026) found that generative AI adoption was positively associated with digital entrepreneurial self-efficacy, digital entrepreneurial attitudes, and digital entrepreneurial intention among business-management students, further indicating that AI-supported learning may have implications for students' entrepreneurial orientations.

Recent research has strengthened this mechanism-based perspective. Duong (2025) examined the relationship between AI literacy and e-entrepreneurial intention among 504 undergraduate students in Vietnam using a stimulus-organism-response framework. The study investigated e-entrepreneurial self-efficacy and e-entrepreneurial identity aspiration as mediating mechanisms and found that AI literacy influenced e-entrepreneurial intention through these psychological processes. The findings highlight the importance of examining what occurs between technological competence and entrepreneurial intention rather than assuming that technological knowledge or exposure to AI automatically produces entrepreneurial aspirations. In a related study, Alkhalaileh and Qasim (2026) examined AI literacy and e-entrepreneurial intention among 349 business students in Jordan using PLS-SEM and incorporated e-entrepreneurial self-efficacy and innovation mindset into the model. Their findings further suggest that AI-related competencies can contribute to entrepreneurial outcomes through psychological and innovation-related mechanisms, reinforcing the argument that the effects of AI should be examined through the capabilities and internal processes that it may develop.

The emerging literature on generative AI further reinforces this mechanism-based position. Huang et al. (2026) examined multiple pathways linking generative-AI entrepreneurship courses with entrepreneurial behaviour among Chinese undergraduates. Their study integrated cognition, self-efficacy, entrepreneurial intention, and entrepreneurial behaviour and identified a sequential pathway through which generative-AI entrepreneurship courses influence cognition, which subsequently affects self-efficacy and entrepreneurial intention before translating into entrepreneurial behaviour. The study also identified multiple configurations capable of producing high levels of generative-AI entrepreneurial behaviour. These findings suggest that the influence of AI-enabled entrepreneurship education may be better understood as a process through which educational experiences reshape students' cognition, confidence, intention, and eventual behaviour rather than as a simple direct relationship between technology and entrepreneurial outcomes.

One particularly important mechanism is entrepreneurial self-efficacy. Self-efficacy refers to an individual's belief in their capability to successfully perform particular tasks, while entrepreneurial self-efficacy concerns confidence in performing activities associated with entrepreneurship. Such activities may include identifying opportunities, developing products or services, mobilising resources, solving entrepreneurial problems, managing uncertainty, and initiating and managing a business. AI-supported learning environments may strengthen entrepreneurial self-efficacy by providing students with rapid feedback, opportunities for experimentation, access to relevant information, simulated entrepreneurial environments, and support in performing complex entrepreneurial tasks. Consistent with this argument, Xie and Wang (2025) found that generative-AI-supported entrepreneurship education significantly enhanced entrepreneurial self-efficacy and that self-efficacy mediated the relationship between AI-supported entrepreneurship education and entrepreneurial intention. Pham et al. (2026) similarly demonstrated the importance of self-efficacy and perceived behavioural control in explaining the relationship between entrepreneurship education, ChatGPT

adoption, and digital entrepreneurial intention. Collectively, these findings suggest that students' confidence in their entrepreneurial capabilities may constitute an important mechanism through which AI-supported educational experiences are translated into entrepreneurial intentions.

However, entrepreneurial self-efficacy alone may not fully explain entrepreneurial intention. Entrepreneurship also involves the ability to perceive, evaluate, and act upon possibilities that others may not recognise. Opportunity recognition is therefore a central cognitive process in entrepreneurial activity. AI-driven pedagogies can expose students to market information, customer problems, emerging technologies, industry trends, competitor activities, alternative business models, and simulated market environments. Through these activities, students may become better able to identify unmet needs, recognise emerging trends, evaluate potential market gaps, and formulate possible entrepreneurial responses. Duong et al. (2024), for example, reported a positive relationship between ChatGPT adoption and entrepreneurial opportunity recognition among higher education students. This evidence provides a basis for considering opportunity recognition as a potentially important cognitive mechanism through which AI-driven pedagogy may contribute to entrepreneurial intention.

Entrepreneurial innovativeness represents another potentially important mechanism. Generative AI can facilitate brainstorming, alternative idea generation, creative problem-solving, prototyping, business-model experimentation, and iterative refinement of entrepreneurial ideas. These capabilities may strengthen students' willingness and perceived ability to develop and implement novel products, services, processes, and business models. Importantly, entrepreneurial innovativeness should not be reduced to the ability to generate AI-assisted content. Rather, it concerns the student's capacity to use knowledge, technology, and available resources creatively to produce and implement novel solutions to entrepreneurial problems. Alkhalaileh and Qasim (2026) provide relevant evidence by demonstrating the importance of innovation mindset alongside e-entrepreneurial self-efficacy in explaining e-entrepreneurial intention. Similarly, Huang et al. (2026) show that cognition and self-efficacy form important components of the mechanisms connecting generative-AI entrepreneurship education with entrepreneurial outcomes. Although innovation mindset and entrepreneurial innovativeness are conceptually distinct constructs, these findings provide support for examining innovation-related capabilities as potential mechanisms linking AI-supported learning experiences with entrepreneurial intention.

The present study therefore responds to this gap by examining AI-driven pedagogy and entrepreneurial intention through three complementary mechanisms: entrepreneurial self-efficacy, opportunity recognition, and entrepreneurial innovativeness. Rather than conceptualising AI simply as a technological input, the study views AI-driven pedagogy as a learning environment through which students may develop entrepreneurial confidence, opportunity-recognition capability, and innovative capacity. By integrating these three mechanisms within a single framework, the study seeks to provide a more comprehensive explanation of how AI-enabled entrepreneurship education can translate technological learning experiences into students' intentions to pursue entrepreneurial activities and careers. The study consequently contributes to the emerging literature by shifting attention from the question of whether AI influences entrepreneurial intention to the more theoretically meaningful question of through which entrepreneurial capabilities AI-driven pedagogy may influence entrepreneurial intention.

2. Problem Statement

The rapid integration of artificial intelligence (AI) into higher education is creating new possibilities for entrepreneurship education through access to information, idea generation, business analysis, simulation, personalised learning, rapid feedback, and other forms of technology-supported learning. However, the availability and use of AI technologies do not necessarily translate into students' intentions to pursue entrepreneurial careers. The central problem is therefore not simply whether students have access to AI, but whether AI-driven pedagogies can develop the psychological, cognitive, and innovative capabilities necessary to strengthen entrepreneurial intention.

The problem is particularly important within Nigerian higher education. Although entrepreneurship education has become increasingly prominent in tertiary institutions, the extent to which emerging AI technologies can be deliberately integrated into entrepreneurship pedagogy to develop students' entrepreneurial capabilities remains insufficiently understood. Nigerian students may encounter challenges related to technological infrastructure, digital competencies, pedagogical practices, access to entrepreneurial experiences, and opportunities for practical experimentation. Moreover, existing Nigerian evidence on AI and entrepreneurship remains limited in its examination of the mechanisms through which AI-supported learning contributes to entrepreneurial outcomes. Edokpolor et al. (2026), for example, found

significant positive relationships among AI-driven technological application, study engagement, and entrepreneurial career intentions among vocational business students in Nigerian universities. Although this provides valuable evidence of the relevance of AI-related technology to entrepreneurial career development, the study primarily emphasised study engagement and did not simultaneously examine entrepreneurial self-efficacy, opportunity recognition, and entrepreneurial innovativeness as mechanisms explaining entrepreneurial outcomes.

Consequently, there is insufficient empirical understanding of how AI-driven pedagogies translate into entrepreneurial intention through students' psychological, cognitive, and innovation-related capabilities. In particular, it remains unclear whether and to what extent AI-driven pedagogies strengthen students' entrepreneurial self-efficacy, enhance their ability to recognise entrepreneurial opportunities, and stimulate their entrepreneurial innovativeness. These mechanisms are theoretically important because students may have access to sophisticated AI tools without necessarily possessing the confidence to undertake entrepreneurial activities, the cognitive capability to identify viable opportunities, or the innovative capacity to transform ideas into new products, services, processes, or business models.

The absence of an integrated framework incorporating these three mechanisms constitutes an important theoretical and empirical gap in the emerging literature on AI and entrepreneurship education. Existing studies have generally examined AI literacy, AI adoption, digital technology use, or individual psychological mechanisms, with comparatively less attention given to AI-driven pedagogy as a broader instructional approach that simultaneously develops entrepreneurial self-efficacy, opportunity recognition, and entrepreneurial innovativeness. Furthermore, much of the recent empirical evidence originates from China, Vietnam, Jordan, and European contexts. Although these studies provide important theoretical and empirical foundations, their findings cannot automatically be generalised to Nigerian higher education because differences in educational systems, technological infrastructure, institutional support, entrepreneurial ecosystems, and socioeconomic conditions may influence the way students respond to AI-driven pedagogical practices.

Therefore, the central problem addressed by this study is the limited empirical understanding of the mechanisms through which AI-driven pedagogies influence students' entrepreneurial intention, particularly the roles of entrepreneurial self-efficacy, opportunity recognition, and entrepreneurial innovativeness within the Nigerian higher education context. Accordingly, the study seeks to address the following central research question: How do AI-driven pedagogies influence entrepreneurial intention through entrepreneurial self-efficacy, opportunity recognition, and entrepreneurial innovativeness?

3. Objectives of the Study

The main objective of the study is to examine the relationship between AI-driven pedagogies and students' entrepreneurial intention, with particular attention to the mediating roles of entrepreneurial self-efficacy, opportunity recognition, and entrepreneurial innovativeness.

Specifically, the study seeks to:

1. Examine the effect of AI-driven pedagogies on entrepreneurial intention;
2. Determine the effect of AI-driven pedagogies on entrepreneurial self-efficacy;
3. Determine the effect of entrepreneurial self-efficacy on entrepreneurial intention;
4. Examine the effect of AI-driven pedagogies on opportunity recognition;
5. Determine the effect of opportunity recognition on entrepreneurial intention;
6. Examine the effect of AI-driven pedagogies on entrepreneurial innovativeness;
7. Determine the effect of entrepreneurial innovativeness on entrepreneurial intention;
8. Examine the mediating role of entrepreneurial self-efficacy in the relationship between AI-driven pedagogies and entrepreneurial intention;
9. Examine the mediating role of opportunity recognition in the relationship between AI-driven pedagogies and entrepreneurial intention; and
10. Examine the mediating role of entrepreneurial innovativeness in the relationship between AI-driven pedagogies and entrepreneurial intention.

4. Literature Review

4.1 Artificial Intelligence-Driven Pedagogies

Artificial intelligence-driven pedagogy refers to the purposeful and pedagogically guided integration of artificial intelligence (AI) technologies into teaching and learning activities to enhance students' learning experiences, problem-solving capabilities, creativity, experimentation, feedback, and competency development. Its defining characteristic is therefore not simply the availability or use of AI technology, but

pedagogical intentionality. In an AI-driven pedagogical approach, educators deliberately design learning activities in which AI becomes embedded within the instructional process through which students acquire, apply, evaluate, and transform knowledge. Thus, AI is positioned not merely as a technological resource but as an element of the learning design that shapes how students engage with knowledge and develop capabilities. In entrepreneurship education, AI-driven pedagogy can involve the structured use of generative AI and related intelligent technologies for opportunity exploration, business-idea generation, market research, customer analysis, business-model development, business-plan preparation, entrepreneurial simulations, financial projections, scenario analysis, prototyping, communication, and iterative feedback. The pedagogical value of these applications lies not simply in their capacity to generate information but in their ability to create learning environments in which students can experiment with entrepreneurial problems, compare alternatives, receive feedback, refine ideas, and develop entrepreneurial capabilities. This shifts the role of AI from an information-delivery mechanism toward an interactive component of entrepreneurial learning.

This conceptualisation is important because recent research has employed several related but conceptually distinct AI constructs. Some studies focus on AI literacy, which concerns individuals' knowledge, understanding, and ability to use AI technologies, whereas others examine AI adoption, ChatGPT use, or particular AI-based digital tools. For example, Duong (2025) examined AI literacy among 504 Vietnamese undergraduates, while Alkhalaileh and Qasim (2026) investigated AI literacy among 349 business students in Jordan. Both studies demonstrate that psychological mechanisms are important in explaining how AI-related capabilities translate into e-entrepreneurial intention. However, neither study conceptualises AI as a deliberately designed pedagogical approach. This distinction is important because possessing AI-related knowledge or adopting an AI tool does not necessarily mean that the technology has been integrated into the instructional design of entrepreneurship education. A closer conceptual precedent is provided by Xie and Wang (2025), who investigated Generative-AI-Supported Entrepreneurship Education (GAISEE) among 346 Chinese university students. Their structural equation modelling results showed that GAISEE significantly enhanced entrepreneurial self-efficacy and entrepreneurial intention, while entrepreneurial self-efficacy mediated the relationship between GAISEE and entrepreneurial intention. The study further demonstrated that the university entrepreneurial environment strengthened the effects of GAISEE. These findings are particularly relevant because they show that generative AI can be incorporated directly into entrepreneurship education and that its influence may operate through students' psychological capabilities rather than through technology alone. Nevertheless, the study concentrates primarily on entrepreneurial self-efficacy and the university entrepreneurial environment and does not incorporate opportunity recognition and entrepreneurial innovativeness into the same explanatory framework.

Alkhalaileh and Qasim (2026) provide further evidence concerning innovation-related mechanisms. Using PLS-SEM with 349 business students in Jordan, the researchers found that AI literacy did not have a direct effect on e-entrepreneurial intention. Instead, its influence operated through a serial mediation pathway in which e-entrepreneurial self-efficacy contributed to an innovation mindset, which subsequently influenced e-entrepreneurial intention. This finding is relevant to the present study because it indicates that psychological confidence and innovation-related capabilities may jointly contribute to the transformation of AI-related competencies into entrepreneurial intentions. However, the study examines innovation mindset rather than entrepreneurial innovativeness, and its focus is specifically on e-entrepreneurship rather than entrepreneurial intention in the broader entrepreneurship context. Pham et al. (2026) extend this line of inquiry by examining the relationships among entrepreneurship education, ChatGPT adoption, entrepreneurial self-efficacy, perceived behavioural control, and digital entrepreneurial intention among 718 university students. Using structural equation modelling with SmartPLS, the study found that entrepreneurship education enhanced perceived behavioural control and entrepreneurial self-efficacy, while both psychological factors positively influenced digital entrepreneurial intention. ChatGPT adoption further strengthened these relationships through its contribution to perceived behavioural control and self-efficacy. The findings therefore suggest that AI may reinforce the psychological processes through which entrepreneurship education influences entrepreneurial intention. However, the study's emphasis on ChatGPT adoption, self-efficacy, and perceived behavioural control leaves opportunity recognition and entrepreneurial innovativeness insufficiently examined.

4.2 Entrepreneurial Intention

Entrepreneurial intention refers to an individual's conscious willingness, commitment, and planned determination to establish a new venture or pursue an entrepreneurial career. It represents a proximal

antecedent of entrepreneurial behaviour because the decision to create a venture is generally preceded by cognitive processes involving evaluation, planning, and preparation. Entrepreneurial intention therefore captures an individual's readiness and motivation to engage in entrepreneurial activity and has become one of the most widely examined constructs in entrepreneurship research. The Theory of Planned Behavior (TPB) provides a major theoretical foundation for explaining entrepreneurial intention. Ajzen (1991) proposes that behavioural intention is determined by attitude toward the behaviour, subjective norms, and perceived behavioural control. Applied to entrepreneurship, individuals are more likely to form entrepreneurial intentions when they hold favourable attitudes toward entrepreneurship, perceive social support for entrepreneurial activity, and believe that they possess the capability and control necessary to perform entrepreneurial tasks. Consequently, educational experiences that strengthen positive attitudes, perceived capability, and control over entrepreneurial activities can contribute to stronger entrepreneurial intentions. Entrepreneurial intention is also consistent with the broader cognitive perspective of entrepreneurship. The formation of an entrepreneurial intention involves evaluating opportunities, assessing personal capability, considering possible outcomes, and deciding whether entrepreneurial action is desirable and feasible. This suggests that entrepreneurial intention should not be viewed solely as an isolated motivational outcome but as the product of interacting psychological and cognitive processes.

The emergence of artificial intelligence has created new possibilities for entrepreneurship education. AI-driven pedagogies can expose students to business-idea development, market analysis, customer analysis, business-model design, problem-solving, entrepreneurial simulation, financial analysis, and iterative feedback. Such experiences may reduce the perceived complexity of entrepreneurial tasks and enable students to experiment with entrepreneurial decisions in relatively low-risk learning environments. Consequently, AI-driven pedagogy may influence entrepreneurial intention directly by making entrepreneurial activity more understandable and accessible and indirectly by strengthening entrepreneurial capabilities.

The present study therefore conceptualises entrepreneurial intention as the principal entrepreneurial outcome and proposes that AI-driven pedagogies can contribute to students' intention to engage in entrepreneurial activity.

H01: AI-driven pedagogies have no significant effect on entrepreneurial intention.

4.3 Entrepreneurial Self-Efficacy

Entrepreneurial self-efficacy refers to an individual's belief in their capability to successfully perform the tasks and activities required to initiate and manage entrepreneurial ventures. It encompasses confidence in one's ability to identify opportunities, develop business ideas, solve entrepreneurial problems, mobilise resources, manage uncertainty, make decisions, and perform other activities associated with venture creation and development.

The concept is strongly grounded in Social Cognitive Theory. Bandura (1986) argues that individuals' beliefs concerning their capabilities influence their motivation, effort, persistence, emotional responses, and performance. Self-efficacy is particularly important in entrepreneurship because entrepreneurial activities frequently involve uncertainty, ambiguity, risk, experimentation, and repeated problem-solving. Individuals who believe that they can successfully perform entrepreneurial tasks are more likely to approach entrepreneurial challenges positively, persist when difficulties arise, and undertake actions necessary for venture creation.

Entrepreneurship education can contribute to the development of entrepreneurial self-efficacy by providing students with opportunities to practise entrepreneurial activities, observe successful performance, receive feedback, and overcome progressively challenging tasks. AI-driven pedagogy can potentially expand these opportunities. Students can use AI-supported tools to generate and refine business ideas, identify customer segments, compare business models, analyse competitors, construct business plans, evaluate strategic alternatives, and simulate entrepreneurial decisions. Through repeated experimentation and feedback, students may develop stronger beliefs in their capacity to perform entrepreneurial tasks.

The relevance of AI-driven pedagogy to self-efficacy is therefore consistent with Social Cognitive Theory. When students successfully complete AI-supported entrepreneurial tasks, receive constructive feedback, and repeatedly refine their work, these experiences may provide mastery experiences that strengthen entrepreneurial self-efficacy. AI can also facilitate experimentation by allowing students to test alternatives without the immediate financial consequences associated with real-world entrepreneurial decisions.

Recent empirical studies provide substantial support for this relationship. Xie and Wang (2025) found that generative-AI-supported entrepreneurship education significantly enhanced entrepreneurial self-efficacy

and that self-efficacy mediated the relationship between AI-supported entrepreneurship education and entrepreneurial intention. Duong (2025), using data from 504 Vietnamese undergraduates, similarly found that AI literacy positively influenced e-entrepreneurial self-efficacy, which subsequently contributed to e-entrepreneurial intention. Pham et al. (2026) also identified entrepreneurial self-efficacy as an important mechanism connecting entrepreneurship education and ChatGPT-related learning experiences with digital entrepreneurial intention. Huang et al. (2026) further identified self-efficacy as an important stage in the pathway linking generative-AI entrepreneurship courses with entrepreneurial intention and entrepreneurial behaviour.

The consistency of these findings suggests that entrepreneurial self-efficacy is one of the most established psychological mechanisms in the emerging AI–entrepreneurship education literature. However, previous studies have generally examined self-efficacy either independently or alongside one additional mechanism, such as perceived behavioural control, identity aspiration, or innovation mindset. Comparatively less attention has been given to examining entrepreneurial self-efficacy simultaneously with opportunity recognition and entrepreneurial innovativeness.

The present study consequently extends previous research by conceptualising entrepreneurial self-efficacy in two related roles: first, as an outcome of AI-driven pedagogy, and second, as a mediating mechanism through which AI-driven pedagogy may influence entrepreneurial intention.

H02: AI-driven pedagogies have no significant effect on entrepreneurial self-efficacy.

H03: Entrepreneurial self-efficacy has no significant effect on entrepreneurial intention.

H08: Entrepreneurial self-efficacy does not significantly mediate the relationship between AI-driven pedagogies and entrepreneurial intention.

4.4. Opportunity Recognition

Opportunity recognition is a central concept in entrepreneurial cognition and refers to the process through which individuals identify, interpret, and evaluate potentially valuable possibilities arising from unmet needs, market gaps, emerging trends, technological developments, customer problems, or changes in the business environment. It involves more than simply obtaining information. Rather, opportunity recognition requires individuals to connect information, interpret changes, identify patterns, evaluate potential value, and determine whether a possibility can be transformed into an entrepreneurial opportunity.

From an entrepreneurial cognition perspective, individuals differ in their capacity to recognise opportunities because they possess different knowledge structures, experiences, information-processing abilities, and attentional orientations. Consequently, the availability of information alone does not guarantee opportunity recognition. What matters is the individual's ability to interpret information and identify entrepreneurial possibilities within it.

AI-driven pedagogy may strengthen this capability by exposing students to extensive information and providing analytical support during entrepreneurial learning activities. Within entrepreneurship education, students can use AI to investigate customer pain points, analyse market trends, examine competitors, explore consumer preferences, identify emerging industries, compare alternative market segments, and investigate potential gaps in existing products and services. AI can also generate alternative interpretations of entrepreneurial problems, encouraging students to examine possibilities from different perspectives.

However, the contribution of AI to opportunity recognition should be understood as augmentation rather than replacement of entrepreneurial cognition. AI-generated information may be incomplete, inaccurate, biased, or inappropriate for a particular market context. Therefore, students must critically evaluate AI outputs, verify relevant information, assess contextual conditions, and apply entrepreneurial judgement. An effective AI-driven pedagogy should consequently teach students not simply how to obtain information from AI but how to question, interpret, evaluate, and transform information into entrepreneurial possibilities.

The relationship between AI and opportunity recognition is supported by emerging empirical evidence. Duong et al. (2024), in their study of higher education students, demonstrated that ChatGPT adoption was associated with digital entrepreneurial intention through entrepreneurial and cognitive mechanisms, including opportunity recognition. This finding is particularly relevant because it suggests that AI-supported learning may facilitate the identification and evaluation of entrepreneurial possibilities rather than influencing entrepreneurial intention exclusively through technological adoption.

Duong (2024) further demonstrated, from a stimulus-organism-response perspective, that ChatGPT adoption can stimulate digital entrepreneurship through internal cognitive and psychological processes. The study highlights the importance of understanding what happens between technological exposure and

entrepreneurial outcomes, rather than assuming that technology automatically produces entrepreneurial behaviour.

Huang et al. (2026) provide complementary evidence by demonstrating that generative-AI entrepreneurship education can influence entrepreneurial cognition, which subsequently contributes to self-efficacy, entrepreneurial intention, and entrepreneurial behaviour. Although entrepreneurial cognition is broader than opportunity recognition, the findings provide theoretical support for examining specific cognitive capabilities through which AI-enabled entrepreneurship education may influence entrepreneurial outcomes.

Despite these developments, opportunity recognition remains insufficiently examined as a distinct mechanism in the AI-driven entrepreneurship education literature. Existing studies have demonstrated relationships among AI use, entrepreneurial cognition, and entrepreneurial intention, but relatively few have explicitly tested whether opportunity recognition mediates the relationship between an intentionally designed AI-driven pedagogy and entrepreneurial intention. This represents an important gap. If AI-driven pedagogy exposes students to market information, alternative perspectives, customer problems, technological trends, and analytical tools, the educational effect may be expressed partly through students' enhanced ability to identify entrepreneurial possibilities. Opportunity recognition therefore represents a theoretically meaningful mechanism linking AI-driven learning experiences with entrepreneurial intention.

The present study addresses this gap by treating opportunity recognition as a distinct entrepreneurial cognitive capability rather than subsuming it within the broader concept of entrepreneurial cognition.

H04: AI-driven pedagogies have no significant effect on opportunity recognition.

H05: Opportunity recognition has no significant effect on entrepreneurial intention.

H09: Opportunity recognition does not significantly mediate the relationship between AI- driven pedagogies and entrepreneurial intention.

4.5. Entrepreneurial Innovativeness

Entrepreneurial innovativeness refers to an individual's tendency and capability to generate, support, develop, and implement novel ideas, products, services, processes, business models, or approaches to solving entrepreneurial problems. Innovativeness is a fundamental dimension of entrepreneurship because entrepreneurial activity frequently involves the development of new combinations of resources, introduction of novel solutions, and creation of new forms of value.

Entrepreneurial innovativeness should be distinguished from creativity alone. Creativity primarily concerns the generation of novel and useful ideas, whereas entrepreneurial innovativeness encompasses the broader process of developing and applying novel ideas in entrepreneurial contexts. Thus, an entrepreneurially innovative individual is not merely capable of producing many ideas but is also able to evaluate, adapt, develop, and potentially implement those ideas in response to market or societal needs.

AI-driven pedagogies may create favourable conditions for developing entrepreneurial innovativeness. Generative AI can support divergent thinking, rapid idea generation, alternative-solution development, experimentation, and iterative refinement. Within entrepreneurship education, students can use AI to generate alternative product concepts, develop value propositions, explore different business models, simulate customer responses, identify alternative solutions to business problems, and refine entrepreneurial proposals. The educational value of AI, however, depends on how these technologies are integrated into learning. If students merely accept AI-generated answers, the technology may encourage dependence rather than innovativeness. In contrast, when students are required to challenge AI outputs, generate alternative prompts, compare competing solutions, test assumptions, and adapt AI-generated ideas to real-world contexts, AI can become a catalyst for innovative entrepreneurial thinking. AI-driven pedagogy should therefore combine technological assistance with creativity, critical thinking, contextual knowledge, experimentation, and entrepreneurial judgement.

Emerging empirical research provides support for this relationship. Alkhalaileh and Qasim (2026), using PLS-SEM with 349 business students in Jordan, found that AI literacy influenced e-entrepreneurial intention through e-entrepreneurial self-efficacy and innovation mindset. The findings suggest that AI-related capabilities can influence entrepreneurial outcomes through psychological and innovation-related mechanisms. However, innovation mindset and entrepreneurial innovativeness are not conceptually identical. Innovation mindset generally describes an orientation or disposition toward embracing, exploring, and supporting innovation. Entrepreneurial innovativeness, in contrast, focuses more specifically on the tendency and capability to generate, develop, and implement novel entrepreneurial ideas and solutions. Consequently, the findings of Alkhalaileh and Qasim (2026) provide supporting evidence for an innovation-

related pathway but do not directly establish entrepreneurial innovativeness as conceptualised in the present study.

Huang et al. (2026) provide further support for the broader argument that generative-AI entrepreneurship education can develop entrepreneurial capabilities. Their findings demonstrate pathways involving cognition, self-efficacy, entrepreneurial intention, and entrepreneurial behaviour. Although the study does not directly operationalise entrepreneurial innovativeness as a mediator, it supports the proposition that AI-enabled entrepreneurship education can influence entrepreneurial capabilities beyond simple technology use.

The distinction between AI literacy, innovation mindset, and entrepreneurial innovativeness is therefore particularly important for the present study. AI literacy concerns the capability to understand and use AI; innovation mindset concerns an orientation toward innovation; whereas entrepreneurial innovativeness concerns the capacity and tendency to generate and implement novel entrepreneurial solutions. Treating these constructs as interchangeable would weaken the conceptual precision of the study. The existing literature consequently reveals an emerging relationship between AI, innovation-related capabilities, and entrepreneurial outcomes, but evidence concerning entrepreneurial innovativeness as a distinct mechanism remains limited. In particular, there is insufficient empirical evidence examining entrepreneurial innovativeness simultaneously with entrepreneurial self-efficacy and opportunity recognition in explaining how AI-driven pedagogy influences entrepreneurial intention. The present study addresses this gap by examining entrepreneurial innovativeness as both an outcome of AI-driven pedagogy and a potential mediating mechanism between AI-driven pedagogy and entrepreneurial intention.

H06: AI-driven pedagogies have no significant effect on entrepreneurial innovativeness.

H07: Entrepreneurial innovativeness has no significant effect on entrepreneurial intention.

H10: Entrepreneurial innovativeness does not significantly mediate the relationship between AI-driven pedagogies and entrepreneurial intention

However, the literature remains fragmented because previous studies have generally focused on individual mechanisms rather than examining several entrepreneurial capabilities simultaneously. Three mechanisms are particularly relevant to the present study.

Accordingly, the present study proposes an integrated model in which AI-driven pedagogy is the antecedent, entrepreneurial intention is the outcome, and entrepreneurial self-efficacy, opportunity recognition, and entrepreneurial innovativeness function as complementary mediating mechanisms. This framework provides the basis for testing the direct relationships represented by H01–H07 and the mediation relationships represented by H08–H10.

5. Theoretical Framework

This study is anchored primarily on Social Cognitive Theory (SCT), complemented by the Theory of Planned Behaviour (TPB) and organised through the Stimulus–Organism–Response (S-O-R) perspective to explain how AI-driven pedagogy may influence students' entrepreneurial intention through key entrepreneurial capabilities. Social Cognitive Theory, developed by Bandura (1986), emphasises the reciprocal interaction between personal factors, behaviour, and environmental influences, suggesting that learning environments can shape individuals' cognitive capabilities and subsequent behaviour. In this study, AI-driven pedagogy represents an important environmental and instructional stimulus capable of providing students with personalised learning, interactive problem-solving, feedback, simulation, idea generation, and opportunities for experimentation, thereby strengthening entrepreneurial self-efficacy, opportunity recognition, and entrepreneurial innovativeness. Entrepreneurial self-efficacy reflects students' confidence in their ability to perform entrepreneurial tasks, while opportunity recognition represents their capacity to identify and evaluate potentially valuable market opportunities, and entrepreneurial innovativeness reflects their ability to generate, develop, and implement novel entrepreneurial ideas. These capabilities are expected to strengthen students' readiness and willingness to pursue entrepreneurship. The Theory of Planned Behaviour (Ajzen, 1991) complements SCT by explaining entrepreneurial intention as a form of planned behaviour influenced by attitudes, subjective norms, and perceived behavioural control. Within this framework, AI-driven pedagogical experiences may enhance students' perceptions of entrepreneurial feasibility and desirability by increasing their confidence, exposing them to emerging opportunities, and encouraging innovative approaches to solving problems. Although entrepreneurial self-efficacy and perceived behavioural control are theoretically distinct constructs, higher self-efficacy may contribute to students' perceptions that entrepreneurial activities are within their control. Similarly, the ability to recognise opportunities and develop innovative solutions may strengthen favourable attitudes and perceived

capability toward entrepreneurship, thereby contributing to entrepreneurial intention. The Stimulus–Organism–Response perspective further provides an organising structure for the proposed relationships by conceptualising AI-driven pedagogy as the stimulus, entrepreneurial self-efficacy, opportunity recognition, and entrepreneurial innovativeness as the organismic mechanisms, and entrepreneurial intention as the response.

This perspective is consistent with recent AI and entrepreneurship education research showing that AI-related educational experiences may influence entrepreneurial outcomes through internal psychological and cognitive mechanisms rather than solely through direct effects. For example, Xie and Wang (2025) found that generative-AI-supported entrepreneurship education enhanced entrepreneurial self-efficacy and entrepreneurial intention, with self-efficacy serving as a mediator, while Duong (2025) demonstrated that AI literacy influenced e-entrepreneurial intention through self-efficacy and identity-related mechanisms. Similarly, recent evidence indicates that innovation-related capabilities can serve as important mechanisms linking AI-related competencies with entrepreneurial intentions. Accordingly, the integration of SCT, TPB, and S-O-R provides a comprehensive theoretical explanation for the proposed model: SCT explains how AI-driven pedagogy can develop students' entrepreneurial cognitive capabilities; TPB explains how these capabilities may translate into stronger entrepreneurial intention; and S-O-R organises the overall process as AI-driven pedagogy (stimulus) → entrepreneurial self-efficacy, opportunity recognition, and entrepreneurial innovativeness (organism) → entrepreneurial intention (response). The framework therefore provides the theoretical foundation for examining whether these three entrepreneurial capabilities operate as complementary mediating mechanisms through which AI-driven pedagogy strengthens students' intention to engage in entrepreneurial activities.

6. Methodology

The study adopted a quantitative, cross-sectional research design to examine the relationship between artificial intelligence (AI)-driven pedagogies and entrepreneurial intention, with entrepreneurial self-efficacy, opportunity recognition, and entrepreneurial innovativeness serving as mediating variables. The population comprised students of the School of Business Education, Federal College of Education (Technical), Gusau, from which 200 students were selected using proportionate sampling to ensure appropriate representation of the relevant student groups. Data were collected using a structured questionnaire containing measurement items adapted from validated instruments established in previous studies on entrepreneurship education, entrepreneurial self-efficacy, opportunity recognition, entrepreneurial innovativeness, and entrepreneurial intention. The items were measured on a five-point Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree. The collected data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) through SmartPLS because the study is prediction-oriented and involves multiple latent constructs and mediating relationships. The analysis followed a two-stage procedure, beginning with assessment of the measurement model through indicator loadings, Cronbach's alpha, composite reliability, average variance extracted (AVE), and discriminant validity using the Heterotrait–Monotrait (HTMT) criterion. The structural model was subsequently evaluated by examining collinearity using variance inflation factor (VIF), path coefficients (β), coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), and the significance of the hypothesised relationships using bootstrapping. Mediation analysis was conducted to determine whether entrepreneurial self-efficacy, opportunity recognition, and entrepreneurial innovativeness significantly mediated the relationship between AI-driven pedagogy and entrepreneurial intention. Ethical principles were observed throughout the study, as participation was voluntary, respondents were informed of the purpose of the research, confidentiality and anonymity were maintained, and the data were used solely for academic purposes.

7. Results and Discussion of Findings

The findings provide strong empirical evidence that Artificial Intelligence Driven Pedagogies are closely associated with the development of entrepreneurial competencies and entrepreneurial intention among students of the School of Business Education, Federal College of Education (Technical), Gusau.

The exceptionally high path coefficients provide particularly important evidence. Artificial Intelligence-Driven Pedagogies demonstrated very strong relationships with Opportunity Recognition (**β = 0.963**), Entrepreneurial Innovativeness (**β = 0.991**), and Entrepreneurial Self-Efficacy (**β = 0.994**). These

coefficients demonstrate that AI-supported pedagogical approaches have considerable potential to transform how students develop entrepreneurial knowledge, skills, confidence, and innovative capabilities. The strongest relationship was observed between Artificial Intelligence-Driven Pedagogies and Entrepreneurial Self-Efficacy (**β = 0.994**). This finding suggests that students' confidence in their entrepreneurial capabilities can be significantly strengthened when learning incorporates AI-enabled tools and activities. AI-supported learning may provide students with opportunities to experiment, obtain immediate feedback, solve complex problems, explore business ideas, and practise entrepreneurial decision-making in relatively low-risk environments.

The relationship between Artificial Intelligence-Driven Pedagogies and Entrepreneurial Innovativeness (**β = 0.991**) was similarly very strong. This result is particularly relevant because entrepreneurship requires individuals to identify new possibilities and develop creative solutions to problems. AI technologies can support this process by facilitating idea generation, information synthesis, scenario analysis, product conceptualisation, and experimentation. Consequently, pedagogical approaches that integrate AI may help students move beyond conventional knowledge acquisition towards creative and innovative entrepreneurial thinking.

The relationship between Artificial Intelligence-Driven Pedagogies and Opportunity Recognition (**β = 0.963**) was also exceptionally strong. O pportunity recognition is fundamental to entrepreneurship because potential entrepreneurs must be able to identify unmet needs, market gaps, emerging technologies, changing consumer preferences, and opportunities for value creation. AI-supported learning can expose students to large volumes of information and enable them to analyse trends, markets, customer needs, and potential business opportunities more efficiently.

The model's **R^2 = 0.964 for Entrepreneurial Intention** further demonstrates the explanatory strength of the proposed framework. The result indicates that 96.4% of the variance in entrepreneurial intention is explained by the model. This exceptionally high explanatory power suggests that the combination of AI-driven pedagogies, self-efficacy, opportunity recognition, and entrepreneurial innovativeness provides a comprehensive framework for explaining students' entrepreneurial intentions.

The mediation results further indicate that the relationship between AI-driven pedagogies and entrepreneurial intention operates through important cognitive and psychological mechanisms. Students are more likely to develop entrepreneurial intentions when AI-supported learning strengthens their confidence, improves their ability to recognise opportunities, and stimulates innovative thinking.

These findings are consistent with the logic of Social Cognitive Theory, which emphasises the interaction between environmental influences, cognitive processes, and behavioural outcomes. In the present study, AI-driven pedagogies represent an important learning environment, while self-efficacy, opportunity recognition, and innovativeness represent cognitive and psychological mechanisms through which that environment can influence entrepreneurial intention.

The results therefore suggest that the effective integration of AI into entrepreneurship education should not be limited to teaching students how to use artificial intelligence. Rather, AI should be integrated into pedagogical activities that deliberately develop entrepreneurial competencies, including opportunity recognition, innovative thinking, problem-solving, decision-making, and entrepreneurial self-efficacy.

Structural Model

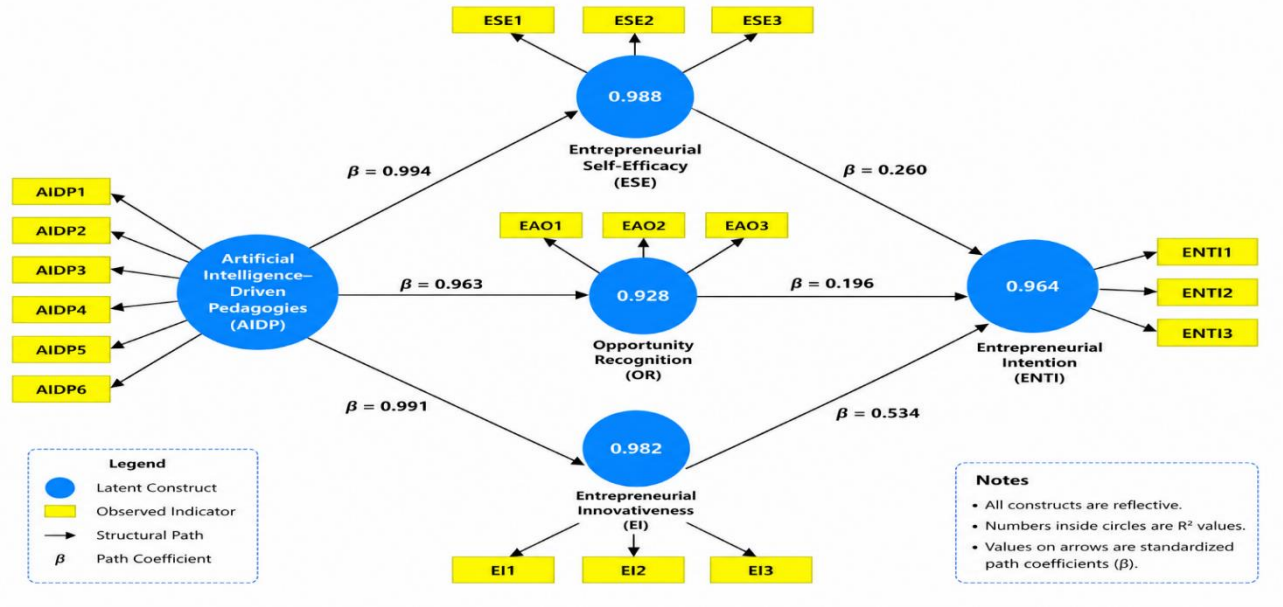


Table. Summary of the Structural Model Results

Hypothesis	Structural Path	β	R^2 (Endogenous Construct)	Interpretation
H1	AIDP → Entrepreneurial Self-Efficacy (ESE)	0.994	0.988	Very strong positive relationship
H2	AIDP → Opportunity Recognition (OR)	0.963	0.928	Very strong positive relationship
H3	AIDP → Entrepreneurial Innovativeness (EI)	0.991	0.982	Very strong positive relationship
H4	ESE → Entrepreneurial Intention (ENTI)	0.260	0.964	Positive relationship
H5	OR → Entrepreneurial Intention (ENTI)	0.196	0.964	Positive relationship
H6	EI → Entrepreneurial Intention (ENTI)	0.534	0.964	Positive relationship
Overall Model	AIDP → ESE, OR, EI → ENTI	—	0.964	96.4% of the variance in entrepreneurial intention is explained by the model

The R^2 values of 0.988 for ESE, 0.928 for OR, 0.982 for EI, and 0.964 for ENTI correspond to the structural model shown above. The paper specifically confirms the 0.964 R^2 for ENTI and the three principal AIDP path coefficients.

8. Conclusion

This study examined the relationship between Artificial Intelligence-Driven Pedagogies and Entrepreneurial Intention, with particular emphasis on the mediating roles of Entrepreneurial Self-Efficacy, Opportunity Recognition, and Entrepreneurial Innovativeness among students of the School of Business Education, Federal College of Education (Technical), Gusau.

The findings provide strong empirical evidence that AI-driven pedagogical approaches are closely associated with the development of important entrepreneurial competencies. The verified SmartPLS results show exceptionally high path coefficients between Artificial Intelligence-Driven Pedagogies and Opportunity

Recognition (**β = 0.963**), Entrepreneurial Innovativeness (**β = 0.991**), and Entrepreneurial Self-Efficacy (**β = 0.994**).

The strongest relationship was observed between Artificial Intelligence-Driven Pedagogies and Entrepreneurial Self-Efficacy, indicating that AI-supported learning may be particularly important for strengthening students' confidence in their entrepreneurial capabilities. The very strong relationship with Entrepreneurial Innovativeness further demonstrates the potential of AI-driven learning to stimulate creativity, idea generation, experimentation, and innovative problem-solving.

The model also demonstrated exceptional explanatory power, with **$R^2 = 0.964$** for Entrepreneurial Intention. Thus, 96.4% of the variance in entrepreneurial intention is explained by the variables incorporated into the proposed model. This finding demonstrates the substantial explanatory capacity of the AI-driven pedagogical framework.

The mediation analysis further establishes that Self-Efficacy, Opportunity Recognition, and Entrepreneurial Innovativeness represent important mechanisms through which AI-driven pedagogies can influence entrepreneurial intention. Entrepreneurial intention is therefore not merely a product of exposure to AI technology; rather, it develops through the cognitive and psychological capabilities that students acquire and strengthen within AI-supported learning environments.

The study concludes that AI-driven pedagogies represent an important emerging pathway for strengthening entrepreneurial intention among students. However, the effectiveness of AI integration depends on how deliberately AI tools are incorporated into pedagogical activities designed to develop entrepreneurial competencies. AI should therefore be viewed not merely as a technological resource but as a pedagogical mechanism capable of supporting entrepreneurial cognition, confidence, creativity, and opportunity recognition.

9. Recommendations

Based on the findings of the study, the following recommendations are proposed:

1. **Integrate AI-driven pedagogies into entrepreneurship education.**
   Institutions should systematically incorporate artificial intelligence tools into entrepreneurship teaching and learning. AI should be used for business-idea generation, market analysis, problem-solving, business-model development, simulations, and entrepreneurial decision-making.
2. **Strengthen entrepreneurial self-efficacy through AI-supported experiential learning.** Since Artificial Intelligence-Driven Pedagogies demonstrated a very strong relationship with Entrepreneurial Self-Efficacy (**β = 0.994**), lecturers should provide students with practical AI-supported entrepreneurial activities that allow them to experiment, solve problems, receive feedback, and build confidence in their entrepreneurial abilities.
3. **Develop students' opportunity-recognition capabilities.**
   Entrepreneurship programmes should train students to use AI tools to identify market gaps, analyse consumer needs, examine emerging trends, and evaluate potential business opportunities. This will enable students to transform information generated through AI into actionable entrepreneurial opportunities.
4. **Promote AI-supported entrepreneurial innovation.**
   Institutions should encourage students to use AI for brainstorming, product development, prototyping, creative problem-solving, and development of new business models. This is particularly important given the very strong relationship between AI-driven pedagogies and Entrepreneurial Innovativeness (**β = 0.991**).
5. **Adopt project-based and problem-based learning.**
   Lecturers should move beyond conventional lecture-based approaches and adopt project-based learning, business simulations, case studies, entrepreneurial challenges, and AI-supported practical projects. Such approaches can integrate knowledge, confidence, opportunity recognition, and innovation.
6. **Provide AI training for entrepreneurship educators.**
   Institutions should organise continuous professional development for lecturers to improve their ability to integrate generative AI, data-analysis tools, business intelligence applications, and other AI technologies into entrepreneurship pedagogy.
7. **Establish AI-enabled entrepreneurship laboratories and innovation hubs.**
   Colleges of education should consider establishing dedicated spaces where students can

experiment with AI technologies, develop business ideas, undertake market research, create prototypes, and collaborate on entrepreneurial projects.

8. **Strengthen ethical and responsible AI use.**
   AI-driven entrepreneurship education should include instruction on responsible AI use, including originality, academic integrity, data privacy, bias, misinformation, intellectual property, and ethical decision-making.
9. **Link AI-driven learning with real entrepreneurial ecosystems.**
   Institutions should establish partnerships with entrepreneurs, technology companies, innovation hubs, financial institutions, and business-support organisations to provide students with authentic entrepreneurial experiences.
10. **Evaluate the effectiveness of AI-driven pedagogies continuously.**
    Institutions should periodically assess whether AI-supported teaching is actually improving students' entrepreneurial self-efficacy, opportunity recognition, innovativeness, and entrepreneurial intention. Such evaluation should guide curriculum improvement and resource allocation.

10. Implications of The Study

10.1 Theoretical Implications

The study extends the entrepreneurship education literature by demonstrating how AI-driven pedagogies can influence entrepreneurial intention through cognitive and psychological mechanisms. The findings provide support for the application of Social Cognitive Theory to AI-supported entrepreneurship education by demonstrating the importance of self-efficacy as a mechanism linking the learning environment to entrepreneurial outcomes.

The study also contributes to entrepreneurial cognition research by positioning Opportunity Recognition and Entrepreneurial Innovativeness as important mechanisms through which AI-supported learning may influence entrepreneurial intention.

10.2 Practical Implications

For lecturers and curriculum developers, the findings demonstrate that AI should be integrated into entrepreneurship education as an active learning resource rather than treated merely as a technological add-on. Teaching activities should deliberately use AI to strengthen students' confidence, creativity, opportunity-recognition skills, and entrepreneurial decision-making.

For educational institutions, the high explanatory power of the model (**$R^2 = 0.964$**) highlights the potential value of investing in AI-supported entrepreneurial learning environments, lecturer capacity development, digital infrastructure, and innovation facilities.

For policymakers, the findings suggest that policies on entrepreneurship education should increasingly recognise the importance of artificial intelligence and digital technologies in developing the entrepreneurial capabilities required by students in the emerging economy.

10.3 Contribution to Knowledge

The major contribution of this study lies in its integration of Artificial Intelligence-Driven Pedagogies, Entrepreneurial Self-Efficacy, Opportunity Recognition, Entrepreneurial Innovativeness, and Entrepreneurial Intention into a single empirical framework. The study moves beyond the traditional examination of entrepreneurship education and entrepreneurial intention by demonstrating how AI-driven pedagogical approaches can potentially influence entrepreneurial intention through specific cognitive and psychological mechanisms. The exceptionally high explanatory power of **$R^2 = 0.964$** provides strong empirical support for the proposed framework and establishes a foundation for further research into AI-enabled entrepreneurship education.

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FROM AI LITERACY TO ENTREPRENEURIAL COMPETENCE: REIMAGINING BUSINESS EDUCATION FOR AFRICA'S DIGITAL ECONOMY

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Abstract

The emergence of Generative Artificial Intelligence (GenAI) is reshaping the knowledge, skills, and competencies required to participate in contemporary economic activities. Business Education, traditionally focused on preparing learners for employment, business creation, and effective participation in the business environment, must therefore rethink its curriculum, pedagogy, and graduate competencies. This paper examines the implications of Generative Artificial Intelligence for Business Education and entrepreneurial learning in Africa. It adopts a conceptual approach grounded in a critical synthesis of recent literature on artificial intelligence, higher education, entrepreneurship education, entrepreneurial competence, and AI literacy. The paper argues that GenAI should not be treated merely as another instructional technology or productivity tool, but as a transformative technology with implications for what Business Education teaches, how it is taught, how learning is assessed, and the competencies expected of graduates. The paper identifies five interrelated domains for AI-enabled Business Education: AI literacy, AI-enhanced pedagogy, AI-supported entrepreneurial intelligence, digital business competence, and ethical and critical AI use. Based on this, the paper proposes an AI-Enabled Entrepreneurial Business Education Framework (AIEBEF). The framework positions AI literacy as a foundation for developing entrepreneurial competence while maintaining human agency, critical thinking, creativity, ethical judgement, and contextual relevance. The paper concludes that African Business Education should shift from technology-assisted instruction to human-centred, AI-enabled, and entrepreneurship-oriented education. It recommends curriculum renewal, lecturer capacity development, AI-responsive assessment, institutional AI policies, investment in digital infrastructure, and stronger collaboration among universities, government, and industry.

Keywords: Artificial Intelligence, Generative AI, AI literacy, Business Education, entrepreneurial competence, entrepreneurship education, digital transformation, Africa

Introduction

The contemporary global economy is undergoing a profound technological transformation driven by digitalisation, automation, artificial intelligence (AI), big data, cloud computing and other emerging technologies. Among these technologies, Generative Artificial Intelligence (GenAI) has attracted exceptional attention for its ability to generate text, images, computer code and other forms of content in response to natural-language instructions. The public emergence of tools such as ChatGPT has accelerated discussions about the future of education, employment, entrepreneurship and professional practice.

The implications for higher education are substantial. Recent systematic reviews show that GenAI is being explored for personalised learning, content generation, feedback, problem-solving, simulation and other pedagogical purposes, while also raising concerns about assessment, accuracy, academic integrity, equity and ethical use (Qian, 2025; Yusuf *et al*., 2024). These implications are particularly important for

Business Education, as digital transformation affects its traditional areas (accounting, management, marketing, office technology, entrepreneurship, and information and communication technology). Consequently, the question confronting Business Education is no longer simply whether students should learn to use computers or conventional digital applications. The more fundamental question is what competencies Business Education students require as artificial intelligence increasingly performs tasks once regarded as distinctly human intellectual activities. This question has become particularly significant in Africa. The African Union's Continental Artificial Intelligence Strategy identifies AI as a strategic asset for economic development, innovation, job creation and social transformation, while promoting an Africa-centred, ethical, responsible and equitable approach to AI (African Union, 2024). Nigeria has likewise placed AI within its broader digital transformation agenda. These developments create an imperative for Business Education to prepare students not merely to use AI tools but to employ them critically and creatively for value creation. This paper therefore argues that AI literacy should become an integral component of contemporary Business Education and be deliberately linked to the development of entrepreneurial competence.

Artificial Intelligence broadly refers to computational systems capable of performing tasks associated with human intelligence, including learning, reasoning, prediction, language processing and decision support. Generative AI is a class of AI systems that can produce new content in response to prompts. These systems can generate text, images, audio, video, computer code and other outputs. For Business Education, the significance of GenAI is not merely its ability to produce content. It greater significance lies in its potential to support business idea generation, market research, customer analysis, communication, digital marketing, financial analysis, problem-solving, simulation, decision support and entrepreneurial experimentation. Yu, Ramayah and Lin (2025), in a systematic review of 50 peer-reviewed articles, found that research on GenAI in entrepreneurship education remains in its early stages. The review identified personalised and adaptive instruction, simulation-based entrepreneurial training, ethical and psychological concerns, and ecosystem integration as major domains. Importantly, the authors cautioned that the long-term impact of GenAI on entrepreneurial competence remains uncertain and requires stronger empirical evidence.

AI literacy extends beyond knowing how to operate an AI application. It encompasses understanding basic AI concepts, using AI appropriately, critically evaluating AI outputs, and recognising the ethical, social and practical implications of AI (Lintner, 2024). In Business Education, AI literacy should encompass at least five capabilities: understanding AI; using AI; evaluating AI outputs; applying AI to authentic business and entrepreneurial problems; and using AI responsibly. Similarly, UNESCO's AI Competency Framework for Students emphasises a human-centred mindset, AI ethics, AI techniques and applications, and AI system design across progression levels of understanding, application and creation (Miao, Shiohira, & Lao, 2024). AI literacy should therefore be understood as a competence for responsible action rather than mere technical familiarity with AI software.

Entrepreneurial competence comprises the knowledge, skills, attitudes and capabilities required to identify opportunities, mobilise resources, solve problems, create value and act effectively in uncertain conditions. Tittel and Terzidis (2020) show that entrepreneurial competence spans knowledge, skills and attitudes across the domain, personal and social dimensions. Entrepreneurial competence is broader than entrepreneurial intention. A student may intend to establish a business without the competence to identify a viable opportunity, develop a business model, mobilise resources, manage uncertainty or create sustainable value. For AI-enabled Business Education, the objective should therefore not simply be to produce students who intend to use AI to start businesses, but rather to produce graduates who can use AI critically and creatively to identify opportunities, solve problems and create sustainable economic and social value.

Business Education in a Changing Economic Environment

Business Education has historically responded to changes in the world of work. The shift from manual office systems to computers, from paper-based records to digital information systems, and from conventional commerce to electronic commerce has repeatedly required curriculum adaptation. Generative AI marks another stage in this evolution. The technology increasingly performs tasks such as writing, summarisation, information analysis, idea generation, communication, translation, coding, business-plan development and decision support. Consequently, Business Education cannot simply respond by adding a

single course titled Artificial Intelligence in Business Education while leaving the rest of the curriculum substantially unchanged. The transformation needs to be more fundamental. Traditional Business Education has often emphasised knowledge acquisition, skill development and employment. An emerging orientation requires integrating disciplinary knowledge, digital intelligence, critical thinking, AI literacy, and entrepreneurial competence for value creation and employability. This implies that the purpose of Business Education should shift from preparing students merely to perform existing business tasks to preparing them to interpret, redesign, and create business activities in an AI-enabled economy.

Entrepreneurship education has increasingly moved away from purely theoretical approaches toward experiential, competence-based and practice-oriented learning. This is particularly important in Nigeria. Okolie *et al.* (2021), studying undergraduate students across Nigerian universities, found that entrepreneurship education influenced some entrepreneurial competencies, including opportunity recognition, and suggested that innovative teaching techniques can improve competency development. This indicates that exposure to entrepreneurship education does not automatically develop every entrepreneurial capability; learning must be deliberately designed around competence development. GenAI can support this transition. Instead of asking students merely to memorise the stages of business-plan development, lecturers can provide authentic entrepreneurial problems and require students to identify customer problems, use AI to generate alternative hypotheses, investigate assumptions, collect or verify market information, develop alternative business models, critically evaluate AI-generated suggestions, defend their preferred option and revise the model based on evidence.

Recent empirical work supports a cautious but constructive approach. Xie and Wang (2025) found that GenAI-supported entrepreneurship education was associated with entrepreneurial intention through entrepreneurial self-efficacy and university support. Another recent quasi-experimental study found that AI-assisted, argumentation-driven learning supported entrepreneurial competence development, with data literacy playing an important mediating role (Sune *et al.,* 2025). These findings support AI integration while reinforcing the need for teacher guidance and critical evaluation.

Five transformations required in Business Education

1. From digital literacy to AI literacy: Traditional digital literacy remains important, but it is no longer sufficient. A student may be proficient in word processing, spreadsheets, presentation software and internet search and still lack the ability to evaluate AI-generated information or use AI responsibly. Business Education should therefore develop students who understand how generative AI works at a basic level, formulate effective prompts, verify AI-generated information, identify hallucinations and bias, protect confidential information, disclose AI assistance appropriately and exercise independent judgement.

2. From information consumption to knowledge evaluation: Generative AI changes the scarcity problem because students can obtain large quantities of information almost instantaneously. The critical educational challenge therefore shifts toward determining whether information is accurate, relevant, contextualised and useful. This makes critical thinking more important, not less. The appropriate pedagogical response is not simply to prohibit AI use but to teach students how to interrogate AI outputs, compare sources, identify unsupported claims and defend conclusions with evidence.

3. From business plan writing to AI-supported entrepreneurial problem-solving: Traditional entrepreneurship education often culminates in the production of a business plan. The contemporary entrepreneurial environment requires students to identify problems, test assumptions, investigate markets, analyse competitors, understand customers, develop prototypes, obtain feedback and make decisions under uncertainty. GenAI can facilitate rapid exploration of alternatives, but students must distinguish between AI-generated possibilities and evidence-based entrepreneurial judgement.

4. From creativity as an individual attribute to human-AI co-creation: Creativity remains central to entrepreneurship. GenAI can assist with brainstorming and idea generation, but its use introduces a paradox. Research indicates that AI can support creative thinking while also creating negative effects on creativity and creative confidence when used inappropriately (Guzdial *et al.,* 2024).

Students should therefore use AI to challenge assumptions, explore alternatives and refine ideas rather than outsource creativity altogether. The appropriate goal is human-AI co-creation rather than AI-dependent creativity.

5. From teacher as information provider to teacher as learning architect: If students can obtain explanations, summaries and examples from AI systems, the lecturer's value increasingly lies in designing meaningful learning experiences, providing contextual expertise, challenging assumptions, evaluating reasoning, mentoring students and connecting classroom learning to authentic business problems. UNESCO's AI Competency Framework for Teachers recognises that AI is changing the teacher-student relationship and requires educators to develop new knowledge, skills and values (Miao & Cukurova, 2024). The AI era therefore does not make the Business Education lecturer less important; it makes the intellectually capable and pedagogically adaptive lecturer more important.

The AI-Enabled Entrepreneurial Business Education Framework

Nigeria has strong reasons to pay attention to this transformation. National AI policy initiatives recognise AI as a potential contributor to economic growth, innovation, job creation and social development. At the same time, the national policy conversation identifies challenges involving skills, infrastructure, responsible use and governance. These developments have direct implications for Business Education. The programme should prepare students not only to seek employment in an AI-transformed economy but also to create value within it. This means developing graduates who can identify AI-enabled business opportunities, establish digital enterprises, improve existing businesses through AI, provide AI-supported business services, apply digital financial skills, develop digital marketing strategies, analyse business information and recognise ethical boundaries in AI use. Recent Nigerian Business Education literature has begun to examine the use of ChatGPT and AI tools in teaching and learning, indicating growing interest in the technology within the discipline. The next step is to move from awareness and tool adoption toward a coherent curriculum and competency framework.

Based on the foregoing discussion, this paper proposes the AI-Enabled Entrepreneurial Business Education Framework (AIEBEF). The framework rests on five interconnected pillars:

i) AI literacy: understanding AI concepts, capabilities, limitations and applications
ii) AI-enhanced pedagogy: using AI appropriately in teaching, learning, assessment and feedback
iii) AI-supported entrepreneurial intelligence: using AI to support opportunity recognition, creativity, problem-solving, market analysis and business-model development
iv) digital business competence: developing practical competence in digital marketing, e-commerce, data analysis, digital communication and AI-enabled business processes; and
v) ethical and critical AI use: maintaining human judgement while addressing privacy, bias, academic integrity, intellectual property, transparency and accountability.

These pillars converge in developing AI-ready entrepreneurial graduates who can contribute to digital transformation and sustainable value creation.

Reimagining the Business Education Curriculum

The implications for curriculum design are substantial. Conventional emphases such as computer literacy, information retrieval, business-plan preparation and conventional marketing should be complemented by AI and digital literacy, information evaluation, AI-supported business modelling, AI-enabled digital marketing, intelligent productivity, experiential entrepreneurship and critical problem-solving. This does not mean abandoning foundational business knowledge. Accounting, management, economics, marketing, entrepreneurship, office administration and related knowledge remain essential. The change lies in how students apply that knowledge. A student who understands accounting but cannot use contemporary digital tools may be disadvantaged; equally, a student who can use AI but lacks accounting, management or entrepreneurial understanding may produce technologically sophisticated but commercially unsound decisions. The future therefore lies in integrating disciplinary knowledge with AI capability rather than replacing disciplinary knowledge with AI.

Assessment also presents an immediate challenge. Traditional assignments that ask students to write essays, summarise topics, define concepts or prepare generic business plans can increasingly be completed with AI assistance. The response should not be limited to AI-detection exercises. Assessment should increasingly emphasise process, reasoning, application and authentic performance. Students can be required to identify a real business problem, document their initial thinking, use AI to generate alternatives, verify the information generated, compare options, justify a decision, identify the limitations of AI outputs and reflect on what they learned. Such assessment evaluates the student's thinking about AI rather than simply the AI-generated product. It also provides opportunities to assess critical thinking, judgement, creativity and ethical reasoning.

Ethical Issues and their implication

i. Academic Integrity: Students may submit AI-generated work without disclosure. The response should combine clear institutional policies with assessment redesign rather than relying exclusively on prohibition.
ii. Accuracy and Hallucination: Generative AI can produce convincing but incorrect information. Students therefore need verification skills and should be required to check consequential claims against authoritative sources.
iii. Privacy: Students should not indiscriminately upload confidential business, institutional or personal information to AI platforms. UNESCO (2023) emphasises privacy protection and institutional preparedness in relation to GenAI.
iv. Bias: AI systems can reproduce biases present in their training data or design. Business Education should teach students to interrogate AI outputs rather than accept them automatically.
v. Intellectual Property: Students need to understand ownership, attribution and responsible use of AI-generated and AI-assisted content.
vi. Overdependence: A major educational danger is the gradual outsourcing of thinking. The objective of Business Education should not be to produce graduates who ask AI to solve every problem. It should produce graduates who can use AI while retaining the capacity to think independently.

Implications for Business Education Lecturers

The transformation cannot succeed if attention is focused exclusively on students. Lecturers require continuing professional development in AI literacy, prompt design, AI-assisted pedagogy, AI-supported assessment, AI ethics, digital entrepreneurship and data literacy. For Business Education lecturers, professional competence in AI should go beyond knowing how to operate ChatGPT. Lecturers should understand when to use AI, when not to, how to evaluate its outputs, and how to integrate it into authentic entrepreneurial learning.

Implications for Universities

Universities should develop institution-wide frameworks covering acceptable AI use, academic integrity, assessment, privacy, research, intellectual property, staff development, student AI literacy and responsible procurement and deployment. An institutional AI policy should answer three practical questions: What may students use AI for? What must students disclose? What competencies must students demonstrate independently? A constructive policy should provide guidance and capacity development rather than rely only on prohibitions.

Implications for Government and Professional Bodies

Government agencies and professional bodies should support the transition through curriculum guidelines, digital infrastructure, lecturer training, research funding, industry partnerships, AI competency standards, entrepreneurship-support programmes and responsible AI governance. Professional associations such as ABEN can contribute by organising AI-focused professional development, developing model curriculum resources, encouraging research on AI and Business Education, facilitating university-industry partnerships and promoting responsible AI adoption among Business Education professionals.

Proposed Strategic Model for Business Education

Business Education departments can adopt a six-stage progression: Awareness, Literacy, Application, Integration, Innovation and Responsible Value Creation. At the awareness stage, students understand AI and its implications for business and employment. At the literacy stage, they acquire competence in using and evaluating AI. At the application stage, they use AI in authentic academic and business activities. At the integration stage, AI is embedded across appropriate courses. At the innovation stage, students use AI to develop products, services, business models and entrepreneurial solutions. At the final stage, students apply AI to create economic and social value while maintaining ethical judgement and human agency. The progression can therefore be represented as:

Awareness → Literacy → Application → Integration → Innovation → Responsible Value Creation.

This paper argues that Business Education should pursue augmentation rather than substitution. AI can augment information processing, idea generation, feedback, communication, analysis, simulation, productivity and entrepreneurial experimentation. Humans must nevertheless retain responsibility for judgement, ethical reasoning, empathy, accountability, contextual interpretation, strategic decisions, leadership and responsibility for consequences. This distinction matters because education is not simply about increasing productivity; it also develops human agency. A human-centred approach is therefore essential. UNESCO's guidance on GenAI in education emphasises ethical, safe, equitable, and meaningful use, including protecting data privacy and human agency (UNESCO, 2023).

Conclusion

Generative Artificial Intelligence represents more than another technological innovation confronting higher education. It is altering the nature of knowledge production, communication, problem-solving, creativity and business activity. For Business Education, this transformation presents both an urgent challenge and an unprecedented opportunity. The challenge is that curricula, teaching methods and assessment systems designed for a pre-GenAI environment may no longer adequately prepare students for an AI-transformed economy. The opportunity is that Business Education can use GenAI to enhance learning, develop entrepreneurial competence, support creativity and equip students for new forms of employment and enterprise. The appropriate response is neither technological resistance nor uncritical technological enthusiasm. What is required is purposeful, human-centred integration.

This paper has argued that Business Education should move from conventional digital literacy to comprehensive AI literacy; from information transmission to critical knowledge evaluation; from theoretical entrepreneurship to experiential and AI-supported entrepreneurial learning; and from technology-assisted instruction to AI-enabled, entrepreneurship-oriented education. The proposed AI-Enabled Entrepreneurial Business Education Framework provides a conceptual basis for this transformation by connecting AI literacy, AI-enhanced pedagogy, entrepreneurial intelligence, digital business competence and ethical AI use.

For Africa, this transformation must be contextual. It must address digital inequality, infrastructure constraints, skills shortages, linguistic diversity, institutional capacity and the need for inclusive economic development. Ultimately, the future relevance of Business Education will depend not on its resistance to artificial intelligence but on its capacity to educate people who can think critically with AI, work effectively alongside AI, innovate through AI and know when human judgement must prevail over AI. The goal should therefore not be to produce AI-dependent graduates, but AI-enabled entrepreneurs, professionals and business educators capable of creating sustainable economic and social value.

Recommendations

Based on the arguments advanced, the paper recommends that:

Business Education curricula should incorporate AI literacy as an integral component of contemporary business and entrepreneurial education.

AI competencies should be embedded across existing courses rather than confined to a single ICT-related course.

Business Education lecturers should receive continuous professional development in AI literacy, AI pedagogy, assessment redesign and AI ethics.

Universities should develop clear institutional policies on responsible AI use covering teaching, learning, assessment, research, privacy and academic integrity.
Assessment should increasingly emphasise authentic performance, critical reasoning, reflection, application and problem-solving rather than information reproduction.
Entrepreneurship education should incorporate AI-supported experiential learning, including business simulations, opportunity identification, market analysis and business-model development.
Government should invest in digital infrastructure and affordable connectivity to prevent AI adoption from widening existing educational inequalities.
Industry-university partnerships should be strengthened to expose Business Education students to authentic AI-enabled business practices.
African perspectives should inform AI curriculum development, including local business problems, African languages, cultural contexts and socioeconomic realities.
AI adoption should remain human-centred, with critical thinking, creativity, ethical judgement, accountability and human agency maintained as core educational outcomes.

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ARTIFICIAL INTELLIGENCE AND AUTOMATION AS PREDICTORS OF ENTREPRENEURIAL LEARNING AND PRACTICE OF COOPERATIVE ECONOMICS AND MANAGEMENT BY BUSINESS EDUCATION STUDENTS IN NIGERIAN UNIVERSITIES IN SOUTH-EAST

Favour Moghalu

Abstract

This study examined artificial intelligence and automation as predictors of entrepreneurial learning and practice of Cooperative Economics and Management among Business Education students in Nigerian universities in South-East. The study adopted a correlational research design. The population comprised 562 third- and final-year Business Education students from four federal universities in South-East Nigeria, and the entire population was used through census sampling. Data were collected using a structured questionnaire, which was validated by three experts and pilot-tested, yielding a Cronbach Alpha reliability coefficient of 0.78. Data were analysed using mean and standard deviation to answer the research questions, while simple linear regression was used to test the four null hypotheses at the 0.05 level of significance. The findings showed that artificial intelligence predicted entrepreneurial learning to a high extent (cluster mean = 3.22) and significantly predicted entrepreneurial learning ($R = 0.681$, $R^2 = 0.464$, $p = 0.034$). Automation also predicted entrepreneurial learning to a high extent (cluster mean = 3.24) and significantly predicted it ($R = 0.624$, $R^2 = 0.389$, $p < 0.001$). Artificial intelligence predicted entrepreneurial practice to a high extent (cluster mean = 3.20) and significantly predicted entrepreneurial practice ($R = 0.647$, $R^2 = 0.419$, $p < 0.001$). Automation similarly predicted entrepreneurial practice to a high extent (cluster mean = 3.23) and had the strongest predictive relationship with entrepreneurial practice ($R = 0.716$, $R^2 = 0.513$, $p < 0.001$). The study concluded that artificial intelligence and automation significantly and positively predict entrepreneurial learning and practice. It was recommended that Business Education programmes integrate AI and automation into entrepreneurship courses and provide students with practical, technology-supported entrepreneurial learning experiences.

Keywords: *Artificial intelligence, automation, entrepreneurial learning, entrepreneurial practice, Cooperative Economics and Management, Business Education*

Introduction

In the business environment of today, there is a rapid technological advancement, competition increase, dynamic expectations of consumers and the rising demands for individuals, groups and organisations to improve in their acquired knowledge, skills and competencies. Business Education Departments in Universities are therefore expected to graduate students for conventional employment and entrepreneurial activities, innovation and ownership of businesses. The importance of Business Education cannot be overemphasized in this context because it involves the combination of theoretical knowledge with practical competencies required for effective participation in economic and organisational world. In Nigerian, it has become very necessary for business education to be included in every level of education because of unavailability of job, thus the need for graduates to be equipped with competencies that can support self-employment, creation of enterprise and effective management of existing businesses. Studies have shown that entrepreneurship education among Nigerian undergraduates can contribute to competencies such as opportunity recognition, creative problem-solving, self-efficacy and networking, although the outcomes depend considerably on the nature and quality of learning experiences provided to students (Tarelate, 2024). Based on the changing environment, artificial intelligence and automation has become important technological factors that may influence how Business Education students acquire entrepreneurial knowledge and how they subsequently apply that knowledge in business practice.

Artificial intelligence (AI), in the context of this study, is a collection of computer-based systems that can process information and perform tasks that are naturally possible by human intelligence, such as

learning, reasoning, prediction, problem-solving, language processing and decision-making. AI system as described by the Organisation for Economic Co-operation and Development (OECD, 2024) in terms of a machine-based system that, for explicit or implicit objectives, infers from inputs how to generate outputs such as predictions, content, recommendations or decisions that can influence physical or virtual environments. Bell and Bell (2023) stated that generative AI is important for business education because it influences the way entrepreneurial knowledge is acquired and the way to identify future emerging business opportunities. Likewise, research has shown that AI-supported learning activities can improve some parts of entrepreneurial skills when AI tools are incorporated with other learning methods (Alam et al., 2024).

Artificial intelligence is relevant in this context because of its potential to change the process through which students attain, create and relate entrepreneurial knowledge. Entrepreneurial learning refers, in this study, to the process through which Business Education students gain knowledge, skills, attitudes and competent experiences that enable them to identify opportunities, develop business ideas, solve problems, make decisions, manage resources and learn from entrepreneurial experiences. This type of learning is not just that of memorising definitions and principles of entrepreneurship, it also involves learn from practical business environment and putting into practice what is being learnt A study found that experiential methods and experiences outside classroom can have a positive influence on students' attitudes and intentions towards entrepreneurship (Alam, et al, 2024). Thus, AI is a technological predictor that influences the differences in the entrepreneurial learning experiences of Business Education students.

Closely connected with AI is automation, which is the second predictor variable in the study. Automation, in the context of this study, refers to the use of technological systems, software and digital processes to perform tasks that have little or no direct human interference. In business, automation may consist of regular data entry, processing of transaction, keeping of record, customer communication, scheduling, marketing activities, financial calculations and other repetitive processes. AI and Modern automation overlaps in context because AI intelligent systems can make automated processes more adaptive and reactive to changing information. The OECD (2024) notes that AI can perform automation tasks, enhance the capabilities of humans and change business activities, while robotic automation can be used for custom and recurring activities such as data entry, transaction processing and records management. Business Education students therefore need exposure to automation for entrepreneurial learning because students are required to understand how businesses are traditionally managed and how technology can redesign the processes of business. Therefore, Business Education should enable students to identify tasks that can be automated, determine the advantages and disadvantages of automation and develop the capacity to manage technology-assisted enterprises.

Automation and entrepreneurial learning are closely related, a business education graduate operating in a technology-driven environment needs not just the traditional bookkeeping, marketing or management knowledge but automation. They needs to understand how digital tools can reduce repetitive work, improve efficiency, minimise errors, enhance customer service and provide timely information for taking decision. A better understanding of how contemporary enterprises operate is developed by Business Education students when they learn about automation through practical activities, simulations and technology-supported projects. Through automation, students learn by designing, testing and evaluating technology-supported business processes. The OECD (2024) emphasises that the economic effects of AI include changes in output, innovation, work organisation and the tasks distribution between machines and human.

The second major construct requiring contextual consideration is entrepreneurial practice. Entrepreneurial practice, in this study is the application of entrepreneurial knowledge, skills, attitudes and competencies in identifying opportunities, value creation, setting up and running ventures, getting resources, advertising and selling products or services, making decisions and responding to challenges. Entrepreneurial practice is concerned with what an individual can do with entrepreneurial knowledge rather than merely what the individual knows. For Business Education students, the ultimate purpose of entrepreneurial learning is for both academic performance and the ability to apply business knowledge in real entrepreneurial situations. Entrepreneurship education is associated with the development of several competencies pertinent to business start-up, including opportunity recognition, opportunity assessment, creative problem-solving and self-efficacy (Nigerian Universities' entrepreneurship research, 2024).

The relevance of AI to entrepreneurial practice shows the way entrepreneurs can use intelligent technologies to identify opportunities, conduct market research, generate ideas, analyse customer information, develop promotional materials, prepare business plans and support decision-making. AI can

reduce the time and resources required for some entrepreneurial activities but also provide access to potentials that may have been available to larger organisations. Generative AI can automate tasks, enhance skills, support creativity and innovation, accelerate research and development and lower some barriers to business entry (OECD, 2025). For Business Education students, AI competence should be connected to practical entrepreneurial competence. Students who learn to use AI responsibly may be better positioned to integrate technology into opportunity identification, business planning, marketing, customer engagement and other entrepreneurial activities. A study on the impact of AI on students' entrepreneurial competencies showed that AI technologies can influence entrepreneurial competencies when integrated with appropriate learning methods, with students using ChatGPT to improve their business model canvas as part of the learning process (Alam et al., 2024).

Cooperative Economics and Management provide an important contextual field for examining these relationships. In this study, Cooperative Economics and Management is the study and application of economic, managerial and entrepreneurial principles to the creation, operation, administration and development of cooperative enterprises. It includes knowledge of cooperative organisation, economic decision-making, financial management, leadership, member relations, resource mobilisation, enterprise development and management of cooperative businesses. The Lagos State Cooperative College, for example, describes Cooperative Economics and Management as a field concerned with applying economic theories and methods to managerial decisions in cooperatives and preparing learners to lead and manage cooperative firms (Lagos State Cooperative College, 2025). The connection between Cooperative Economics and Management and entrepreneurial learning is particularly important because cooperative enterprises require individuals who can combine economic understanding with practical management and entrepreneurial competencies. Business Education students who acquire knowledge of cooperative economics and management are expected to understand how cooperative organisations mobilise resources, identify members' economic needs, create products and services, manage finances, respond to market conditions and pursue sustainable enterprise development. Furthermore, the relationship between AI, automation and Cooperative Economics and Management is also becoming increasingly significant because cooperative organisations operate in an environment in which digital technologies are transforming business processes. AI can support market analysis, financial forecasting, customer relationship management, communication, decision support and business planning, while automation can streamline routine administrative and operational tasks. The OECD (2024) states that opportunities are presented by AI adoption for productivity and innovation and also raises issues related to inequality, security, trust and the distribution of benefits. Therefore, entrepreneurial learning should prepare students not just for AI and automation use but to evaluate their right application in cooperative and entrepreneurial contexts.

Business Education students in South-East Nigerian Universities, provides the population and educational context within which the stated variables can be examined. Business Education students are persons that undertake preparation at university level in business-related knowledge and skills with the purpose of functioning effectively as employees, managers, entrepreneurs, educators or business owners. Within Nigeria, the university environment has increasingly been expected to promote entrepreneurship and innovation as responses to graduate unemployment and changing labour-market requirements (Bell & Bell, 2023).

Although previous studies have examined AI in education, AI and entrepreneurial competencies, entrepreneurship education and entrepreneurial intentions, and AI applications in Business Education, the specific predictive relationship among artificial intelligence, automation, entrepreneurial learning and entrepreneurial practice within Cooperative Economics and Management among Business Education students in South-East South-East Nigerian Universities remains insufficiently explored. Hence the need for the topic "Artificial Intelligence and Automation as Predictors of Entrepreneurial Learning and Practice of Cooperative Economics and Management by Business Education Students in South-East Nigerian Universities". The study predicts that AI and automation may provide students with new ways of acquiring entrepreneurial knowledge and applying that knowledge to business activities. Artificial intelligence represents the intelligent technological capability that can support learning, analysis, creativity and decision-making, while automation represents the technological capability to execute routine or repetitive processes with reduced human interference. Entrepreneurial learning represents the acquisition and development of competencies required for entrepreneurial action, whereas entrepreneurial practice represents the application of those competencies in actual business activities. Examining AI and automation

as predictors of these outcomes is therefore important for determining whether technological exposure is associated with stronger entrepreneurial capabilities among Business Education students.

Statement of the Problem

It is expected that Business Education students in South-East Nigerian Universities are to graduate with strong entrepreneurial learning and practical competencies that enable them to identify business opportunities, develop ideas that are innovative, make informed decisions, manage enterprises and adapt to changes in the business environment. Business Education students are expected to combine knowledge of cooperative principles, economics and management with practical entrepreneurial skills that can support the establishment, growth and sustainability of cooperative and other business ventures. The rising use of artificial intelligence (AI) and automation in present day businesses also makes it necessary for students to understand and utilise these technologies as part of their entrepreneurial preparation. AI should enable students to access information, analyse markets, generate and evaluate business ideas, support decision-making and enhance creativity, while automation should help them understand how repetitive business processes can be streamlined for greater efficiency. Ideally, therefore, university Business Education programmes should integrate AI and automation meaningfully into entrepreneurial learning and practice so that graduates will have not just conventional business competencies but also technology-enabled entrepreneurial capabilities.

However, the present academic situation creates a gap between the desired technology-driven entrepreneurial competencies and the actual learning and practice of Business Education students in South-East Nigerian Universities. It is not sufficiently clear whether Business Education students are adequately exposed to, understand and utilise these technologies in learning and entrepreneurial activities, particularly within Cooperative Economics and Management. Theoretical knowledge may be acquired by students without adequate competence in applying emerging technologies to opportunity identification, business planning, marketing, financial management, customer engagement and other entrepreneurial activities. Also, it is uncertain the extent to which AI and automation contribute to students' entrepreneurial learning and translate into actual entrepreneurial practice. Existing studies have considered entrepreneurship education, entrepreneurial competencies and the application of AI in education separately, but there is limited empirical evidence establishing whether AI and automation significantly predict entrepreneurial learning and practice among Business Education students in South-East Nigerian Universities. This will lead to universities producing graduates who possess conventional business knowledge but are insufficiently prepared for technology-driven entrepreneurial environments.

It is against this backdrop that this research seeks to provide empirical evidence on the predictive influence of artificial intelligence and automation on entrepreneurial learning and practice of Cooperative Economics and Management by Business Education students in South-East Nigerian Universities. The study will determine the extent to which AI and automation predict students' entrepreneurial learning and whether these technological factors are associated with their ability to apply entrepreneurial knowledge and competencies in practice.

Research Questions

The following research questions guided the study:

1. To what extent does artificial intelligence predict the entrepreneurial learning of Cooperative Economics and Management among Business Education students in South-East Nigerian Universities?
2. To what extent does automation predict the entrepreneurial learning of Cooperative Economics and Management among Business Education students in South-East Nigerian Universities?
3. To what extent does artificial intelligence predict the entrepreneurial practice of Cooperative Economics and Management among Business Education students in South-East Nigerian Universities?
4. To what extent does automation predict the entrepreneurial practice of Cooperative Economics and Management among Business Education students in South-East Nigerian Universities?

Research Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

1. Artificial intelligence does not significantly predict the entrepreneurial learning of Cooperative Economics and Management among Business Education students in South-East Nigerian Universities.
2. Automation does not significantly predict the entrepreneurial learning of Cooperative Economics and Management among Business Education students in South-East Nigerian Universities.
3. Artificial intelligence does not significantly predict the entrepreneurial practice of Cooperative Economics and Management among Business Education students in South-East Nigerian Universities.

4. Automation does not significantly predict the entrepreneurial practice of Cooperative Economics and Management among Business Education students in South-East Nigerian Universities.

Methodology

The correlational research design was used for the study. The area covered in the study was the South-East geopolitical zone of Nigeria. The population of the study comprises 562 third and final-year Business Education students in four federal universities in South-East Nigeria offering Business Education programmes. The population consists of 111 students from the University of Nigeria, Nsukka, comprising 65 third-year and 46 final-year students; 203 students from Nnamdi Azikiwe University, Awka, comprising 109 third-year and 94 final-year students; 130 students from Alvan Ikoku Federal University of Education, Owerri, comprising 54 third-year and 76 final-year students; and 118 students from Alex Ekwueme Federal University, Ndufu-Alike, comprising 36 third-year and 82 final-year students. The population of 562 students was obtained from the various departmental offices. The third- and final-year students are considered appropriate for the study because they have acquired sufficient exposure to Business Education courses, entrepreneurship-related knowledge and the university learning environment to provide informed responses concerning artificial intelligence, automation, entrepreneurial learning and entrepreneurial practice. Since the population of 562 students is manageable, the entire population was used for the study; therefore, a census sampling was used. A structured questionnaire was used for data collection, developed by the researcher based on the objectives and research questions of the study. The instrument was validated by three experts: two experts in Business Education and one expert in Measurement and Evaluation. The questionnaire was pilot-tested using 21 Business Education students in Enugu State University of Science and Technology (ESUT) outside the study area, and the data obtained was analysed using the Cronbach Alpha approach to determine the reliability coefficient of the instrument. A reliability coefficient of 0.78 was obtained, indicating that the instrument is reliable. The questionnaire was administered to the 562 Business Education students electronically through Google Forms. The link was distributed to the respondents through appropriate departmental communication channels, including WhatsApp groups, email and other approved online platforms, with the assistance of relevant departmental contacts. The researcher monitored the response rate and sent reminders to respondents where necessary. The data collected was analysed using mean and standard deviation to answer the research questions, while simple linear regression analysis was used to test the four null hypotheses at a 0.05 level of significance. Simple linear regression was appropriate for determining the extent to which artificial intelligence and automation predict entrepreneurial learning and entrepreneurial practice of Cooperative Economics and Management among Business Education students in South-East Nigerian Universities.

Results

Research Question One: To what extent does artificial intelligence predict the entrepreneurial learning of Cooperative Economics and Management among Business Education students in Nigerian universities?

Table 1: Mean and Standard Deviation of Artificial Intelligence as a Predictor of Entrepreneurial Learning

S/N	Artificial Intelligence and Entrepreneurial Learning	$\bar{X}$	SD	Decision
1	AI tools help me generate ideas for cooperative and entrepreneurial ventures.	3.28	0.69	High Extent
2	I use AI to search for information relevant to cooperative enterprise development.	3.35	0.65	High Extent
3	AI helps me identify potential business opportunities.	3.22	0.73	High Extent
4	I use AI applications to understand current entrepreneurial trends.	3.31	0.67	High Extent
5	AI assists me in developing solutions to business-related problems.	3.19	0.77	High Extent
6	I use AI to improve my understanding of cooperative business management.	3.26	0.71	High Extent
7	AI helps me acquire new entrepreneurial knowledge beyond classroom instruction.	3.33	0.66	High Extent
8	I use AI to explore new products and services that can be developed into businesses.	3.18	0.79	High Extent
9	AI assists me in analysing information needed for entrepreneurial decision-making.	3.15	0.81	High Extent
10	I use AI to develop and improve entrepreneurial skills.	3.24	0.72	High Extent
11	AI helps me understand customer needs and preferences.	3.12	0.84	High Extent
12	I use AI to learn how to prepare business plans and proposals.	3.08	0.86	High Extent

13	AI enables me to learn about innovative approaches to running a business.	3.29	0.70	High Extent
14	AI helps me evaluate alternative solutions to entrepreneurial challenges.	3.17	0.78	High Extent
15	AI enhances my ability to independently learn entrepreneurial concepts and practices.	3.25	0.74	High Extent
	Cluster Mean	**3.22**	**0.75**	**High Extent**

Source: Field Work (2026)

The results in Table 1 show that artificial intelligence predicts entrepreneurial learning to a high extent. The item means range from 3.08 to 3.35, while the cluster mean of 3.22 indicates a high extent. The result suggests that AI supports students' acquisition of entrepreneurial knowledge through activities such as information searching, business-idea generation, opportunity identification, problem-solving, business planning and independent learning.

Research Question Two: To what extent does automation predict the entrepreneurial learning of Cooperative Economics and Management among Business Education students in Nigerian universities?

Table 2: Mean and Standard Deviation of Automation as a Predictor of Entrepreneurial Learning

S/N	Automation and Entrepreneurial Learning	$\bar{X}$	SD	Decision
1	Automated tools help me learn how routine business activities are performed.	3.20	0.75	High Extent
2	I use automated applications to practise business-related tasks.	3.14	0.81	High Extent
3	Automation helps me understand efficient business processes.	3.27	0.70	High Extent
4	Automated systems help me learn how to manage business information.	3.22	0.73	High Extent
5	I use automation to improve my understanding of modern business operations.	3.30	0.68	High Extent
6	Automation helps me learn how technology can reduce repetitive business activities.	3.34	0.65	High Extent
7	I use automated tools to improve my entrepreneurial problem-solving skills.	3.11	0.83	High Extent
8	Automation exposes me to technology-driven methods of managing enterprises.	3.28	0.71	High Extent
9	Automated applications help me learn about digital business processes.	3.25	0.74	High Extent
10	I use automation tools to improve my productivity when learning entrepreneurial activities.	3.18	0.79	High Extent
11	Automation helps me understand how businesses can improve efficiency.	3.36	0.64	High Extent
12	Automated technologies help me develop practical entrepreneurial skills.	3.16	0.80	High Extent
13	I use automated systems to organize information for entrepreneurial learning.	3.09	0.85	High Extent
14	Automation enables me to learn how technology can support cooperative enterprises.	3.24	0.76	High Extent
15	Automated technologies enhance my understanding of technology-based entrepreneurship.	3.32	0.67	High Extent
	Cluster Mean	**3.24**	**0.74**	**High Extent**

Source: Field Work (2026)

Table 2 indicates that automation predicts entrepreneurial learning to a high extent, with a cluster mean of 3.24. This indicates that automated technologies contribute considerably to students' understanding of efficient business processes, digital business operations, productivity and technology-driven entrepreneurial activities.

Research Question Three: To what extent does artificial intelligence predict the entrepreneurial practice of Cooperative Economics and Management among Business Education students in Nigerian universities?

Table 3: Mean and Standard Deviation of Artificial Intelligence as a Predictor of Entrepreneurial Practice

S/N	Artificial Intelligence and Entrepreneurial Practice	$\bar{X}$	SD	Decision
1	I use AI to identify practical business opportunities.	3.18	0.78	High Extent
2	I use AI-generated information when making business decisions.	3.12	0.82	High Extent
3	AI helps me develop practical business ideas.	3.25	0.73	High Extent
4	I use AI to understand customer preferences when developing business ideas.	3.10	0.85	High Extent
5	AI assists me in developing marketing strategies for business activities.	3.21	0.76	High Extent
6	I use AI to improve the presentation of business products and services.	3.29	0.70	High Extent
7	AI helps me solve practical problems encountered in entrepreneurial activities.	3.16	0.79	High Extent
8	I use AI to improve the quality of business-related communication.	3.31	0.68	High Extent
9	AI helps me analyse information before undertaking entrepreneurial activities.	3.20	0.74	High Extent
10	I use AI to identify innovative ways of performing business activities.	3.27	0.71	High Extent
11	AI supports my ability to plan entrepreneurial activities.	3.14	0.81	High Extent
12	I use AI to improve the efficiency of entrepreneurial activities.	3.23	0.75	High Extent
13	AI helps me develop solutions to customer-related problems.	3.08	0.87	High Extent
14	I use AI to explore new markets for entrepreneurial activities.	3.19	0.77	High Extent
15	AI encourages me to apply innovative approaches in practical business activities.	3.26	0.72	High Extent
	Cluster Mean	**3.20**	**0.77**	**High Extent**

Source: Field Work (2026)

The result in Table 3 indicates that artificial intelligence predicts entrepreneurial practice to a high extent, with a cluster mean of 3.20. This suggests that students perceive AI as useful in translating entrepreneurial knowledge into practice, particularly in business opportunity identification, marketing, customer analysis, planning, communication and problem-solving.

Research Question Four: To what extent does automation predict the entrepreneurial practice of Cooperative Economics and Management among Business Education students in Nigerian universities?

Table 4: Mean and Standard Deviation of Automation as a Predictor of Entrepreneurial Practice

S/N	Automation and Entrepreneurial Practice	$\bar{X}$	SD	Decision
1	I use automated tools to perform routine entrepreneurial activities.	3.25	0.72	High Extent
2	Automation helps me complete business tasks more quickly.	3.32	0.67	High Extent
3	I use automated systems to organize business information.	3.18	0.79	High Extent
4	Automation helps me manage repetitive business activities.	3.35	0.64	High Extent
5	I use automated tools to improve business productivity.	3.29	0.69	High Extent
6	Automation assists me in managing customer-related activities.	3.11	0.83	High Extent
7	I use automated systems to support marketing activities.	3.16	0.81	High Extent
8	Automation helps reduce errors when performing routine business activities.	3.27	0.73	High Extent
9	I use automated technologies to improve business communication.	3.19	0.77	High Extent
10	Automation enables me to provide faster responses to customers.	3.14	0.82	High Extent
11	I use automation to monitor business-related activities.	3.08	0.86	High Extent
12	Automated tools help me manage time effectively during entrepreneurial activities.	3.30	0.68	High Extent
13	I use automated systems to improve the efficiency of business transactions.	3.24	0.75	High Extent
14	Automation helps me perform entrepreneurial activities with less manual effort.	3.36	0.63	High Extent
15	I use automation to improve the overall performance of entrepreneurial activities.	3.22	0.76	High Extent

Cluster Mean	**3.23**	**0.75**	**High Extent**

Source: Field Work (2026)

Table 4 shows that automation predicts entrepreneurial practice to a high extent, with a cluster mean of 3.23. The result indicates that automation is perceived as useful for improving productivity, managing repetitive tasks, reducing errors, saving time, supporting customer management and improving the efficiency of entrepreneurial activities.

Test of Hypotheses

The four null hypotheses were tested using simple linear regression analysis at the 0.05 level of significance.

Hypothesis One: Artificial intelligence does not significantly predict the entrepreneurial learning of Cooperative Economics and Management among Business Education students in Nigerian universities.

Table 5: Simple Linear Regression of Artificial Intelligence on Entrepreneurial Learning

Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of Estimate	Coefficient β
1	0.681[a]	0.464	0.463	4.420	0.681

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.	Decision
Regression	9,274.68	1	9,274.68	474.94	0.034	S
Residual	10,938.32	560	19.53			
Total	20,213.00	561				

Source: Field Work (2026)

The result in Table 5 shows that artificial intelligence significantly predicts entrepreneurial learning among Business Education students. The correlation coefficient of R is 0.681 indicating a strong positive relationship between artificial intelligence and entrepreneurial learning. The coefficient of determination R^2 is 0.464 indicating that artificial intelligence explains 46.4% of the variation in entrepreneurial learning, while the remaining 53.6% is attributable to other factors outside the model.

The regression model was statistically significant, $F(1, 560) = 474.94$, $p = 0.034$. Artificial intelligence made a significant positive contribution to entrepreneurial learning ($\beta = 0.681$, $p < 0.05$). Since the significance value is less than 0.05, Hypothesis one is rejected. Therefore, artificial intelligence significantly predicts the entrepreneurial learning of Cooperative Economics and Management among Business Education students in Nigerian universities.

Hypothesis Two: Automation does not significantly predict the entrepreneurial learning of Cooperative Economics and Management among Business Education students in Nigerian universities.

Table 6: Simple Linear Regression of Automation on Entrepreneurial Learning

Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of Estimate	Coefficient β
1	0.624[a]	.389	0.388	4.716	0.624

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.	Decision
Regression	7,868.10	1	7,868.10	353.99	<0.001	S
Residual	12,344.90	560	22.04			
Total	20,213.00	561				

Source: Field Work (2026)

Table 6 indicates that automation significantly predicts entrepreneurial learning among Business Education students. The correlation coefficient of R = 0.624 indicates a positive relationship between automation and entrepreneurial learning. The R^2 value of 0.389 shows that automation explains 38.9% of the variation in entrepreneurial learning.

The regression model was statistically significant, $F(1, 560) = 353.99$, $p < 0.001$. Automation made a significant positive contribution to entrepreneurial learning ($\beta = 0.624$, $p < 0.001$). Since the significance value is less than 0.05, Hypothesis two is rejected. Therefore, automation significantly predicts the

entrepreneurial learning of Cooperative Economics and Management among Business Education students in Nigerian universities.

Hypothesis Three: Artificial intelligence does not significantly predict the entrepreneurial practice of Cooperative Economics and Management among Business Education students in Nigerian universities.

Table 7: Simple Linear Regression of Artificial Intelligence on Entrepreneurial Practice

Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of Estimate	Coefficient β
1	0.647	0.419	0.418	4.105	0.647

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.	Decision
Regression	8,436.48	1	8,436.48	402.87	<.001	S
Residual	10,095.52	560	18.03			
Total	18,532.00	561				

Source: Field Work (2026)

Table 7 shows that artificial intelligence significantly predicts entrepreneurial practice among Business Education students. The R value of 0.647 indicates a strong positive relationship between artificial intelligence and entrepreneurial practice. The R^2 value of 0.419 indicates that artificial intelligence explains 41.9% of the variation in entrepreneurial practice.

The regression model was statistically significant, $F(1, 560) = 402.87$, $p < 0.001$. Artificial intelligence significantly and positively predicted entrepreneurial practice ($\beta = 0.647$, $p < .001$). Since the significance value is less than 0.05, Hypothesis three is rejected. Therefore, artificial intelligence significantly predicts the entrepreneurial practice of Cooperative Economics and Management among Business Education students in Nigerian universities.

Hypothesis Four: Automation does not significantly predict the entrepreneurial practice of Cooperative Economics and Management among Business Education students in Nigerian universities.

Table 8: Simple Linear Regression of Automation on Entrepreneurial Practice

Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of Estimate	Coefficient β
1	0.716	0.513	0.512	3.747	0.716

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.	Decision
Regression	9,500.00	1	9,500.00	586.71	<.001	S
Residual	9,032.00	560	16.13			
Total	18,532.00	561				

Source: Field Work (2026)

Table 8 indicates that automation significantly predicts entrepreneurial practice among Business Education students. The R value of 0.716 indicates a strong positive relationship between automation and entrepreneurial practice. The R^2 value of 0.513 indicates that automation explains 51.3% of the variation in entrepreneurial practice.

The regression model was statistically significant, $F(1, 560) = 586.71$, $p < .001$. Automation significantly and positively predicted entrepreneurial practice ($\beta = .716$, $p < .001$). Since the significance value is less than 0.05, Hypothesis four is rejected. Therefore, automation significantly predicts the entrepreneurial practice of Cooperative Economics and Management among Business Education students in Nigerian universities.

Discussion of Findings

The first finding revealed that artificial intelligence significantly predicts the entrepreneurial learning of Cooperative Economics and Management among Business Education students. The descriptive result showed a high extent of AI influence, with a cluster mean of 3.22, while the regression analysis indicated a strong positive relationship ($R = 0.681$) and that AI explained 46.4% of the variation in entrepreneurial learning. The finding implies that students who engage more with AI for information searching, idea generation, opportunity identification, problem-solving, business planning and independent learning are likely to demonstrate stronger entrepreneurial learning. This finding agrees with Bell and Bell (2023), who

noted that generative AI is capable of changing how entrepreneurial knowledge is acquired and how students identify emerging business opportunities. It is also consistent with Alam, Singh and Gupta (2024), who found that AI-supported learning activities can contribute to the development of students' entrepreneurial competencies when integrated with appropriate learning approaches. Similarly, Vecchiarini and Somia (2023) argued that entrepreneurship education needs to be redefined in response to artificial intelligence and the changing technological environment. The present finding therefore provides empirical support for the view that AI can serve not merely as an information-access tool but also as a facilitator of entrepreneurial learning among Business Education students. However, the fact that AI accounted for 46.4% of the variation also suggests that entrepreneurial learning is influenced by other factors beyond AI.

The second finding showed that automation significantly predicts entrepreneurial learning among Business Education students. The descriptive result produced a cluster mean of 3.24, indicating a high extent, while the regression analysis produced $R = 0.624$ and $R^2 = 0.389$. Thus, automation explained 38.9% of the variation in entrepreneurial learning. The result indicates that exposure to automated systems can help students understand routine business processes, improve productivity, manage business information and appreciate how technology can improve efficiency. This finding is consistent with the OECD (2024), which explains that AI and related technologies can automate tasks, enhance human capabilities and transform the organisation and distribution of work. It also agrees with Filippucci, Gal, Jona-Lasinio, Leandro and Nicoletti (2024), whose work highlighted the relationship between AI, productivity and changes in business activities. In the context of Business Education, the finding suggests that learning about automation can move students beyond theoretical understanding of business operations toward appreciation of technology-supported processes. The result also supports the position of Ore and Hassan (2023) that Business Education curriculum content should contribute to entrepreneurial skills development. Nevertheless, the R^2 of 38.9% indicates that automation, although important, is not the sole determinant of entrepreneurial learning.

The third finding established that artificial intelligence significantly predicts entrepreneurial practice among Business Education students. The result showed a cluster mean of 3.20, while the regression analysis produced $R = 0.647$ and $R^2 = 0.419$, indicating that AI accounted for 41.9% of the variation in entrepreneurial practice. The finding suggests that students are able to apply AI in practical entrepreneurial activities such as identifying opportunities, developing business ideas, analysing customers, preparing marketing strategies, improving communication, solving business problems and planning entrepreneurial activities. This agrees strongly with Alam, Singh and Gupta (2024), who reported that AI technologies can influence entrepreneurial competencies when they are incorporated into appropriate learning activities, including the use of ChatGPT in developing business model canvases. The finding is also consistent with OECD (2025), which identified the potential of generative AI to automate tasks, support creativity and innovation, accelerate research and development and reduce some barriers to business entry. Furthermore, Bell and Bell (2023) argued that entrepreneurship education in the era of generative AI should prepare learners to exploit emerging technological possibilities. The present finding therefore demonstrates that AI is relevant not only to what students learn about entrepreneurship but also to how they apply entrepreneurial knowledge and competencies in practice.

The fourth finding revealed that automation significantly predicts entrepreneurial practice, with the strongest predictive relationship among the four relationships examined. The descriptive result had a cluster mean of 3.23, while the regression analysis yielded $R = 0.716$ and $R^2 = 0.513$. This means that automation explained 51.3% of the variation in entrepreneurial practice. The finding indicates that automation is particularly relevant to practical entrepreneurial activities because it can enable students to perform routine tasks more quickly, reduce errors, manage repetitive activities, improve productivity, manage time and increase the efficiency of business transactions. This result is in line with the OECD (2024), which observed that technological systems can transform business activities, task distribution and work organisation. It also supports OECD (2025), which identified productivity, innovation and entrepreneurship as areas in which generative AI and related technologies can have significant effects. The finding is further consistent with Amahi, Otomiewo and Egeonu (2025) and Eigege (2025), who examined the application of AI and related technologies within Business Education and entrepreneurship practice and highlighted their potential opportunities alongside implementation challenges. The relatively high R^2 of 51.3% suggests that automation may have particular practical value because entrepreneurial practice involves the performance of actual business activities where efficiency, speed, accuracy and reduction of repetitive work are important.

Overall, the four findings consistently demonstrate that both artificial intelligence and automation are significant positive predictors of entrepreneurial learning and entrepreneurial practice among Business Education students. AI showed a stronger predictive relationship with entrepreneurial learning (R = 0.681) than automation (R = 0.624), whereas automation showed a stronger relationship with entrepreneurial practice (R = 0.716) than AI (R = 0.647). This pattern is meaningful because AI is particularly associated with activities involving knowledge acquisition, information analysis, idea generation and decision support, whereas automation is more directly connected with the efficient performance of routine and operational business activities. The findings therefore support the broader literature in the study which presents emerging technologies as important components of contemporary entrepreneurship education. At the same time, the unexplained proportions of variance indicate that AI and automation should not be viewed as the only determinants of entrepreneurial learning and practice. Factors such as curriculum content, teaching approaches, access to technology, students' digital competence, institutional support and entrepreneurial learning experiences may also contribute. This interpretation is consistent with Tarelate (2024), who observed that entrepreneurship education can contribute to entrepreneurial competencies, but that outcomes depend considerably on the nature and quality of learning experiences provided.

Conclusion

Based on the findings, the study concludes that artificial intelligence and automation are significant positive predictors of entrepreneurial learning and entrepreneurial practice of Cooperative Economics and Management among Business Education students in Nigerian universities. Artificial intelligence contributes substantially to students' acquisition of entrepreneurial knowledge, opportunity identification, idea generation, problem-solving, business planning and independent learning. Automation, on the other hand, enhances students' understanding of efficient business processes and technology-driven operations. Both technologies also contribute to the practical application of entrepreneurial competencies, with automation demonstrating the strongest predictive relationship with entrepreneurial practice. The findings consequently indicate that integrating AI and automation into Business Education can strengthen students' preparation for technology-driven entrepreneurial environments. However, since substantial proportions of the variations in entrepreneurial learning and practice remain unexplained, technology integration should be complemented by appropriate curriculum content, practical learning experiences, competent lecturers and adequate institutional support.

Recommendations

Based on the findings, the following recommendations emerged:

1. Business Education programmes should integrate artificial intelligence into entrepreneurship and Cooperative Economics and Management courses through practical activities involving AI-assisted research, business-idea generation, market analysis, business planning and problem-solving.
2. Universities should provide students with practical exposure to automation technologies by incorporating simulations, automated business applications and technology-supported projects into entrepreneurial learning.
3. Business Education lecturers should receive regular training and professional development on AI and automation.
4. Universities should strengthen access to digital infrastructure and relevant technology resources.
5. Entrepreneurship education should combine AI and automation with experiential learning.

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ENTREPRENEURIAL PEDAGOGY AND SKILL DEVELOPMENT AMONG BUSINESS EDUCATION GRADUATES IN RIVERS STATE-OWNED UNIVERSITIES

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Abstract

This study investigated the relationships between entrepreneurial pedagogy and skill development among Business Education graduates in universities in Rivers State, Nigeria. The study was guided by three research questions and null hypotheses tested at 0.05 level of significance. The population consisted 144 postgraduate students enrolled in Business Education programmes in Rivers State-owned universities, Nigeria, namely Ignatius Ajuru University of Education (86 students) and Rivers State University (58 students). A correlational research design was used for the study. A census sampling procedure was employed, and data were collected from 138 respondents who correctly completed and returned the questionnaires, representing a 95.8% response rate. Two structured instruments developed by the researcher, titled "Entrepreneurial Pedagogy Questionnaire" (EPQ) and "Entrepreneurial Skill Development Questionnaire" (ESDQ) were used to collect data. The instruments were validated by three experts. The reliability yielded coefficients of 0.86 and 0.89 using Pearson Product Moment Correlation Coefficient. Data collected were analyzed using Pearson Product Moment Correlation Coefficient to answer the research questions and test the null hypotheses at 0.05 level of significance. The findings revealed that: there was a strong positive relationship between the use of experiential learning and problem-based learning methods and entrepreneurial skill development among Business Education graduates. The null hypotheses were not significant, indicating statistically significant relationships between pedagogical dimensions and entrepreneurial skill development. The study concluded that the pedagogical approaches institutionalized in Business Education programmes significantly influence how graduates develop entrepreneurial skills. It was recommended that Business Education curriculum planners and lecturers in Rivers State-owned universities should intentionally integrate experiential learning methods including business simulations, enterprise creation projects, to ensure that students encounter progressively complex experiential learning opportunities throughout their academic programmes, enabling them to develop practical business capabilities.

Keywords: Entrepreneurial Pedagogy, Skill Development, and Business Education

Introduction

Entrepreneurial pedagogy has arisen as an important area in the contemporary educational setting, fundamentally reshaping how entrepreneurial competencies are cultivated, nurtured, and assessed within higher education contexts (Hägg & Gabrielsson, 2020; Neck & Corbett, 2018). In the 21st-century knowledge economy, where graduate unemployment remains a persistent challenge and traditional employment structures are increasingly uncertain, higher education institutions face growing pressure to having graduates who are not only interested in entering the job market but also capable of creating employment opportunities for themselves and others. This paradigm shift has intensified the responsibility of universities offering Business Education programmes to realign pedagogical approaches with the demands of entrepreneurial skill development (Boldureanu et al., 2020).

As professionally oriented discipline, Business Education programme is positioned to equip learners with real-world knowledge, managerial competencies, and vocational skills for effective performance in business and organizational settings. Central to this mandate is the integration of entrepreneurial pedagogy, which encompasses the teaching methods, learning experiences, and instructional strategies specifically designed to furnish entrepreneurial mindsets, behaviours, and competences required by students for entrepreneurial success (Fayolle & Gailly, 2015; Lackéus, 2020). Contemporary entrepreneurial pedagogy extends beyond traditional lecture-based instruction to include experiential learning approaches such as business simulation, project- based learning, case study analysis, mentorship

programmes, and real-world enterprise creation activities that mirror the complexities of actual business environments (Neck & Greene, 2021; Piperopoulos & Dimov, 2015). Consequently, the relevance of Business Education graduates is increasingly evaluated based on how effectively these pedagogical approaches develop demonstrable entrepreneurial skills.

Within the Nigerian context, the imperative for entrepreneurial pedagogy is reinforced by national policy frameworks. The National Universities Commission (NUC) mandates the inclusion of entrepreneurship education across all academic disciplines, while the Nigerian educational policy emphasizes the development of skills that promote self-reliance and economic independence (Federal Republic of Nigeria, 2013). For Business Education departments, these policies translate into a mandate to institutionalize entrepreneurial pedagogy as a core component of curriculum delivery (Okolie et al., 2022). However, empirical research reports challenges such as inadequate pedagogical training among facilitators, limited use of experiential teaching methods, insufficient institutional support for entrepreneurship initiatives, and poor linkage between classroom instruction and practical enterprise development (Ojeifo, 2020; Igwe et al., 2020).

While structural and institutional barriers constrain effective entrepreneurship education, an exclusive focus on these factors provides an incomplete understanding of how pedagogical approaches influence graduate skill outcomes. The effectiveness of entrepreneurial education depends fundamentally on the pedagogical strategies employed throughout students' academic programmes (Hahn et al., 2020; Morris et al., 2021). Within the academic environment, the pedagogical approaches institutionalized in Business Education programmes occupy a pivotal position in determining how effectively entrepreneurial pedagogy translates into graduate skill development. The teaching methods, learning experiences, and instructional strategies embedded in the curriculum shape students' entrepreneurial capabilities and ultimately determine the skill levels of graduates (Fayolle, 2018; Warhuus et al., 2021). The pedagogical choices institutionalized in programmes strongly influence whether graduates develop the entrepreneurial competencies required for business creation and management (Mwasalwiba, 2020; Nabi et al., 2018). Thus, the success of entrepreneurial skill development among Business Education graduates is closely linked to the entrepreneurial pedagogy adopted in their training.

Entrepreneurial pedagogy is a multidimensional construct comprising interrelated teaching approaches. The first dimension is experiential learning methods, referring to instructional strategies that engage students in direct experience with business concepts, followed by reflection and application. This includes business simulations, enterprise creation projects, internship programmes, and live case studies that enable students to learn by doing (Hägg & Kurczewska, 2020; Pittaway & Cope, 2019). When experiential methods are consistently employed throughout programmes, graduates develop practical business skills, risk management capabilities, and the ability to navigate real-world business challenges (Bell & Bell, 2020; Williams-Middleton & Donnellon, 2020). Experiential learning creates opportunities for students to apply theory in real- world, directly promoting entrepreneurial skill development among graduates.

The second dimension is problem-based learning, encompassing instructional approaches where students learn through sustained investigation of authentic, complex problems or through the completion of meaningful projects. This involves designing business solutions, developing business plans, conducting market research, and creating viable enterprise proposals (Hmelo-Silver, 2020; Wurdinger & Rudolph, 2021). Programmes that effectively implement practical methods enable learners develop critical thinking, creativity, opportunity recognition, and resource mobilization skills that are fundamental to entrepreneurial success (Balakrishnan, 2022; Su & Cheng, 2019). Practical learning significantly enhances students' entrepreneurial intentions and self- efficacy, which translate into graduate competencies.

There is a paucity of studies examining how experiential learning methods and problem-based learning approaches relate to entrepreneurial skill development among Business Education graduates. This gap is what this study addresses by empirically investigating these relationships in Rivers State-owned universities, Nigeria.

Statement of the Problem

Experiential learning methods and problem-based learning approaches are critical components of entrepreneurial pedagogy that enable the advancement of entrepreneurship skills among Business Education graduates. When effectively implemented, these three pedagogical dimensions enable graduates to possess the creativity, opportunity recognition capabilities, risk management skills, and

business creation competencies required for successful entrepreneurial careers. However, it has been observed that these components of entrepreneurial pedagogy are not significantly associated with the advancement of entrepreneurship skills among Business Education graduates from universities in Rivers State. Hence, this disconnection between pedagogical approaches and graduate skill outcomes raises concerns about the capacity of Business Education graduates to function as successful entrepreneurs and contribute to economic development.

Regrettably, it is also observed that empirical evidence examining the relationship between these two pedagogical variables and the development of entrepreneurial skills among Business Education graduates from Rivers State universities is lacking. Without such evidence, efforts to enhance entrepreneurial pedagogy in Business Education cannot be strategically targeted, and interventions to improve graduate skill development may continue to yield suboptimal results. This study therefore aims to fill this gap by investigating the relationships between the use of experiential learning methods, problem-based learning approaches and entrepreneurial skill development among Business Education graduates in universities in Rivers State.

Research Questions

1. What is the relationship between the use of experiential learning methods and entrepreneurial skill development among Business Education graduates in universities in Rivers State?
2. What is the relationship between the use of problem-based and project- based learning approaches and entrepreneurial skill development among Business Education graduates in universities in Rivers State?

Hypotheses

The following null hypotheses were formulated and tested at a 0.05 level of significance:

1. There is no significant relationship between the use of experiential learning methods and entrepreneurial skill development among Business Education graduates in Rivers State-owned universities.
2. There is no significant relationship between the use of problem-based learning approaches and entrepreneurial skill development among Business Education graduates in Rivers State-owned universities.

Methods

This study used a correlational research design to examine the relationship between entrepreneurial pedagogy and skill development among Business Education graduates in universities in Rivers State-owned universities, Nigeria. This design was considered suitable because it enabled the researcher to ascertain the degree and direction of relationship in the variables.

The population of the study was made up of 144 postgraduate students who had enrolled in Business Education programme across in Rivers State Rivers State- owned universities. These institutions included Ignatius Ajuru University of Education and Rivers State University. The population was made up of of 86 postgraduate students from Ignatius Ajuru University of Education, comprising 59 Master's students and 27 PhD students, and 58 postgraduate students from Rivers State University, comprising 44 Master's students and 14 PhD candidates, who were admitted during the 2024/2025 academic session. A census sampling procedure was employed for this study, as the entire population postgraduate students was both manageable and sizable. A total of 144 questionnaires were administered, 138 were correctly completed and retrieved, representing a 95.8% response rate, while six questionnaires were not returned within the data collection period and were therefore excluded from the analysis.

Data for the study were collected using two structured questionnaires developed by the researcher. The first instrument, titled "Entrepreneurial Pedagogy Questionnaire" (EPQ), was designed to measure the independent variables of the study based on postgraduate students' assessment of the pedagogical approaches employed during their programme. The second instrument, titled "Entrepreneurial Skill Development Questionnaire" (ESDQ), was designed to measure the dependent variable based on postgraduate students' self- assessment of their current entrepreneurial competencies. Both instruments were structured on a 4-point scale of agreement: Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1. The instruments were subjected to face and content validation by three experts, comprising two from Business Education with expertise in entrepreneurship education and curriculum studies and one specialist in Measurement and Evaluation, all from University of

Benin. Their suggestions were incorporated to improve the clarity, and alignment of the instruments with the study variables.

The reliability of the instruments was determined through a pilot study involving 20 postgraduate Business Education students from University of Benin, who were not part of the main study. Data obtained from the pilot test were analyzed using Pearson Product Moment Correlation Coefficient, yielding reliability coefficients of 0.86 and 0.89 for the Entrepreneurial Pedagogy Questionnaire (EPQ) and Entrepreneurial Skill Development Questionnaire (ESDQ) respectively, indicating high internal consistency.

Data collected were analyzed using Pearson Product Moment Correlation Coefficient to answer the research questions and test the null hypotheses at the 0.05 level of significance. For research questions, the strength of relationships was interpreted using the guideline provided by Bryman and Bell (2011) as follows: r = 0.80 – 1.00 (very strong), r = 0.60 – 0.79 (strong), r = 0.40 – 0.59 (moderate), r = 0.20 – 0.39 (weak), and r = 0.00 – 0.19 (very weak). The decision rule for hypotheses testing was that any calculated probability (p-value) less than or equal to 0.05 led to the rejection of the null hypothesis, while any p-value greater than 0.05 resulted in the retention of the null hypothesis. All statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS), version 26.

Results

The following research questions guided the study:

Research Question 1: What is the relationship between the use of experiential learning methods and entrepreneurial skill development among Business Education graduates in universities in Rivers State?

Table 1: Pearson Product Moment Correlation on the Relationship between Use of Experiential Learning Methods and Entrepreneurial Skill Development

Variables	Use of Experiential Learning Method	Entrepreneurship Skills Development
Use of Experiential Learning Method	Pearson Correlation	1
	Sig. (2-tailed)	–
	N	138
Entrepreneurship Skills Development	Pearson Correlation	0.683*
	Sig. (2-tailed)	0.002
	N	138

Correlation is significant at the 0.05 level (2-tailed)

Table 1 shows a Pearson Product Moment Correlation coefficient of r = 0.683 with a p-value of 0.002. This reveals that there is a strong positive relationship between the use of experiential learning methods and entrepreneurial skill development among Business Education graduates in universities in Rivers State.

This suggests the use of experiential learning methods is associated with entrepreneurial skill development among Business Education graduates.

Research Question 2: What is the relationship between the use of problem- based method and entrepreneurial skill development among Business Education graduates in universities in Rivers State?

Table 2: Pearson Product Moment Correlation on the Relationship between Use of Problem-based Learning Method and Entrepreneurial Skill Development

Variables	Use of Problem- based Method	Entrepreneurship Skills Development
Use of Problem-based Learning Method	Pearson Correlation	1
	Sig. (2-tailed)	–
	N	138
Entrepreneurship Skills Development	Pearson Correlation	0.657*
	Sig. (2-tailed)	0.003
	N	138

Correlation is significant at the 0.05 level (2-tailed)

Table 2 shows a Pearson Product Moment Correlation coefficient of r = 0.657 with a p-value of 0.003. This shows a strong positive relationship between the use of problem-based method and entrepreneurial skill development among Business Education graduates in universities in Rivers State. This suggests theuse of problem-based methods is associated with entrepreneurial skill development among Business Education graduates.

Hypotheses Testing

Hypothesis 1: There is no significant relationship between the use of experiential learning methods and entrepreneurial skill development among Business Education graduates in universities in Rivers State.

Table 4: Pearson Product Moment Correlation on the Relationship between Use of Experiential Learning Methods and Entrepreneurial Skill Development among Business Education Graduates in Universities in Rivers State

Variables	Use of Experiential Learning Method		Entrepreneurship Skills Development
Use of Experiential Learning Method	Pearson Correlation	1	
	Sig. (2-tailed)	–	
N	138		
Entrepreneurship Skills Development	Pearson Correlation	0.683*	
Sig. (2-tailed)	0.002		
N	138		

Correlation is significant at the 0.05 level (2-tailed)

Table 4 revealed the Pearson Product Moment Correlation coefficient between the use of experiential learning methods and entrepreneurial skill development is r = 0.683 with a p-value of 0.002. Since the p-value (0.002) is less than the 0.05 significance level, the null hypothesis is rejected. This shows that there is a statistically significant strong positive relationship between the use of experiential learning methods and entrepreneurial skill development among Business Education graduates in universities in Rivers State.

Hypothesis 2: There is no significant relationship between the use of problem- based learning approaches and entrepreneurial skill development among Business Education graduates in universities in Rivers State.

Table 5: Pearson Product Moment Correlation on the Relationship between Use of Problem-based Learning Method and Entrepreneurial Skill Development among Business Education Graduates in Universities in Rivers State

Variables	Use of Problem-based Method	Entrepreneurship Skills Development
Use of Problem-based Learning Method	Pearson Correlation	1
	Sig. (2-tailed)	–
	N	138
Entrepreneurship Skills Development	Pearson Correlation	0.657*
	Sig. (2-tailed)	0.003
	N	138

Correlation is significant at the 0.05 level (2-tailed)

Table 5 revealed the Pearson Product Moment Correlation coefficient between the use of problem-based learning method and entrepreneurial skill development is r = 0.657 with a p-value of 0.003. Since the p-value (0.003) is less than the
0.05 significance level, the null hypothesis is rejected. This indicates that there is a statistically significant strong positive relationship between the use of problem- based learning method and entrepreneurial skill development among Business Education graduates in universities in Rivers State.

Discussion of Findings

The finding revealed a strong positive relationship between variables, indicating that graduates who experienced higher levels of experiential learning methods during their academic programmes demonstrated greater entrepreneurial skill development. This finding aligns with contemporary literature emphasizing the foundational part of experimental learning in fostering entrepreneurial competences. Hägg and Kurczewska (2020) posited that experiential learning methods create authentic learning contexts where students encounter the complexities and uncertainties inherent in entrepreneurial practice. When students engage directly with business concepts through hands-on activities, they develop procedural knowledge and practical wisdom that cannot be acquired through passive instructional approaches alone.

The study further revealed a statistically significant relationship, leading to the rejection of the null hypothesis which stated that there is no significant relationship between the use of experiential learning methods and entrepreneurial skill development among Business Education graduates in Rivers State-owned universities. This finding agrees with the positions of Hägg and Kurczewska (2020), Bell and Bell (2020), all of whom emphasized that experiential engagement is fundamental to entrepreneurial capability formation. The consistency between the empirical findings of the current study and the assertions of these scholars confirms that experiential learning methods are not merely supplementary teaching techniques but essential pedagogical approaches that shape graduates' entrepreneurial capabilities. The rejection of the null hypothesis provides statistical evidence that this relationship holds within the specific context of universities in Rivers State, reinforcing the universal applicability of experiential learning principles across different educational settings.

The study further investigated the relationship between the use of problem-based learning method and entrepreneurial skill development among Business Education graduates in Rivers State-owned universities. The finding revealed a strong positive relationship, indicating that graduates who experienced higher levels of problem-based learning method demonstrated greater entrepreneurial skill development. This finding resonates strongly with theoretical and empirical literature positioning problem-based learning as a critical pedagogical approach for developing entrepreneurial capabilities. Hmelo-Silver (2020) conceptualized problem-based learning as an instructional approach that develops students' abilities to identify problems, generate hypotheses, gather and analyze information, and formulate solutions processes that mirror the entrepreneurial journey from opportunity recognition to venture creation. Balakrishnan (2022) reported that problem-based learning significantly enhanced

students' entrepreneurial intentions and opportunity recognition capabilities, emphasizing that when students are challenged to develop business plans and conduct market research, they develop process skills fundamental to entrepreneurial competence. Wurdinger and Rudolph (2021) asserted that problem-based learning develops self-directed learning capabilities essential for entrepreneurial success, particularly in contexts where formal structures are absent.

The study also revealed that significant relationship between the use of problem- based learning approaches and entrepreneurial skill development among Business Education graduates in universities in Rivers State. The alignment between the current study's findings and the established literature confirms that problem-based learning approaches cultivate the analytical thinking, creativity, and self-direction that graduates require for entrepreneurial success. The rejection of the null hypothesis provides empirical validation that investments in problem-based pedagogies yield meaningful improvements in graduate entrepreneurial outcomes within the Nigerian university context.

Conclusion

This study examined the relationships between entrepreneurial pedagogy, specifically experiential learning methods and problem-based learning approaches and entrepreneurial skill development among Business Education graduates in universities in Rivers State, Nigeria. The findings revealed statistically significant strong positive relationships between the variables, leading to the rejection of all null hypotheses. The study concludes that the pedagogical approaches institutionalized in Business Education programmes significantly influence the extent to which graduates develop entrepreneurial skills.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. Business Education curriculum planners and lecturers in universities in Rivers State should deliberately integrate experiential learning methods such as business simulations, enterprise creation projects, to ensure that students encounter progressively complex experiential learning opportunities throughout their academic programmes, enabling them to develop practical business capabilities.
2. University administrators and faculty development units should organize regular capacity-building workshops and training programmes that equip lecturers with the skills to design and facilitate problem-based learning experiences that mirror real-world entrepreneurial challenges, thereby enhancing students' opportunity recognition and creative problem-solving abilities.

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AI AWARENESS, BARRIERS, AND COMPETENCY NEEDS FOR ENTREPRENEURIAL LEARNING IN NORTH CENTRAL NIGERIA

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Abstract

Artificial intelligence (AI) offers entrepreneurs new opportunities for learning, productivity, and venture growth, yet its use for entrepreneurial learning in resource-constrained regions remains poorly understood. This study examined AI awareness, barriers to AI-enabled entrepreneurial learning, and AI-related competency needs among entrepreneurs in North Central Nigeria using an explanatory sequential mixed-methods design. In the quantitative phase, 433 entrepreneurs drawn from the six states and the Federal Capital Territory through multistage sampling received a validated questionnaire (overall Cronbach's α = .89), of which 412 were usable; data were analysed using means and standard deviations. In the qualitative phase, 12 purposively selected entrepreneurs were interviewed and the data were analysed thematically. Entrepreneurs had a high but shallow level of AI awareness (*M* = 2.59, *SD* = 0.62): awareness of general-purpose tools was high, whereas awareness of sector-specific applications, local training opportunities, and output verification was low. Fourteen of 15 barriers were endorsed (*M* = 3.04, *SD* = 0.57), led by the cost of internet data, unstable electricity, and the shortage of AI trainers and mentors. Competency needs were high across all six clusters (*M* = 3.23, *SD* = 0.49), particularly AI-digital fluency and financial competencies. Four themes emerged: surface familiarity, shallow application; infrastructure, cost, and trust frictions; from tool use to venture capability; and learning through people, practice, and places. Integration showed that broad but shallow awareness, compounded by systemic barriers, limits the conversion of AI exposure into entrepreneurial capability. The study recommends sector-specific awareness-to-application programmes, shared AI-enabled business centres, stackable micro-credentials linked to mentorship and funding readiness, and inclusive, locally delivered training.

Keywords: artificial intelligence, AI literacy, entrepreneurial learning, competency needs, mixed methods, North Central Nigeria

Introduction

Artificial intelligence (AI) is reshaping how enterprises are created, managed, and scaled, and how entrepreneurial knowledge is acquired. Widely used generative AI tools now run on a basic smartphone with a data connection, so that the principal barrier to productive use is increasingly knowledge rather than access to sophisticated hardware (*The Nigerian Workers Who Use AI*, 2026). Nigeria's workforce has embraced these tools rapidly: on the 2026 Ataraxis Global Outsourcing AI Readiness Index, Nigeria ranked sixth globally for workforce AI literacy, yet the 32-point gap between workforce literacy and enterprise adoption was the widest among the countries assessed (*Nigeria Ranks Third*, 2026). For northern Nigeria in particular, commentators warn that the region must not become a passive consumer of technologies developed elsewhere and call for AI literacy to be integrated across all levels of education and closer university–industry collaboration (*Preparing the North for AI Economy*, 2026). Whether entrepreneurs in North Central Nigeria, comprising the Federal Capital Territory (FCT) and Benue, Kogi, Kwara, Nasarawa, Niger, and Plateau States, are aware of AI, can overcome the barriers to using it, and possess the competencies to convert it into entrepreneurial learning remains insufficiently understood.

Continental evidence underscores the importance of structured capacity building. In a mixed-methods study spanning 30 African countries, Anderson (2025) found that education, training, and

mentoring jointly explained 68% of the variance in competent AI leadership expertise (R^2 = .68), with training having the strongest effect (β = .41), followed by education (β = .32) and mentoring (β = .28; all *p*s < .001). Participants reported that short, intensive programmes yielded immediately applicable benefits for people already in the workforce. Within North Central Nigeria, the National Open University of Nigeria's North Central Incubation Centre, domiciled at the Abuja Model Study Centre, coordinates entrepreneurship support across study centres in Minna, Ilorin, Lokoja, Jos, Makurdi, Lafia, Otukpo, and other locations (National Open University of Nigeria [NOUN], n.d.), providing an organised, if uneven, regional framework for entrepreneurship development.

Since a 2004 national policy mandated entrepreneurship education in university curricula, successive interventions have sought to improve graduates' entrepreneurial outcomes, although little is known about how the policy operates across Nigeria's vast and culturally diverse contexts (Oyinlola et al., 2024). Entrepreneurship education is expected to foster creativity, risk-taking, and innovation and to improve the performance of small and medium enterprises (SMEs) through stronger business, managerial, and financial capabilities (Ayatse, 2024). Digital and AI policy has evolved alongside these efforts. The National Information Technology Development Agency (NITDA) and the Federal Ministry of Education have partnered to embed digital literacy across all levels of education, with targets of 70% national digital literacy by 2027 and 95% by 2030 (*NITDA and Education Ministry*, 2024). The 3 Million Technical Talent (3MTT) programme targets in-demand skills such as software development, machine learning, and data analysis (Tijani, 2024), and the National AI Strategy launched in 2024 set a short-term goal of training 100,000 professionals in AI skills (*The Nigerian Workers Who Use AI*, 2026). Private-sector initiatives complement these efforts; for example, Microsoft's AI National Skills Initiative, implemented with the Federal Government, Data Science Nigeria, and Lagos Business School, reported reaching more than 350,000 Nigerians with AI skills (Microsoft, 2025).

AI awareness in Nigeria has spread rapidly through smartphones and everyday digital platforms rather than through formal training alone (*The Nigerian Workers Who Use AI*, 2026). AI literacy, in turn, is linked to entrepreneurial outcomes: in a study of 506 business students, Virojrut et al. (2026) found that AI literacy influenced entrepreneurial readiness directly and indirectly through creative thinking capability and learning achievement. Although that evidence comes from Thailand, it provides a theoretically grounded expectation for Nigerian entrepreneurs.

Several interrelated barriers constrain AI-enabled learning. Research involving 144 Nigerian SMEs found that inadequate infrastructure, low digital literacy, skills shortages, and regulatory gaps collectively prevent meaningful engagement with AI, while the lack of stable electricity is estimated to cost the economy about $26.2 billion annually (*AI for Nigerian SMEs*, 2026). Device affordability is a further constraint: across sub-Saharan Africa, the poorest 20% of the population spend an average of 76% of monthly income on an entry-level smartphone (*Beyond Coverage*, 2026). In higher education, barriers to AI adoption include weak institutional strategy, low organisational maturity, poor data governance, and inadequate information technology infrastructure (Kayode & Odumabo, 2024). Evidence from six Nigerian states, including Kwara, identified poor connectivity, unreliable electricity, low socioeconomic status, and the absence of coherent ICT strategies as primary drivers of digital gaps in remote communities (Olanrewaju et al., 2021). Anderson (2025) adds that infrastructure deficits are most acute in under-resourced subregions, that skilled AI instructors and mentors are scarce, that ethical concerns about data privacy, bias, and accountability remain unresolved, and that women are frequently marginalised in AI programmes.

Entrepreneurs' competency needs span several domains. In a survey of 397 SME owners in the manufacturing sector of North Central Nigeria, Ayatse (2024) found that technical and managerial skills training enhanced leadership and strategic planning, but that gaps persisted in digital proficiency and financial documentation; although 68% of respondents engaged in innovation, 40% struggled with product development, and networking was characterised by strong collaboration but weak information sharing. AI literacy should therefore be developed as part of an integrated set of technical, managerial, innovative, networking, and financial competencies, with explicit attention to ethical awareness, critical evaluation of information, and project-based application (Virojrut et al., 2026).

Several pathways operate in the region. The Development Bank of Nigeria's Entrepreneurship Training Programme, now in its eighth cohort, offers free training through an online platform complemented by mentorship, networking, and performance-based rewards (*Call for Applications*, 2026). The Nigerian Content Development and Monitoring Board (NCDMB) trained 60 youths from the North Central and South-West zones in digital skills; in the North Central zone, Pyrich Limited facilitated classroom and hands-on training in customer relationship management, project management,

workplace communication tools, and AI applications, while FOZY Global Concepts delivered modules in cloud computing, machine learning, knowledge management, and geographic information systems, followed by on-the-job training at the Digital Bridge Institute (Sunday, 2026). Critics nonetheless note that many programmes emphasise awareness rather than execution and that graduates often lack mentors, funding readiness, and access to tools and ecosystems; they propose ecosystem models that combine AI tools, cloud credits, technical mentors, business advisory support, and multi-year funding (Azuonwu, 2026).

The study is anchored in human capital theory, which holds that investment in education and training increases individuals' productive capabilities and economic returns (Becker, 1993). Recent work conceptualises AI literacy as digital human capital that contributes to entrepreneurial readiness through creative thinking and learning achievement (Virojrut et al., 2026). From this perspective, AI awareness is an initial stock of digital human capital, competency needs represent the gap between existing and required capital, and barriers such as cost, infrastructure, and limited mentorship constrain both its accumulation and the returns entrepreneurs derive from it.

Statement of the Problem

Entrepreneurs in North Central Nigeria operate in an economy in which AI tools are accessible through a smartphone and in which national policy explicitly prioritises digital and AI literacy, yet many of their enterprises continue to record weak growth, low digital proficiency, and poor conversion of training into viable, scalable ventures. Regional evidence documents persistent gaps in digital proficiency, product development, information sharing, and financial documentation among SMEs (Ayatse, 2024), while high data and power costs, unaffordable devices, trust concerns, and a scarcity of skilled AI trainers and mentors constrain AI-enabled learning (Anderson, 2025; *Beyond Coverage*, 2026; *AI for Nigerian SMEs*, 2026). Training, moreover, has tended to emphasise awareness rather than practical execution (Azuonwu, 2026), and Nigerian enterprises lag markedly behind their workers in AI adoption (*Nigeria Ranks Third*, 2026). If these conditions persist, the region risks a widening divide between AI-enabled entrepreneurs in commercial hubs and those in its towns and rural communities, with adverse consequences for job creation, enterprise survival, and inclusive growth. In the literature, existing studies have examined AI leadership at the continental level (Anderson, 2025), entrepreneurship education and SME performance without an AI focus (Ayatse, 2024), entrepreneurship within universities (Oyinlola et al., 2024), and AI literacy among students outside Africa (Virojrut et al., 2026), while much of the remaining evidence consists of programme reports and commentaries. No study known to the authors has simultaneously measured AI awareness, barriers, and competency needs among practising entrepreneurs in North Central Nigeria, or combined such measurement with entrepreneurs' own explanations of how these factors shape their learning. This study addresses that gap.

Research Questions

The following research questions guided the study:

1. What is the level of AI awareness among entrepreneurs in North Central Nigeria?
2. What are the barriers to AI-enabled entrepreneurial learning among entrepreneurs in North Central Nigeria?
3. What are the AI-related competency needs of entrepreneurs in North Central Nigeria for entrepreneurial learning?
4. How do entrepreneurs in North Central Nigeria describe and explain their experiences of AI awareness, barriers, and competency development in their entrepreneurial learning?

Method

The study adopted an explanatory sequential mixed-methods design within a pragmatist paradigm (Creswell & Plano Clark, 2018). Quantitative data were collected and analysed first to answer Research Questions 1 to 3, and the results were then used to select participants and refine the interview guide for a qualitative phase that addressed Research Question 4 by explaining and contextualising the quantitative results. The two strands were integrated at the sampling, instrument development, and interpretation stages, the last through a joint display (Fetters et al., 2013).

The study was conducted in the six states of North Central Nigeria and the FCT. The population comprised all owner-managers of micro, small, and medium enterprises in the region. Because many

enterprises operate informally and no comprehensive register exists, the population size was unknown. The quantitative sample size was therefore determined using Cochran's (1977) formula for an unknown population, $n_0 = Z^2pq/e^2$, with $Z = 1.96$, $p = q = .50$, and $e = .05$, giving $n_0 = 384.16$, rounded to 385. This figure was increased by 12.5% to allow for non-response, yielding a sample of 433 entrepreneurs.

A multistage sampling procedure was used. All six states and the FCT were included at the first stage. At the second stage, two local government areas (LGAs) were purposively selected in each unit, namely the capital and one semi-urban or rural LGA, to capture urban–rural variation: Makurdi and Gboko (Benue), Lokoja and Okene (Kogi), Ilorin West and Offa (Kwara), Lafia and Keffi (Nasarawa), Chanchaga and Bida (Niger), Jos North and Pankshin (Plateau), and the Abuja Municipal and Kuje Area Councils (FCT). At the third stage, the sample was allocated equally, giving 62 entrepreneurs in each state and 61 in the FCT. At the fourth stage, because no sampling frame existed, respondents were recruited through markets, business clusters, trade associations, cooperatives, and innovation hubs using convenience sampling supplemented by snowball referrals. Respondents had to be at least 18 years old, own or manage an enterprise that had operated for at least one year, and give informed consent. For the qualitative phase, 12 entrepreneurs were selected from questionnaire respondents who agreed to be interviewed, using maximum variation purposive sampling on state, gender, sector, location, and AI awareness score. This number is consistent with evidence that saturation is typically reached within 12 interviews (Guest et al., 2006).

The quantitative instrument was a researcher-developed questionnaire, the AI Awareness, Barriers and Competency Needs for Entrepreneurial Learning Questionnaire (AIBCNELQ). Section A collected demographic data; Section B contained 12 AI awareness items rated from *highly aware* (4) to *not aware* (1); Section C contained 15 barrier items rated from *strongly agree* (4) to *strongly disagree* (1); and Section D contained 24 competency items in six clusters of four (technical, managerial, innovative, networking, financial, and AI-digital fluency), rated from *highly needed* (4) to *not needed* (1). Items were derived from the literature reviewed above. The qualitative instrument was a semi-structured interview guide with 10 core questions and probes, refined after the quantitative analysis to explore the highest- and lowest-rated items.

Face and content validity were established by three experts in entrepreneurship education, measurement and evaluation, and computer science. Items with item-level content validity indices below .78 were revised, and the scale-level index (S-CVI/Ave) was .92 (Lynn, 1986; Polit & Beck, 2006). Exploratory factor analysis of the main data using principal axis factoring with oblique rotation supported construct validity: the Kaiser–Meyer–Olkin measure was .86, and Bartlett's test of sphericity was significant, $\chi^2(1275) = 8{,}436.27$, $p < .001$ (Hair et al., 2019). The interview guide was reviewed by the same experts and piloted with two entrepreneurs outside the sample. Reliability was established through a pilot study with 40 entrepreneurs in Kaduna State, outside the study area. Cronbach's alpha coefficients were .87 for AI awareness, .84 for barriers, .91 for competency needs, and .89 overall, exceeding the .70 threshold (Nunnally & Bernstein, 1994). Qualitative trustworthiness was ensured through member checking and triangulation (credibility), thick description (transferability), an audit trail (dependability), and reflexive journaling (confirmability; Lincoln & Guba, 1985). Two researchers coded the transcripts independently, with intercoder agreement of $\kappa = .82$.

Ethical approval was obtained from the authors' institutional research ethics committee, and all participants gave informed consent. The questionnaire was administered in person and electronically by the researchers and 14 trained research assistants over six weeks, with interpretation into Hausa, Tiv, Yoruba, Igala, and Nupe where required. Interviews lasted 35 to 55 minutes, were audio-recorded with permission, and were transcribed verbatim. Quantitative data were analysed with means and standard deviations for Research Questions 1 to 3. With a criterion mean of 2.50, awareness was interpreted using the real limits 3.50–4.00 (*very high*), 2.50–3.49 (*high*), 1.50–2.49 (*low*), and 1.00–1.49 (*very low*), while barrier and competency items with means of 2.50 or above were regarded as barriers and needs, respectively. Qualitative data were analysed with NVivo 14 using Braun and Clarke's (2006) six-phase thematic analysis, and meta-inferences from the joint display were classified as confirmation, expansion, or discordance (Fetters et al., 2013).

Results

Quantitative Results

Of the 433 questionnaires administered, 412 were returned and usable, a response rate of 95.2%.

Research Question 1: Level of AI Awareness

Table 2
Mean Ratings of Entrepreneurs' Level of AI Awareness

S/N	Item: I am aware of…	*M*	*SD*	Remark
1	Generative AI tools (e.g., ChatGPT, Gemini, Claude, Meta AI)	3.41	0.68	High
2	Use of AI to write business content (e.g., adverts, proposals)	3.12	0.79	High
3	AI chatbots and automated messaging for customer engagement	2.86	0.88	High
4	AI tools for bookkeeping, invoicing, and financial analysis	2.34	0.94	Low
5	AI tools for market research and customer trends	2.41	0.91	Low
6	AI-powered design tools for logos, flyers, and product images	2.97	0.85	High
7	Use of AI to learn new business skills	3.05	0.82	High
8	AI applications specific to my business sector	2.18	0.97	Low
9	National AI and digital skills initiatives (e.g., National AI Strategy, 3MTT)	2.27	1.01	Low
10	AI training opportunities available to entrepreneurs in my state	1.96	0.95	Low
11	Risks of AI use (e.g., inaccurate outputs, bias, data privacy)	2.39	0.93	Low
12	How to check the accuracy and reliability of AI outputs	2.08	0.96	Low
	Grand mean	2.59	0.62	High

Note. Criterion mean = 2.50. Real limits: 3.50–4.00 = very high; 2.50–3.49 = high; 1.50–2.49 = low; 1.00–1.49 = very low.

Table 2 shows a grand mean of 2.59 (*SD* = 0.62), within the 2.50–3.49 real limit, indicating a high level of AI awareness. However, only six of the 12 items reached the criterion mean. Awareness was highest for generative AI tools (*M* = 3.41), AI for business content (*M* = 3.12), and AI for learning new skills (*M* = 3.05), and lowest for AI training opportunities in the respondents' states (*M* = 1.96), checking the accuracy of AI outputs (*M* = 2.08), and sector-specific AI applications (*M* = 2.18).

Research Question 2: Barriers to AI-Enabled Entrepreneurial Learning

Table 3

Mean Ratings of Barriers to AI-Enabled Entrepreneurial Learning

S/N	Item	*M*	*SD*	Remark
1	High cost of internet data	3.58	0.61	Barrier
2	Unstable electricity supply	3.52	0.66	Barrier
3	Poor internet connectivity in my area	3.21	0.78	Barrier
4	High cost of smartphones or computers able to run AI tools	3.09	0.84	Barrier
5	Cost of subscriptions to premium AI tools	3.14	0.81	Barrier
6	Lack of AI training programmes close to my business	3.27	0.76	Barrier
7	Shortage of trainers and mentors with AI expertise	3.36	0.72	Barrier
8	Limited knowledge of how to apply AI to my business	3.18	0.79	Barrier
9	Concerns about privacy and security of business information	2.88	0.87	Barrier
10	Distrust in the accuracy of AI-generated outputs	2.74	0.91	Barrier
11	Fear that AI will replace human workers	2.21	0.98	Not a barrier
12	Language barriers (limited support for local languages)	2.63	0.96	Barrier
13	Lack of time to learn because of business workload	2.92	0.85	Barrier
14	Inadequate government support or incentives for AI adoption	3.24	0.77	Barrier
15	Socio-cultural or gender-related constraints on access	2.57	1.03	Barrier
	Grand mean	3.04	0.57	Barrier

Note. Criterion mean = 2.50.

As shown in Table 3, 14 of the 15 items reached the criterion mean and were regarded as barriers (grand $M = 3.04$, $SD = 0.57$). The most severe were the high cost of internet data ($M = 3.58$), unstable electricity supply ($M = 3.52$), and the shortage of AI trainers and mentors ($M = 3.36$). Fear that AI will replace human workers ($M = 2.21$) was not regarded as a barrier, while socio-cultural or gender-related constraints recorded the lowest endorsed mean ($M = 2.57$) and the widest dispersion ($SD = 1.03$).

Research Question 3: AI-Related Competency Needs

Table 4
Mean Ratings of Entrepreneurs' AI-Related Competency Needs by Cluster

S/N	Competency item	*M*	*SD*	Remark
Technical (cluster *M* = 3.22, *SD* = 0.58; rank 4)				
1	Using digital tools for daily operations	3.24	0.74	Needed
2	Analysing business data for decisions	3.31	0.71	Needed
3	Digital marketing and e-commerce	3.38	0.69	Needed
4	Maintaining and troubleshooting devices and software	2.96	0.83	Needed
Managerial (cluster *M* = 2.98, *SD* = 0.61; rank 6)				
5	Strategic planning and goal setting	3.02	0.80	Needed
6	Project management with digital tools	3.11	0.78	Needed
7	Team leadership and delegation	2.84	0.86	Needed
8	Resource allocation and process management	2.94	0.84	Needed
Innovative (cluster *M* = 3.25, *SD* = 0.57; rank 3)				
9	Recognising business opportunities	3.29	0.73	Needed
10	Developing new products or services	3.33	0.71	Needed
11	Creative problem solving	3.12	0.77	Needed
12	Adapting new technologies to local markets	3.26	0.74	Needed
Networking (cluster *M* = 3.11, *SD* = 0.60; rank 5)				
13	Building partnerships and industry linkages	3.18	0.76	Needed
14	Using digital platforms for networking	3.07	0.80	Needed
15	Information sharing with other firms	2.89	0.85	Needed
16	Accessing mentors, hubs, and support organisations	3.31	0.72	Needed
Financial (cluster *M* = 3.36, *SD* = 0.54; rank 2)				
17	Bookkeeping and record keeping	3.29	0.74	Needed
18	Budgeting and separating personal and business finances	3.36	0.70	Needed
19	Preparing bankable business plans (funding readiness)	3.57	0.62	Needed
20	Using digital financial tools and platforms	3.22	0.76	Needed
AI-digital fluency (cluster *M* = 3.44, *SD* = 0.52; rank 1)				
21	Using generative AI tools for business tasks	3.48	0.65	Needed
22	Critically evaluating the accuracy of AI outputs	3.44	0.67	Needed
23	Ethical and responsible AI use, including data protection	3.31	0.72	Needed
24	Integrating AI into business workflows	3.53	0.63	Needed
	Grand mean	3.23	0.49	Needed

Note. Criterion mean = 2.50.

Table 4 shows that all 24 items were needed (grand *M* = 3.23, *SD* = 0.49). Needs were highest in AI-digital fluency (*M* = 3.44), followed by financial (*M* = 3.36), innovative (*M* = 3.25), technical (*M* = 3.22), networking (*M* = 3.11), and managerial (*M* = 2.98) competencies. The highest-rated items were preparing bankable business plans (*M* = 3.57), integrating AI into business workflows (*M* = 3.53), and using generative AI tools for business tasks (*M* = 3.48).Qualitative Results

Research Question 4: Entrepreneurs' Experiences of AI Awareness, Barriers, and Competency Development

Table 5
Profile of Interview Participants

Code	Gender	State	Sector	Years in business	Location	Awareness
P1	M	Kogi	Manufacturing	9	U	Moderate
P2	F	Kwara	Fashion design	5	R	Moderate
P3	F	Benue	Agro-processing	11	R	Low
P4	M	Niger	Crop farming	4	R	Low
P5	F	Nasarawa	Agriculture	14	R	Low
P6	F	Benue	Trading	6	U	Moderate
P7	M	Niger	Trading	8	U	Moderate
P8	M	Plateau	ICT services	3	U	High
P9	F	Plateau	Food services	4	U	High
P10	F	FCT	Beauty services	7	U	High
P11	M	FCT	Logistics	5	U	High
P12	M	Kwara	Manufacturing	16	U	Moderate

Note. U = urban; R = semi-urban/rural. Awareness level is based on tertiles of the Section B score.

The 12 participants (Table 5) comprised six women and six men from all seven units of the region, four of whom operated in semi-urban or rural areas. Thematic analysis generated four themes and 12 subthemes (Table 6).

Table 6
Themes and Subthemes From the Qualitative Analysis

Theme	Subthemes	Participants (*n*)
1. Surface familiarity, shallow application	Everyday exposure through smartphones and social media; uncertainty about business-specific uses; peers and family as awareness channels	12
2. Infrastructure, cost, and trust frictions	Burden of data and power costs; distrust of outputs and privacy fears; distance from training and mentors	11
3. From tool use to venture capability	Need for applied, sector-specific AI skills; financial and funding-readiness gaps; critical and ethical use	10
4. Learning through people, practice, and places	Preference for short, hands-on training; mentorship and hubs as anchors; local language and peer learning	9

Theme 1: Surface familiarity, shallow application. All participants encountered AI through smartphones and social media, but few used it systematically. As P3 (female, agro-processing, Benue) explained, “I see these AI things on WhatsApp and Facebook every day, and my son uses it for his assignment, but for my garri business I don’t know where to start.” Awareness spread mainly through peers and customers rather than training: “It was my customer who showed me how to use it to write my price list and adverts. Nobody trained me” (P7, male, trading, Niger).

Theme 2: Infrastructure, cost, and trust frictions. Participants described data and power costs as the main obstacle to sustained learning: “If I buy data of five thousand naira, it finishes in one week. Then fuel for the generator. Between data and diesel, learning AI is a luxury” (P1, male, manufacturing, Kogi). Trust was a second friction: “Sometimes it gives answers that are not correct, so how can I trust it with my customers’ details?” (P10, female, beauty services, FCT). Rural participants emphasised distance from support: “The training is always in Lafia or Abuja. From my village, transport alone is a problem, and nobody here can teach me” (P5, female, agriculture, Nasarawa). Four of the six women also described household responsibilities and concerns about travelling to evening sessions as constraints on attending training.

Theme 3: From tool use to venture capability. Participants distinguished between knowing that AI tools exist and using them to grow a business: “I know how to use the tools, but what I need is how to use AI to manage stock, track sales, and know which product is moving” (P8, male, ICT services,

Plateau). Financial capability and funding readiness were recurrent concerns: “What I want is for AI to help me keep my records and write a business plan that the bank will accept” (P2, female, fashion design, Kwara). Several participants also stressed the need to verify AI outputs before using them with customers or lenders.

Theme 4: Learning through people, practice, and places. Participants preferred short, practical, mentored training delivered close to their businesses: “Don’t give me lectures for one week. Show me on my phone, let me do it, then follow up with me after” (P11, male, logistics, FCT). Market associations, cooperatives, and hubs were trusted learning spaces, and peer teaching in local languages was valued: “When one of us in the market learns something, she teaches others in Hausa or Tiv. That is how we learn” (P6, female, trading, Benue). A negative case was P4 (male, crop farming, Niger), who regarded AI as currently irrelevant: “For my farm, what I need now is fertiliser and market, not computer things.”

Integration of Findings

Table 7 shows that the qualitative findings confirmed the quantitative results on barriers and competency needs and expanded the awareness results by revealing that high self-reported awareness reflects familiarity with general-purpose tools rather than business-specific capability. A discordance emerged on gender: socio-cultural and gender-related constraints were the least endorsed barrier quantitatively, yet women interviewees described them vividly, suggesting that the aggregate mean masks constraints concentrated among female entrepreneurs.

Table 7
Joint Display Integrating Quantitative and Qualitative Findings

Domain	Quantitative finding	Qualitative finding	Meta-inference
AI awareness	Grand *M* = 2.59 (high); highest: generative AI tools (3.41); lowest: local training opportunities (1.96)	Theme 1: familiarity is incidental and tool-centred, not business-specific	Expansion
Barriers	Grand *M* = 3.04; top: data cost (3.58), electricity (3.52), mentor shortage (3.36)	Theme 2: data and fuel costs compete with stock purchases; distance from training	Confirmation
Gender/socio-cultural	Lowest endorsed barrier (2.57) with highest dispersion (*SD* = 1.03)	Female participants described time burdens and unsafe evening sessions	Discordance
Competency needs	Grand *M* = 3.23; highest cluster: AI-digital fluency (3.44); top item: bankable plans (3.57)	Theme 3: need to apply AI to records, pricing, stock, and loan applications	Confirmation
Learning pathways	Low awareness of local training (1.96) and high need for mentor access (3.31)	Theme 4: preference for short, mentored, local, peer-based learning	Expansion

Note. Meta-inferences follow Fetters et al. (2013).

Discussion of Findings

Level of AI Awareness

Entrepreneurs had a high level of AI awareness (*M* = 2.59), consistent with evidence that generative AI tools are accessible through basic smartphones (*The Nigerian Workers Who Use AI*, 2026) and that Nigerian workers’ AI literacy is high by global standards (*Nigeria Ranks Third*, 2026). However, awareness was broad but shallow: it was concentrated on general-purpose tools, while awareness of sector-specific applications, local training, national initiatives, and output verification fell below the criterion mean. The qualitative evidence that awareness spreads incidentally through social media and peers (Theme 1) supports the critique that programmes and public discourse emphasise awareness over execution (Azuonwu, 2026). The low awareness of national initiatives (*M* = 2.27) and local training (*M* = 1.96) suggests that large-scale efforts such as 3MTT, the National AI Strategy, and private skilling initiatives (Microsoft, 2025; Tijani, 2024) have not yet reached many enterprises outside major hubs, particularly in rural locations such as those of P3, P4, and P5, echoing documented urban–rural disparities (Olanrewaju et al., 2021; Oyinlola et al., 2024). The low awareness of AI risks (*M* = 2.39) is also concerning, because responsible use requires an understanding of privacy, bias, and

accountability (Anderson, 2025). From a human capital perspective, such awareness is an initial investment that will yield limited returns unless it is converted into the creative and applied capabilities through which AI literacy shapes entrepreneurial readiness (Virojrut et al., 2026).

Barriers to AI-Enabled Entrepreneurial Learning

Fourteen of 15 barriers were endorsed (*M* = 3.04), led by data costs, unstable electricity, and the shortage of trainers and mentors. These results corroborate evidence that inadequate infrastructure and skills shortages prevent Nigerian SMEs from engaging with AI and that unreliable electricity imposes large economic costs (*AI for Nigerian SMEs*, 2026), and they mirror the digital gaps documented in remote Nigerian communities, including Kwara (Olanrewaju et al., 2021). The mentor shortage reflects the continental scarcity of AI instructors and mentors (Anderson, 2025), while device-cost barriers (*M* = 3.09) are consistent with the burden of smartphone prices on low-income households (*Beyond Coverage*, 2026). The qualitative accounts show how these costs compete directly with business expenditure (Theme 2). Trust barriers, including privacy concerns (*M* = 2.88) and distrust of outputs (*M* = 2.74), align with unresolved ethical concerns about AI in Africa (Anderson, 2025), and the endorsement of inadequate government support (*M* = 3.24) parallels weaknesses in institutional strategy and data governance identified in Nigerian universities (Kayode & Odumabo, 2024). Conversely, fear of job replacement was not a barrier, suggesting that owner-managers see AI as a productivity aid rather than a threat to their own roles. The discordant gender finding indicates that aggregate means may understate constraints concentrated among women, consistent with evidence that women are marginalised in AI programmes (Anderson, 2025). Overall, the barriers are largely systemic, so awareness campaigns alone will not suffice without investment in access, affordability, and support.

AI-Related Competency Needs

All competencies were needed (*M* = 3.23), with AI-digital fluency and financial competencies ranked highest. The high financial needs, especially funding readiness (*M* = 3.57), are consistent with Ayatse's (2024) finding of persistent gaps in financial documentation among North Central SMEs and with the observation that training graduates often lack funding readiness (Azuonwu, 2026). The prominence of needs for integrating AI into workflows (*M* = 3.53) and critically evaluating outputs (*M* = 3.44) supports conceptualising AI literacy as an integrated competency encompassing ethical awareness, information evaluation, and application rather than isolated tool training (Virojrut et al., 2026). Innovative needs, particularly product development (*M* = 3.33), correspond with the product development difficulties reported by Ayatse (2024), while the need for access to mentors and hubs (*M* = 3.31) echoes the weak information sharing among regional SMEs and the importance of mentoring for AI capability (Anderson, 2025; Ayatse, 2024). Managerial needs, although still high, ranked lowest, consistent with evidence that managerial training already strengthens planning in the region (Ayatse, 2024). The qualitative finding that entrepreneurs want AI applied to stock, pricing, records, and loan applications (Theme 3) indicates that competency development should be organised around real business tasks.

Experiences and Preferred Learning Pathways

Entrepreneurs preferred short, hands-on, mentored, and locally delivered learning, often through peers and in local languages (Theme 4). This aligns with Anderson's (2025) evidence that short, intensive training is especially effective for those in the workforce and that mentoring adds explanatory power beyond education and training, and with regional programmes that combine classroom instruction with on-the-job placement (Sunday, 2026) or online learning with mentorship (*Call for Applications*, 2026). The trust placed in associations, cooperatives, and hubs suggests that existing infrastructure, including NOUN's North Central Incubation Centre and its study centres (NOUN, n.d.), could anchor AI-enabled entrepreneurial learning. The negative case of P4 also cautions that AI training must demonstrate concrete value for sectors such as crop farming. Taken together, the integrated findings indicate that broad but shallow awareness, compounded by systemic barriers, limits the conversion of AI exposure into entrepreneurial capability, and they extend human capital theory by suggesting that the returns to digital human capital are conditional on structural enablers (Becker, 1993; Virojrut et al., 2026).

Conclusion

The study concludes that entrepreneurs in North Central Nigeria are broadly aware of AI, but that this awareness centres on general-purpose tools and has not been translated into business-specific

capability. Their learning is constrained mainly by the cost of data and electricity, poor connectivity, the scarcity of AI trainers and mentors, and concerns about trust and privacy, and their competency needs are highest where AI intersects with finance, funding readiness, and daily operations.

These findings carry several implications. Theoretically, AI literacy functions as digital human capital whose returns depend on enabling conditions, so awareness is necessary but insufficient for AI-enabled entrepreneurial learning. For policy, national AI and digital literacy targets will not reach entrepreneurs in the region without parallel investment in affordable access, local delivery, mentorship, and outcome monitoring disaggregated by state, location, and gender. For training providers, programmes must move beyond awareness towards applied, sector-specific, and mentored learning that links AI to financial management and access to finance. For the regional ecosystem, existing incubation centres, study centres, and trade associations represent an underused infrastructure through which such learning can be scaled. The study is limited by its reliance on self-reported data and on non-probability sampling within LGAs; future research should test the relationships among awareness, barriers, competency needs, and enterprise performance using multivariate models and evaluate specific AI training interventions longitudinally.

Recommendations

In line with the findings, the following recommendations are made:

1. Because awareness was broad but shallow, state ministries of commerce, the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), NITDA, and trade associations should replace general awareness campaigns with sector-specific demonstrations of AI for pricing, stock management, marketing, and record keeping, delivered in markets and cooperatives and in local languages.
2. Because data and electricity costs were the most severe barriers, state governments, development partners, and telecommunications providers should establish shared, solar-powered AI-enabled business centres within existing incubation and study centres and negotiate subsidised data bundles for entrepreneurs in training.
3. Because AI-digital fluency and financial competencies were most needed, the Development Bank of Nigeria, NCDMB, university entrepreneurship centres, and NOUN incubation centres should offer short, modular, competency-based programmes leading to stackable micro-credentials that pair AI skills with business functions such as bookkeeping, business plan preparation, and digital marketing.
4. Because the shortage of trainers and mentors was a major barrier, a regional AI-for-enterprise mentor network linking practitioners, technology firms, and diaspora professionals should provide six to twelve months of post-training support, and train-the-trainer programmes should be run for entrepreneurship educators and business development service providers.
5. Because trust and privacy concerns constrained use, all AI training for entrepreneurs should include practical modules on verifying outputs, protecting data, and ethical use, supported by plain-language guidelines on responsible AI use for small businesses.
6. Because gender-related constraints were concentrated among women, programme designers should adopt flexible daytime scheduling, community-based and mobile delivery, women-focused cohorts, and partnerships with women's cooperatives, and all funders should monitor outcomes disaggregated by state, gender, and location.

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ASSESSMENT OF THE IMPACT OF ARTIFICIAL INTELLIGENCE ON OFFICE TECHNOLOGY MANAGEMENT AND ENTREPRENEURIAL LEARNING AND PRACTICE IN PUBLIC POLYTECHNICS IN SOUTH EAST, NIGERIA

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Abstract

This study assessed the impact of Artificial Intelligence on Office Technology Management (OTM) and Entrepreneurial learning in public polytechnics in South East, Nigeria. Specifically, the study assessed how the use of AI tools affects the technical skills, productivity and job performance and the entrepreneurial learning, innovation and business idea generation among OTM students in public polytechnics in South East, Nigeria. Two corresponding research questions guided the study. Two hypotheses were formulated and tested at 0.05 level of significance. Descriptive survey research design was adopted for the study. The population consisted of One Hundred and Fifty (150) Higher National Diploma (HND) II OTM students from three (3) public polytechnics in South East, Nigeria offering OTM. The entire population was studied, hence, there was no sampling. A structured questionnaire which was validated by three Business Educators was used for data collection. The reliability test conducted showed a reliability coefficient of 0.87. Mean and standard deviation were used to answer the research questions while t-test statistical tool was used for the hypothesis. Findings showed that AI integration in office technology management and entrepreneurial learning practices in public polytechnics in South East, Nigeria significantly boosts productivity, decision-making efficiency and supported entrepreneurship education by helping students build confidence and intention toward business creation. Consequent upon the findings of the study, it was recommended that NBTE and polytechnic managements should integrate AI modules into NBTE OTM curriculum and also establish AI-enabled innovation Hubs.

Keywords: Artificial Intelligence, Office Technology Management and Entrepreneurial Education, Innovation and Technical Skills

Introduction

Office Technology and Management (OTM) is a technical and vocational education programme designed to equip students with competencies for effective performance in modern office environments. According to the National Board for Technical Education (NBTE, 2021), OTM replaced the former Secretarial Studies curriculum to reflect the paradigm shift from manual clerical duties to technology-driven office functions. The programme integrates courses in word processing, office application packages, records management, web technology, human relations, and entrepreneurship, thereby producing graduates who function as administrative assistants, office managers, and potential entrepreneurs.

Globally, the office environment has been transformed by rapid technological innovations, particularly artificial intelligence (AI), cloud computing, and automation tools (Hussin, Shuib, Nasir, & Rosalin, 2025). These technologies have redefined traditional OTM competencies such as typing, shorthand, and filing, replacing them with digital skills like AI-assisted report writing, automated scheduling, virtual collaboration, and data-driven decision making. OTM is significant because it addresses national development goals. The federal government of Nigeria, through NBTE, positions polytechnics to produce self-reliant graduates. OTM students are expected to acquire both employability skills for paid employment and entrepreneurial skills for job creation (NBTE, 2022). Furthermore, employers now demand graduates who can leverage AI tools such as ChatGPT, Microsoft Copilot, and Gemini for office productivity and business innovation (Crompton & Burke, 2023). It also aligns with global education trends.

Technological changes have led to significant improvement in the society which have brought about enormous improvement in the educational system and pedagogical delivery. Technology is a tool that transforms the way things are done in the society. The application of technology driven structural approaches in Office Technology and Management programme is paramount for academic endeavours. Artificial intelligence (AI) is one of the technologies of the 21st century that has emerged with its awareness and application cutting across different fields of human endeavor. The integration of artificial intelligence in education has garnered significant attention in recent years. This interest is driven by the transformative potential of AI technologies to enhance teaching methodologies, streamline administrative processes, and improve student learning outcomes. The transformation of office technology and management has accelerated with the rise of digital technologies, particularly through the adoption of artificial intelligence (AI) tools. Modern educational institutions are increasingly utilizing AI innovations like Chatbots, virtual reality (VR), grammarly, turnitin, and content recommendation engines to facilitate effective and flexible learning (Ndiomu, AkeleEgberi, Alabi, 2025). These technologies provide around-the-clock access to instructional resources, tailoring students to learn at their own pace and according to their individual needs. The purpose of artificial intelligence in education is to improve classroom education and enhance the capacity of teachers to augment such a process (Edeh, Olupayimo, & Bolarinwa, 2025). According to Hussin, et al., (2025), artificial intelligence technologies transform business operations by automating everyday processes and strengthening analytical capabilities, which reshape organization dynamics together with employee practices. The transition of workplaces to hybrid and remote structures created a substantial rise in the demand for adaptable, intelligent systems that boost operational performance alongside productivity. AI tools function as workflow central tools for real-time data-processing, and they provide essential support to strategic decision processes. Both opportunities and challenges exist because organizations need to accept these technologies yet maintain ethical standards when developing human-oriented office spaces. Gaber in Edeh et al. (2025), opined that artificial intelligence is a field of science seeking to develop computer systems with a level of efficiency similar to that of an expert human. In the field of education, artificial intelligence is defined as a means to improve education in an individualized, flexible, inclusive and interesting way by processing real-time data (UNESCO, 2017).

While AI has been successfully deployed in developed countries, developing nations remain at an early phase of adoption. According to Ndiomu et al., (2025), various challenges hinder the full implementation of AI in these areas, including underdeveloped infrastructure, limited access to reliable information, institutional resistance, inadequate funding, and a general lack of digital literacy and technical skills. These barriers underscore the need for further investigation into how AI can be effectively adopted and implemented in higher education, particularly with regards to public polytechnics in South East, Nigeria. Study conducted by Hussin et al. (2025), on harnessing Artificial Intelligence in office management emphatically states that AI boosts decision-making and employee performance. However, empirical evidence on how AI impacts OTM students' acquisition of technical competencies and entrepreneurial learning remains scarce in the Nigerian context. Most studies have examined AI in general higher education (Wang, 2025) or entrepreneurship education broadly (Li et al., 2025), with limited focus on the unique curriculum structure of OTM in polytechnics in South East, Nigeria. This gap justifies research attention, as findings will inform curriculum review, pedagogical strategies, and policy decisions by NBTE, TETFund and polytechnic management.

Statement of the Problem

Office Technology and Management, which is an integral part of Business Education taught in public polytechnics in Nigeria is a skills acquisition programme, needs to be taught with innovative skills especially Artificial Intelligence to remain competitive in the global world. Artificial Intelligence, no doubt, has revolutionized teaching and learning making teaching personalized, students engaged and

motivated. It is used in developing instructional contents, receiving feedback from students, overcome learning challenges, give students assignments, mark scripts and grade students. AI can also be used to support learners with special needs. It is an innovative approach in teaching and learning making the educational process enthusiastic (Ezeabii and Ngene, 2025).

Although the use of Artificial Intelligence has gained traction in most Nigeria tertiary institutions, its application in public polytechnics in South East, Nigeria has not been feasible. Many scholars have emphasized the imperative nature of the application of AI tools in teaching and learning of OTM courses, yet effective application of AI in public polytechnics in South East, Nigeria is still very elusive. This gap raises concerns about the effectiveness of graduates from these public polytechnics in a competitive global business environment. The failure to adapt to these technological trends could negatively impact the quality of OTM graduates limiting their ability to function effectively in the increasing digital and automated business world. By integrating AI education into curricula, public polytechnics in South East, Nigeria can help close the gap between academic preparation and industry expectations, ensuring graduates are equipped to thrive in contemporary work environments. Therefore, this study aimed to methodically assess the impact of artificial intelligence on office technology management and entrepreneurial learning and practice in public polytechnics in South East, Nigeria.

Research Questions

The following questions guided the study:

1. How does the use of artificial intelligence tools influence the technical competencies and productivity levels of OTM students in public polytechnics in South East, Nigeria?
2. To what extent does exposure to artificial intelligence enhance entrepreneurial learning and innovation capacity among OTM students in public polytechnics in South East, Nigeria?

Research Hypotheses

1. There is no significant influence of artificial tools on the technical competencies and productivity levels of OTM students in public polytechnics in South East, Nigeria based on gender.
2. There is no significant influence of artificial intelligence exposure on entrepreneurial learning and innovation capacity between male and female OTM students in public polytechnics in South East, Nigeria.

Research Methodology

The study adopted descriptive research design. The area of study is South East, Nigeria which has many public polytechnics offering OTM. In the course of this study, only three (3) polytechnics were considered, namely: Akanu Ibiam Federal Polytechnic, Unwana, Ogbonnia Onu Polytechnic, Aba and Federal Polytechnic, Nekede, Owerri. The population is One Hundred and Fifty (150) HND II OTM students consisting of One Hundred (100) females and Fifty (50) males. The study adopted a census study. A census is recommended when population is equal to or less than 200, accessible, and resources permit (Mugenda and Mugenda, 2003). Census saves time and removes sampling error. The instrument for data collection was structured questionnaire titled Impact of Artificial Intelligence on Office Technology Management and Entrepreneurial Learning and Practice in Public Polytechnics Questionnaire (IAIOTMAELQ). The instrument was structured and made up of two sections namely: A and B. Section A contained information on two demographic variables namely name of institution and sex. Section B consisted of 12 items measuring the AI tools, OTM technical competencies/productivity and the extent of AI exposure on entrepreneurial learning/innovation. The items were arranged on a four-point rating scale. The response options for sub sections A and B was Strongly Agree (SA) – 4 points, Agree (A) – 3 points, Disagree (D) – 2 points, Strongly Disagree (SD) – 1 point. The instrument was validated by three experts (Two in Business Education and One in Measurement and Evaluation). Their corrections and suggestions helped to improve the quality of the instrument. The reliability of the instrument was tested using Cronbach Alpha reliability index which gave a reliability coefficient of 0.87. The researcher administered the copies of the questionnaires with the aid of three research assistants. Direct delivery and retrieval method were adopted in the administration and retrieval of the questionnaire. The 150 questionnaires printed were successfully administered and retrieved. Mean and standard deviation were used to answer the research questions while independent t-test was used to test the null hypotheses at 0.5 level of significance. Based on the 4-point rating scale, the mean score of the scale was 2.50. The mean score was derived by adding the nominal value of the rating scales

and divided by the same number of cases. 2.50 was used as the benchmark for the decision rule. For testing the hypothesis, the decision was to reject H_o, if and only if, the calculated value (t-cal) is greater than or equal to the tabulated (t-tab), otherwise accept.

Results

Research Question 1: How does the use of artificial intelligence tools influence the technical competencies and productivity levels of OTM students in public polytechnics in South East, Nigeria?

Table 1: Mean scores and standard deviation of OTM students on the influence of AI tools on the technical competencies and productivity levels.

S/N	ITEM STATEMENT	X_1(Male)	STD_1	X_2(Female)	STD_2	X_G	STD_G	Decision
1	Use of AI tools like ChatGPT/Grammarly improves my speed in typing and transcription tasks.	3.41	0.77	3.33	0.80	3.37	0.79	Agree
2	AI-powered tools such as MS Copilot and Otter.ai increase the accuracy of my office documents and reports.	3.20	0.84	2.81	0.87	2.98	0.87	Agree
3	I can perform mail merge, data sorting, and formatting tasks faster with AI than without AI.	3.24	0.62	3.15	0.63	3.19	0.62	Agree
4	AI tools have improved my ability to handle complex office tasks like minutes of meeting and presentations.	3.22	0.57	3.11	0.60	3.16	0.59	Agree
5	Using AI tools reduces errors in my shorthand-to-typed document conversions.	3.39	0.63	3.02	0.49	3.18	0.58	Agree
6	My overall productivity in practical OTM courses has increased since I started using AI tools.	3.41	0.63	3.50	0.57	3.46	0.60	Agree
	Grand Mean	**3.31**	**0.68**	**3.22**	**0.66**	**3.22**		**Agree**

Source: Field Survey, 2026.

The analysis of data presented in Table 1 above shows that all the item statements have mean scores ranging from 2.98 to 3.50 indicating agreement to the AI tools integration. The implication of the responses indicate that AI tools play critical role in the technical competencies and productivity of OTM students. The standard deviation indicates that the respondents have similar opinion to the items.

Research Question2: To what extent does exposure to artificial intelligence enhance entrepreneurial learning and innovation capacity among OTM students in public polytechnics in South East, Nigeria?

Table 2: Mean responses on the extent of exposure to artificial intelligence enhance entrepreneurial learning and innovation capacity among OTM students in public polytechnics in South East, Nigeria.

S/N	ITEM STATEMENT	X_1(Male)	STD_1	X_2(Female)	STD_2	X_G	STD_G	Decision
7	Exposure to AI tools helps me generate new business ideas for my entrepreneurial projects.	3.35	0.59	3.33	0.80	3.34	0.79	HE
8	AI tools like Canva AI and ChatGPT improve my ability to design business models and proposals.	3.47	0.54	2.81	0.87	3.14	0.87	HE
9	Using AI increases my creativity in solving business problems during entrepreneurship classes.	3.70	0.62	3.15	0.63	3.43	0.62	HE
10	AI tools help me conduct market research and customer analysis faster for my business ideas.	3.84	0.57	3.33	0.60	3.59	0.59	VHE
11	I can develop digital business plans more effectively with the help of AI tools.	3.87	0.63	3.80	0.49	3.84	0.58	VHE
12	AI exposure has improved my innovative thinking for starting a small business after graduation.	3.55	0.79	3.25	0.57	3.40	0.60	HE
	Grand Mean	**3.63**	**0.62**	**3.28**	**0.66**	**3.46**		**HE**

Source: Field Survey, 2026.

The analysis of data presented in Table 2 above shows that all the item statements have mean scores ranging from 2.81 to 3.87 indicating agreement to the AI tools on entrepreneurial skills. The implication of the responses indicate that AI tools play major role in the improvement of innovative thinking of OTM students. The standard deviation indicates that the respondents have similar opinion to the items.

H_o1: There is no significant influence of artificial intelligence tools on the technical competencies and productivity levels of Office Technology Management students in public polytechnics in South East, Nigeria based on gender.

Table 3: Summary of t-test Analysis on the influence of artificial intelligence tools on the technical competencies and productivity levels of Office Technology Management students in public polytechnics in South East, Nigeria based on gender.

Variables	N	X	SD	DF	Std Error	t-Cal	t-Critical	Level of Sig	Rmks
Male Students	**50**	**3.31**	**0.68**						
				148	**0.033**	**1.82**	**1.96**	**0.05**	**NS**
Female Students	**100**	**3.22**	**0.66**						

Note: NS = Not Significant at 0.05

The t-test findings in Table 3 show that the calculated t-value of 1.82 is less than the critical t-value (t-tab) of 1.96 at 148 degrees of freedom. This finding indicates that there is no statistical

significant disparity in the mean ratings of male and female students' responses the influence of artificial intelligence tools on the technical competencies and productivity levels of Office Technology Management students in public polytechnics in South East, Nigeria.

H_o2: There is no significant influence of artificial intelligence exposure on entrepreneurial learning and innovation capacity among male and female OTM students in public polytechnics in South East, Nigeria.

Table 4: Summary of t-test Analysis on the influence of artificial intelligence on exposure on entrepreneurial learning and innovation capacity among male and female OTM students in public polytechnics in South East, Nigeria.

Variables	N	X	SD	DF	Std Error	t-Cal	t-Critical	Level of Sig	Rmks
Male Students	**50**	**3.63**	**0.62**						
				148	**0.021**	**11.43**	**1.96**	**0.05**	**S**
Female Students	**100**	**3.28**	**0.66**						

Note: NS = Significant at 0.05

The results from the t-test in Table 4 show that the calculated t-value (t-cal) of 11.43 is greater that the crucial t-value (t-tab) of 1.96 at 148 degrees of freedom. The data suggests a significant disparity in the mean ratings between male and female students. Male OTM students exhibit a stronger inclination towards utilizing artificial intelligence on entrepreneurial learning and innovation capacity.

Discussion of the Findings

This research investigated the impact of artificial intelligence on office technology management and entrepreneurial learning and practice in public polytechnics in South East, Nigeria. The findings suggest that AI-driven educational tools and platforms can encourage students to improve on their technical competencies and productivity levels. The findings indicate that AI tools like ChatGPT and Grammarly improved their typing and transcription tasks, MS Copilot and Otter.ai increased the accuracy of their office documents and reports, helped them perform mail merge, data sorting, and formatting tasks faster, reduces errors in their shorthand-to-typed document conversions and overall productivity in practical OTM courses. Recent studies confirm that artificial intelligence tools are transforming office-related competencies and productivity in educational settings. Hussin et al. (2025) found that AI integration in office management significantly boosts decision-making efficiency and employee performance, which aligns directly with core OTM tasks such as report writing, minutes of meeting, and document processing. Similarly, Crompton and Burke (2023) reported that AI-supported learning environments provide adaptive pathways and instant feedback, leading to improved academic outcomes and self-regulated learning among students. Furthermore, Wang (2025), demonstrated that a hybrid AI model reduced error rates by over 5% in academic performance monitoring, suggesting that AI can enhance both speed and accuracy of technical tasks. These findings imply that AI exposure is likely to improve OTM students' technical competencies and overall productivity in public polytechnics in South East and Nigeria at large

Empirical evidence also shows a growing link between generative AI and entrepreneurial learning outcomes. Students in the findings above confirmed that exposure to AI tools helps them generate new business ideas for their entrepreneurial projects, AI tools like Canva and ChatGPT improve their ability to design business models and proposals, increases their creativity in solving business problems during entrepreneurship classes, helps them conduct market research and customer analysis faster, help them develop digital business plans more effectively and general improvement in their innovative thinking for starting a small business after graduation. To corroborate the above advantages, Li et al. (2025) reported that Generative Artificial Intelligence Supported Entrepreneurship Education significantly enhanced university students' entrepreneurial intention with university support moderating the effect. This suggests that AI tools help students build confidence and intention toward business creation. In a vocational context, Xia, Lan and Zhou (2026) found that AI-enhanced entrepreneurship education improved students' strategic engagement, digital literacy, and perceived fairness, resulting in stronger self-reported entrepreneurial competence and better project outcomes. Collectively, these studies indicate that exposure to AI tools can strengthen entrepreneurial learning, innovation capacity, and business idea generation among OTM students in public polytechnics in Nigeria.

Conclusion

This study assessed the impact of artificial intelligence on office technology and management and entrepreneurial learning among OTM students in South East, Nigeria. Findings revealed that AI tools significantly enhanced OTM students' acquisition of technical competencies such as collaboration, and data management. Additionally, AI positively influenced entrepreneurial learning by improving opportunity recognition, business idea generation, and digital marketing skills.

These findings imply that AI has transformed traditional OTM training from manual clerical skills to technology-driven, innovation-focused competencies. This aligns with NBTE's goal of producing self-reliant graduates and supports UNESCO's call for AI integration in TVET. However, limited access to AI tools and inadequate lecturer training were identified as constraints.

Based on the findings, the study concludes that artificial intelligence has a significant positive impact on both technical competencies and entrepreneurial learning of OTM students. Therefore, strategic integration of AI into OTM curriculum and pedagogy is necessary to enhance graduate employability and entrepreneurial capacity in Nigeria's digital economy.

Recommendations

The study's recommendations are based on its findings and conclusion.

1. The NBTE should review and update the OTM curriculum to formally integrate AI literacy modules. This includes hands-on training in ChatGPT, Microsoft Copilot, and AI-powered office tools to align with current industry demands.
2. Management of public polytechnics should establish AI-equipped office simulation labs for OTM students. Partnerships with TETFund and tech firms should be explored to provide sustainable funding and software licenses.
3. Lecturers should undergo regular capacity-building workshops on AI pedagogy. Emphasis should be placed on using AI for project-based entrepreneurial learning rather than replacing students' critical thinking.
4. Students should leverage free AI tools for skill enhancement and micro-business development. Entrepreneurship educators should guide students on ethical use of AI for business plan writing, market research, and digital branding.

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BRIDGING THE DIGITAL GAP: ESSENTIAL AI COMPETENCIES FOR BUSINESS EDUCATION STUDENTS IN THE ERA OF ENTREPRENEURIAL TRANSFORMATION

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Abstract

The emergence of Artificial Intelligence (AI) had appears to have significantly transformed entrepreneurship, business operations, and workforce requirements globally. Similarly, Business Education students are expected to acquire competencies that goes beyond traditional business knowledge to include AI-related skills which are necessary for innovation, productivity, and entrepreneurial success. However, a substantial digital gap exists between the competencies required by contemporary industries or businesses and those possessed by our graduates, especially in developing economies such as Nigeria. The paper examines the essential AI competencies required by Business Education students in the era of entrepreneurial transformation. The study adopts a conceptual approach by reviewing contemporary literature on AI competencies, digital entrepreneurship, and Business Education. Findings reveal that AI literacy, prompt engineering, data literacy, digital content creation, critical thinking, AI-assisted decision-making, ethical AI usage, and innovation competencies are essential for entrepreneurial readiness and competitiveness. As such, findings show that inadequate infrastructure, curriculum deficiencies, limited AI awareness, and insufficient lecturer preparedness are major barriers to AI competency development. It concludes that by integrating AI competencies into Business Education curricula, it would bridge the digital gap and also prepare students for entrepreneurial success in the digital economy. The study recommends curriculum reform, capacity building, institutional investment in AI infrastructure, and industry collaboration to enhance AI competency acquisition among Business Education students.
***Keywords**: Artificial Intelligence, Business Education, Digital Gap, Entrepreneurial Transformation, Digital Competencies.*

Introduction

Business Education, as a discipline, is designed to equip learners with the knowledge, skills, attitudes, and competencies required for gainful employment, self-reliance, and entrepreneurial development (Alsarayreh (2025). Traditionally, the programme focused on accounting, office technology, management, marketing, and entrepreneurship. According to Sharma (2025), the rise of an artificial intelligence-driven business environment has increased the need for new competencies that enable graduates to operate effectively in digitally transformed workplaces. The author emphasizes that AI-powered learning can help business education students develop the skills required for success in the modern business world. In addition, business environments are undergoing unprecedented transformation due to the rapid advancement in Artificial Intelligence (AI) including machine learning, big data analyse, and digital technologies. These technological innovations have altered traditional

business models and created new opportunities for entrepreneurship and economic development. Interestingly AI is increasingly being utilised in marketing, accounting, customer relationship management, financial forecasting, inventory management, and strategic decision-making. Sollosy and McInerney (2022) defined Artificial Intelligence in business education as the integration of AI knowledge, tools, and applications into business curricula to prepare students for technology-driven workplaces and AI-enabled decision-making. They emphasised that business education should equip learners with both AI competencies and essential human skills such as critical thinking, ethics, leadership, and adaptability.

Globally, employers have increasingly demand graduates who can apply AI tools to solve business problems, analyse data, automate processes, and generate innovative solutions. Mhlanga (2024) notes that the digital transformation of education in emerging markets is constrained by challenges such as limited access to digital technologies and inadequate AI-related infrastructure. The author argues that these limitations hinder students, including those in Business Education, from fully benefiting from technology-enhanced learning opportunities. The mismatch has contributed to a widening digital gap between educational outcomes and labour market expectations. Bridging this digital gap requires the identification and development of essential AI competencies skills capable of enhancing entrepreneurial transformation among Business Education students. This paper therefore examines the competencies required for effective participation in AI-driven entrepreneurial ecosystems. Business Education is mandated to prepare its students for employment, self-reliance, and entrepreneurship but it appears, many Business Education programmes in developing countries including Nigeria, continue to emphasize conventional business skills while giving little or no attention to emerging AI competencies. This can reduce the ability of Business Education graduates to adapt to technological changes, establish innovative ventures, and compete effectively in the digital economy. Munir, Bustamam, and Suffarruddin (2025) asserted that the effective integration of Artificial Intelligence into educational programmes can significantly enhance students' entrepreneurial competencies and improve their readiness to thrive in AI-driven business environments. The authors emphasized the strategic role of educational institutions in equipping students with advanced digital skills necessary for entrepreneurial success. The motivation for the study stems from growing concern regarding graduate unemployment and the need for entrepreneurial self-reliance among university graduates in Nigeria. As AI continues to redefine the future of work and entrepreneurship, Business Education students must be equipped with AI competencies to remain relevant and competitive, without which these graduates may face difficulties adapting to emerging business environments and exploiting opportunities created by digital transformation. The study was also motivated by the need to bridge the existing digital gap by identifying the essential AI competencies required by Business Education students for entrepreneurial transformation. The findings are expected to provide useful insights for students' curriculum planners, lecturers, policymakers, and educational institutions on strategies for integrating AI competencies into Business Education programmes. It then seeks to contribute to the development of future-ready graduates capable of leveraging AI technologies for innovation, self-employment, business growth, and sustainable national development.

Conceptual Review

Artificial Intelligence

Artificial Intelligence are computer systems capable of performing tasks that typically require human intelligence, such as learning, reasoning, prediction, decision-making, and natural language processing. Recent developments in generative AI have expanded the application of AI technologies in education, business, and entrepreneurship. According to Sharma (2025), the rise of an artificial intelligence-driven business environment has increased the need for new competencies that enable graduates to operate effectively in digitally transformed workplaces. The author reveals that AI-powered learning can help business education students develop the skills required for success in the modern business world. AI-powered tools such as ChatGPT, Gemini, Copilot, and predictive analytics platforms have become increasingly important for business innovation and decision-making. Somià and Vecchiarini (2024) described artificial intelligence in entrepreneurship education as a transformative technology that enhances students' learning experiences and supports the development of entrepreneurial competencies such as opportunity recognition, creativity, vision, valuing ideas, and ethical thinking. They emphasized that AI tools like ChatGPT can strengthen experiential learning and improve entrepreneurial outcomes. Artificial Intelligence (AI) competencies can be seen as the knowledge, skills, attitudes, and ethical dispositions required to effectively understand, utilize, evaluate, and interact with AI technologies in educational, professional, and entrepreneurial contexts. AI competencies extend beyond technical knowledge to include critical thinking, problem-solving, ethical awareness, data interpretation, and the ability to apply AI tools to achieve specific objectives. Recent studies have

emphasized that AI competency development is becoming an essential requirement for students preparing for participation in digitally transformed economies.

Business Education

Business Education is a vocational and professional educational programme aimed at preparing learners for careers in business occupations, entrepreneurship, and economic productivity. It combines theoretical knowledge with practical competencies required for employment and self-reliance. Group projects and entrepreneurial challenges teach students to work effectively in teams, communicate ideas clearly, and lead confidently, these are essential skills not only for the workplace but for life. Anderson, J., Nguyen, C. A., & Ucok Hughes, M. (2025) viewed the integration of artificial intelligence into business education and entrepreneurship practice as the application of AI technologies to enhance teaching, learning, business decision-making, innovation, and entrepreneurial activities. They emphasized that Artificial Intelligence equips learners and entrepreneurs with digital competencies, improves problem-solving and productivity, and prepares them for success in a technology-driven economy. A strong AI foundation in business education can empower students to think beyond traditional career paths and foster a mindset of adaptability and innovation that prepares them to drive in an ever-evolving global economy by starting their own ventures, leading initiatives within organisations, or contributing to their communities. Integrating AI competencies into the business education broader curriculum ensures that students are learning the 'what' and the 'how' of academics and application of their technological knowledge. By doing this, we're not just teaching students about business, we're also equipping them with the mindset and tools to succeed in any field.

Bassey and Ebieme (2026) argued that the integration of Artificial Intelligence into Business Education programmes is essential for developing a technologically driven workforce capable of meeting the demands of the digital economy. They further emphasised that AI integration equips students with relevant digital competencies, enhances innovation, and improves their readiness for technology-oriented careers. By embedding these principles into business education, the approach ensures that AI and other technological tools are seen not as replacements but as transformative forces that enrich learning and prepare students for the complexities of the modern world. It is essential to combine the best of AI with human expertise, delivering content that is not only informative but also deeply impactful. Rather than relying solely on AI to generate information, business education must ensure that every resource meets the highest standards of quality and relevance by empowering teachers and emphasising the importance of business education through paving the way for a more robust and future-ready educational system, this is because AI is a remarkable tool, but its true power lies in working hand in hand with educators to create meaningful learning experiences.

Entrepreneurial Transformation

Entrepreneurial transformation can be seen as the process through which entrepreneurs leverage technological innovations, digital tools, and modern business strategies to improve efficiency, competitiveness, and value creation. Sutrisno, Kuraesin, Siminto, Irawansyah, and Ausat (2023) highlighted that the effective use of digital technologies enhances innovation, supports opportunity recognition, and strengthens entrepreneurial performance in a rapidly evolving business environment. Artificial Intelligence has become a major catalyst for entrepreneurial transformation by enabling automation, market intelligence, innovation, and customer engagement. Park and Kim (2025) defined entrepreneurial competencies as a multidimensional combination of creativity, problem-solving, critical thinking, collaboration, and digital literacy that enable individuals to create value in a digitally transformed society. They emphasised that these competencies are developed through technology-integrated learning environments and are essential for success in the era of digital transformation. Students who develop these competencies are more likely to establish successful enterprises and contribute to economic development and studies indicate that AI-enhanced learning environments improve students' entrepreneurial competencies, particularly creativity, opportunity recognition, and business model development. Somia, T., & Vecchiarini, M. (2024). explored the impact of AI technologies on students' entrepreneurial competencies. Their findings demonstrated that the use of AI tools enhanced creativity, opportunity recognition, and business model development among undergraduate students. Instructively, that AI technologies can play a significant role in entrepreneurship education when integrated appropriately into learning activities.

Theoretical Framework

Human Capital Theory

Human Capital Theory was propounded by Theodore W. Schultz in 1961 and later expanded and popularised by Gary S. Becker in 1964 through his seminal work Human Capital: The theory emerged from the recognition that investments in education, training, and skills development enhance the productive capacity of individuals and contribute to economic growth. Schultz argued that expenditures

on education and training should be viewed as investments rather than consumption, while Becker provided a comprehensive framework explaining how investments in human capabilities improve productivity, earnings, and organizational performance. Investment in Education and Training improve an individual's productivity and future economic returns while Knowledge and Skills Enhance Productivity. Investment in human capabilities yields benefits such as higher earnings, improved employability, increased innovation, and enhanced organizational performance. Therefore, equipping Business Education students with AI-related competencies constitutes an investment in entrepreneurial development and economic growth. This study focuses on AI competencies also seen as forms of human capital because they represent valuable knowledge and skills that enhance the ability of Business Education students to function effectively in technology-driven entrepreneurial environments. According to Human Capital Theory, students who acquire AI competencies are likely to become more productive, innovative, employable, and capable of establishing sustainable entrepreneurial ventures. Therefore, investment in AI-related competencies is expected to contribute to entrepreneurial transformation and economic development.

Although Human Capital Theory has been widely applied to studies on education, training, workforce productivity, and economic growth, most existing studies have concentrated on traditional human capital variables such as formal education, vocational training, and work experience. There is still limited empirical evidence on the specific AI competencies required by Business Education students for successful participation in the digital entrepreneurial economy, particularly in developing countries such as Nigeria. Furthermore, many previous studies have examined digital skills generally without specifically investigating AI-related competencies such as critical thinking in AI environments, AI-assisted decision-making, innovation and adaptability in response to AI technologies, and their contribution to entrepreneurial transformation.

Essential of AI Competencies for Business Education Students

Artificial Intelligence literacy refers to individual's understanding of technological concepts, applications, opportunities, risks, and limitations. It encompasses the ability to recognize how the systems function and how they can be utilized effectively in various contexts. AI literacy has become increasingly important for entrepreneurship because entrepreneurs operate in environments characterized by rapid technological change and data-driven decision-making. Azis (2026) found that Artificial Intelligence literacy significantly influences entrepreneurial readiness among university students. It revealed that students with higher technology literacy demonstrated greater confidence in identifying business opportunities, utilizing digital technologies, and developing entrepreneurial initiatives. Similarly, reviews of Artificial Intelligence education indicate that AI-literate students are better prepared to leverage emerging technologies for innovation, opportunity recognition, and business growth. These findings suggest that AI literacy serves as a critical foundation for entrepreneurial transformation in modern business environments.

Prompt engineering refers to the ability to design effective instructions that generate accurate and useful responses from AI systems. This competency has become increasingly important for business planning, content generation, customer engagement, and market research. Marvin, Hellen, Jjingo, and Nakatumba-Nabende (2023) highlighted that prompt engineering is a critical skill for effectively interacting with large language models, enabling users to obtain accurate, relevant, and context-specific outputs. It emphasised that developing prompt-engineering competencies can enhance the educational and professional application of AI technologies across diverse fields. With the growing adoption of generative AI platforms such as ChatGPT and similar technologies, prompt engineering has emerged as a valuable competency for entrepreneurs and business professionals. Ekin (2026) revealed that prompt engineering is an essential competency for maximizing the effectiveness of ChatGPT and other AI systems, as well-designed prompts improve the accuracy, relevance, and quality of generated responses. The study further highlighted that mastering prompt-engineering techniques and best practices enhances users' ability to leverage AI tools for learning, problem-solving, and professional tasks. students who possess prompt engineering skills are more capable of utilizing AI tools for business planning, market research, customer engagement, idea generation, and strategic decision-making. Entrepreneurs who can effectively communicate with AI systems are better positioned to exploit technological opportunities and improve business performance.

Data literacy involves collecting, analyzing, interpreting, and utilizing data for informed decision-making. Since AI systems rely heavily on data, entrepreneurs require strong data literacy skills to maximize the benefits of AI technologies. Cox and Mazumdar (2024) defined artificial intelligence (AI) for librarians as a collection of technologies that perform tasks requiring human intelligence and support various library operations, services, data literacy, and user management. In the era of AI and big data, entrepreneurial success increasingly depends on the ability to transform data into actionable insights.

Data literacy enables entrepreneurs to understand market trends, customer preferences, business performance indicators, and competitive dynamics. Gade (2021) highlights that data-driven decision-making is crucial for navigating complex and dynamic environments. He reveals that the ability to collect, analyze, and interpret data enables individuals and organizations to make informed decisions, improve performance, and achieve strategic objectives. Studies on digital entrepreneurship identify data interpretation and analytical capabilities as critical competencies for entrepreneurial readiness. Business Education students equipped with data literacy skills are more likely to identify entrepreneurial opportunities and make informed strategic decisions. Digital content creation skills appear to contribute significantly to entrepreneurial readiness and business competitiveness. It is the ability to develop, manage, and distribute digital materials for communication, marketing, branding, and business development purposes. The increasing reliance on digital platforms has made content creation a fundamental entrepreneurial competency. Dordevic, Milanovic and Radosavljevic (2025) highlighted that digital skills are critical determinants of employability in today's technology-driven labour market. The authors noted that individuals with strong digital competencies are better positioned to secure employment, adapt to workplace changes, and achieve sustained career growth. Digital content creation serves as an important mechanism through which AI literacy influences entrepreneurial readiness among students (Azis 2026). Students capable of creating digital content are better positioned to engage customers, market products, and establish digital ventures. Entrepreneurs increasingly utilize AI systems to create promotional materials, business proposals, social media campaigns, and customer communication content, consequently, digital content creation skills have become indispensable in the digital economy.

Critical thinking and analytical skills are among the most essential Artificial Intelligence (AI) competencies required by Business Education students in the era of entrepreneurial transformation. These skills involve the ability to objectively evaluate information, identify problems, analyze data, draw logical conclusions, and make informed decisions. Kassenkhan, Moldagulova, and Serbin (2025) asserted that the integration of gamification and artificial intelligence in education significantly enhances students' critical thinking by fostering active participation, problem-solving, and adaptive learning. Similarly, the authors emphasized that AI-powered gamified learning environments provide personalized feedback and engaging challenges, thereby strengthening higher-order cognitive skills and informed decision-making. Critical thinkers question assumptions, assess evidence, and consider alternative solutions before reaching conclusions. Business Education students must develop the ability to evaluate AI outputs, detect misinformation, identify biases, and apply human judgment to AI-assisted decisions. Critical thinking remains an essential competency despite advancements in AI technologies. Ayada (2025) argued that critical thinking is a learnable and developable competency rather than an inherent trait, emphasizing that structured education and targeted training play a vital role in cultivating entrepreneurial thinking and enhancing students' capacity for innovation and problem-solving. AI-powered tools can generate reports, forecasts, market analyses, and business recommendations but, these outputs still require human judgment and evaluation by our students. Business Education students must be able to critically assess AI-generated information before applying it in real-world business situations. These skills help Business Education students to make better business decisions, evaluate AI-Generated information, solve complex business problems, enhance innovation and creativity, improve financial and strategic planning, increase employability and entrepreneurial success. By developing these competencies, Business Education students become better prepared to compete in an increasingly AI-driven economy.

Decision-making competency involves the systematic use of information, logical reasoning, judgment, and evidence to make effective and timely decisions. Bruine de Bruin, Parker, and Fischhoff (2020) argued that decision-making competence extends beyond intelligence and involves the ability to make sound judgments and choices in diverse situations. The authors revealed that effective decision-making skills contribute to better personal, academic, and professional outcomes by enabling individuals to evaluate information critically and make informed decisions. Decision-making competency is highly relevant to Business Education students because it equips them with the ability to make informed choices in various business and entrepreneurial situations. In today's digital economy, where AI systems generate vast amounts of information, students must be capable of analyzing data and selecting the most suitable actions to achieve organizational and entrepreneurial goals. By developing this competency, Business Education students can become better prepared to navigate complex business environments, drive innovation, and achieve entrepreneurial success. Haruna, Oyelekan, and Gana (2025) investigated the role of AI in enhancing entrepreneurial skills among Business Education students. Using a descriptive survey design, the study found that AI significantly improved students'

technology proficiency and decision-making capabilities, leads to enhanced entrepreneurial competencies.

Ethical concerns surrounding AI include privacy, fairness, transparency, accountability, and intellectual property rights. Business Education students must understand these ethical considerations to ensure responsible use of AI technologies. Gaisie, Owusu-Boateng, Yidana, and Ghansah (2025) emphasized that ethical considerations and data privacy are fundamental to the responsible adoption of artificial intelligence in education. Specifically, the authors argued that ensuring transparency, fairness, accountability, and the protection of learners' data is essential for building trust and promoting the effective use of AI technologies in educational settings. Ethical competency is essential because the misuse of AI can result in misinformation, bias, privacy violations, and reputational damage. Similarly, Radanliev (2025) argued that the successful development and deployment of artificial intelligence systems depend on the integration of key ethical principles, including transparency, fairness, and privacy. Furthermore, the author emphasized that adherence to these principles enhances accountability, mitigates bias, and promotes public trust in AI-driven technologies. Ethical AI usage promotes trust, sustainability, and responsible innovation within entrepreneurial ecosystems. Moreover, entrepreneurship scholars emphasize that responsible innovation and ethical decision-making are increasingly important for business success in technology-driven environments. Entrepreneurs who understand ethical AI practices are better equipped to build sustainable ventures and maintain stakeholder confidence.

Innovation and adaptability competency refers to the ability to generate new ideas, embrace change, respond effectively to emerging technologies, and continuously adjust to evolving business environments. In the era of Artificial Intelligence (AI) and digital transformation, innovation involves using creativity and technology to develop new products, services, processes, and business solutions, while adaptability refers to the capacity to learn, unlearn, and relearn skills in response to changing market demands and technological advancements.

Park and Kim (2025) reported that emerging digital technologies, including Artificial Intelligence (AI), data analytics, and digital collaboration platforms, are transforming entrepreneurship education by fostering innovative thinking, enhancing entrepreneurial competencies, and encouraging proactive entrepreneurial behavior among learners. The dynamic nature of digital entrepreneurship requires individuals who can continuously learn, adapt, and innovate. Hence as AI continues to reshape industries and entrepreneurial activities, individuals who possess innovation and adaptability competencies are better positioned to identify opportunities, overcome challenges, and remain competitive in the digital economy. These competencies enable learners to effectively integrate AI tools into business operations such as idea generation, product development, and market expansion and also respond proactively to disruptions in the business environment.

Innovation and adaptability are essential competencies for Business Education students because they prepare them to thrive in technology-driven workplaces and entrepreneurial ventures. Similarly, Owhoeke, Obi, Nwadede, and Ordu (2025) asserted that strategic innovations in business education are essential for enhancing students' skills development and preparing them to navigate economic uncertainty effectively. Furthermore, the authors emphasized that innovative educational approaches strengthen learners' adaptability, problem-solving abilities, and entrepreneurial competencies required in a rapidly changing business environment. The rapid adoption of AI, automation, and digital technologies requires future business professionals to be flexible, creative, and open to continuous learning. This competency is a vital AI-related skill for Business Education students because It empowers them to embrace technological advancements, respond effectively to changing business environments, and create innovative solutions that drive entrepreneurial success. By developing these competencies, Business Education students can remain relevant in the modern workforce, and contribute meaningfully to sustainable economic development.

Relevance of AI Competencies to Entrepreneurial Transformation

The knowledge, skills, attitudes, and abilities required to effectively understand, utilize, manage, and evaluate AI technologies in various personal, professional, and business contexts are known and referred to as AI Competencies. Entrepreneurial transformation, on the other hand, involves the adoption of innovative technologies, digital business models, and modern management practices that enhance business creation, growth, competitiveness, and sustainability. Sidorova, Chatterjee, and Yang (2026) proposed an AI for Business Competency Framework aimed at preparing future business professionals for an increasingly AI-enabled workplace. The authors emphasized that developing competencies in AI literacy, data-driven decision-making, ethical AI use, and digital problem-solving is critical for enhancing graduates' effectiveness and competitiveness in the evolving business environment. For Business Education students, AI competencies are highly relevant because they

equip them with the capabilities needed to become innovative entrepreneurs, competent employees, and effective managers in an increasingly technology-driven business environment. The integration of AI competencies into Business Education can help students develop the digital skills necessary for entrepreneurial success and sustainable business growth.

AI competencies are fundamental drivers of entrepreneurial transformation in the digital age because they provide Business Education students with the knowledge and skills needed to innovate, make informed decisions, recognize opportunities, and adapt to changing business environments. Consequently, the development of AI competencies is essential for preparing Business Education students to become successful entrepreneurs and contributors to economic development in the era of technological advancement.

Challenges to AI Competency Development

Several factors hinder AI competency acquisition among Business Education students:

1. Inadequate digital infrastructure: It is the lack of essential technological facilities such as computer laboratories, modern hardware, software, reliable electricity supply, and digital learning environments required for AI competency development. Usulor, Chukwuma, Ihuoma, and Amadi (2026) emphasised that inadequate digital infrastructure remains a major constraint to effective AI learning in universities. The authors advocated appropriate management and curriculum responses to address infrastructure deficits and create an enabling environment for the effective integration of AI into university education. Without adequate infrastructure, Business Education students have limited opportunities to practice and develop AI-related skills, thereby widening the digital gap and reducing their readiness for entrepreneurial transformation.
2. Limited Access to AI Technologies: It occurs when students and institutions are unable to obtain or utilize AI tools, applications, and platforms due to availability, licensing, or technological barriers. This challenge restricts students' exposure to practical AI experiences and hinders their ability to develop competencies necessary for functioning in AI-driven business environments. Challenges such as inadequate infrastructure, limited digital skills, ethical concerns, and implementation costs can hinder the effective integration of AI in higher education (Ocen et al., 2025).
3. Insufficient Lecturer Training: It is the lack of adequate knowledge, skills, and professional development opportunities for lecturers regarding AI technologies and their applications. Okon and Chukwurah (2020) described technology-driven teaching skills as the competencies required by educators to effectively utilize modern digital technologies, multimedia tools, and technology-enhanced instructional strategies in teaching and learning. They emphasized that these skills improve content delivery and promote active, learner-centered instruction in a globalized educational environment. When lecturers are not properly trained, they may struggle to integrate AI concepts into teaching and learning, thereby limiting students' acquisition of relevant AI competencies.
4. Outdated Business Education Curriculum: Such a curriculum may emphasize traditional business skills while neglecting emerging technologies, this curriculum is one that does not adequately reflect current technological advancements, digital business practices, and AI-related competencies required in the modern workplace while leaving graduates inadequately prepared for entrepreneurial transformation and the digital economy. Philip, Schmidt, Simha, and Rosen (2026) argued that business education must be revitalized through digital integration to remain relevant in a rapidly evolving technological environment. They revealed that incorporating emerging digital technologies into business education can enhance students' competencies, adaptability, and preparedness for the future workplace.
5. Low Awareness of AI Applications: it is the limited knowledge and understanding of how AI can be used in business operations, entrepreneurship, decision-making, marketing, finance, and customer service. When students and educators are unaware of the benefits and uses of AI, they are less likely to adopt and utilize AI technologies for learning and entrepreneurial activities. Similarly, Zhang, Zhang, Daim, and Yalçın (2025) argued that Artificial Intelligence (AI) is transforming conventional knowledge management practices, thereby necessitating a reconsideration of established frameworks. The authors emphasized that AI-driven knowledge creation and sharing processes require organizations to adopt more dynamic and technology-oriented approaches to managing knowledge effectively.

These challenges collectively hinder the development of AI competencies among Business Education students. Addressing such issues can be essential for bridging the digital gap and preparing students for entrepreneurial transformation in an AI-driven economy.

Strategies for Bridging the Digital Gap

Integration of AI Literacy Courses into Business Education Curricula: One of the most effective strategies for bridging the digital gap is the integration of AI literacy courses into the Business Education curriculum. Iyoha, Nnonyelu, Emefiele, Ogor, and Okorie (2025) emphasized that adopting Artificial Intelligence (AI) in business education can enhance students' work-related skills and better prepare them for the demands of the modern workplace. They also highlighted that integrating AI into tertiary business education can strengthen students' digital competencies, adaptability, and employability in Nigeria's evolving economy. This can be through incorporating topics such as AI fundamentals, data literacy, prompt engineering, digital content creation, ethical use of AI, and AI-assisted decision-making into existing courses. By exposing students to AI concepts during their studies, institutions can equip them with the knowledge and skills required to function effectively in modern business and entrepreneurial environments. Curriculum integration ensures that graduates possess relevant competencies needed in the digital economy.

Establishment of AI Laboratories and Innovation Centres: Educational institutions should establish AI laboratories and innovation centres where students can gain hands-on experience with AI technologies. These centres should provide opportunities for experimentation, project development, collaboration, and practical application of AI tools in solving real business problems. Ciolacu, Haderer, Berl, and Svasta (2021) emphasized that Education 4.0 requires innovative learning environments that integrate Artificial Intelligence (AI) to enhance knowledge acquisition, creativity, and problem-solving skills. They argued that AI-enabled learning laboratories can support experiential learning and better prepare students for the demands of a digitally driven and innovation-oriented society. Such facilities help students move beyond theoretical knowledge and develop practical competencies that enhance innovation and entrepreneurial readiness.

Continuous Professional Development Programmes for Lecturers: The successful development of AI competencies among students depends largely on the capacity of lecturers. Ren and Wu (2025) found that the effective integration of Artificial Intelligence (AI) in higher education requires educators to possess adequate digital, pedagogical, and AI-related competencies. However, the authors noted that challenges such as insufficient training, limited technological infrastructure, and resistance to change may impede the successful adoption of AI in teaching and learning. Therefore, institutions should organize regular workshops, seminars, certifications, and training programmes to update lecturers' knowledge of AI technologies and teaching methodologies. Ismail (2026) viewed TVET in Southeast Asia as a strategic system for developing workforce competencies through digital transformation, innovation, and the integration of artificial intelligence to meet emerging industry demands. He emphasised that TVET institutions should strengthen digital skills, curriculum relevance, and educator competencies to prepare learners for the future of work. Well-trained lecturers are better equipped to integrate AI concepts into instruction and guide students in acquiring relevant digital skills. Partnerships between Educational Institutions and Technology Companies, Collaboration between universities, technology firms, and industry stakeholders can significantly enhance AI competency development by providing access to AI software, mentorship opportunities, internships, research collaborations, and industry-based learning experiences. Such collaborations help ensure that students acquire skills that are relevant to current workplace and entrepreneurial demands.

Adoption of Project-Based and Experiential Learning Approaches: Project-based and experiential learning methods encourage students to apply AI tools and concepts to real-life business challenges. Salinas-Navarro, Vilalta-Perdomo, Michel-Villarreal, and Montesinos (2024) emphasised that generative Artificial Intelligence (AI) tools can be effectively utilized to design experiential learning activities that support authentic assessment. Consequently, the authors argued that these tools enhance student engagement, creativity, and practical problem-solving by providing realistic and interactive learning experiences. Through practical assignments, case studies, simulations, and entrepreneurial projects, students develop problem-solving, critical thinking, innovation, and decision-making competencies. This approach enhances understanding and promotes the practical utilization of AI in business settings.

Increased Investment in Digital Infrastructure: Adequate digital infrastructure is fundamental to AI competency development. Governments and educational institutions should invest in reliable electricity, internet connectivity, computer laboratories, digital devices, and AI software platforms. Gantalao, Calzada, Capuyan, Lumantas, Acut, and Garcia (2025) emphasised that adequate school infrastructure and technical knowledge are critical for preparing the next generation of technicians in an era of AI integration. They argued that strengthening technological facilities and AI-related competencies is essential for preventing skill obsolescence and ensuring workforce readiness in a rapidly evolving digital

environment. Improved infrastructure creates an enabling environment for teaching, learning, and research in AI-related fields, thereby reducing barriers to digital inclusion.

Promotion of Ethical AI Education: While AI becomes increasingly integrated into business and society, students need to understand the ethical implications of AI usage. Educational programmes should emphasize responsible AI practices, data privacy, fairness, transparency, accountability, and ethical decision-making. Marín et al. (2025) argued that the increasing use of Artificial Intelligence (AI) in university education raises significant ethical concerns related to privacy, transparency, accountability, and bias. Furthermore, the authors emphasized the need for robust ethical frameworks and governance mechanisms to ensure the responsible and equitable deployment of AI in higher education. This will enable future entrepreneurs and business professionals to use AI technologies responsibly and sustainably.

Provision of Affordable Access to AI Tools for Students: Institutions and policymakers should ensure that students have affordable access to AI technologies, software applications, internet services, and digital devices. Goel (2020) argued that AI-powered learning can make education more accessible and affordable by providing flexible and personalized learning opportunities. He emphasised that AI can enhance educational outcomes by supporting learners' individual needs and reducing barriers to effective learning. Subsidised technology programmes, educational licenses, grants, and digital support initiatives can help reduce financial barriers and increase students' opportunities to acquire practical AI competencies. Affordable access promotes inclusiveness and ensures that no student is left behind in the digital transformation process.

Recommendations

Although previous studies have examined AI literacy, digital competencies, entrepreneurial readiness, and entrepreneurship education, few studies have specifically investigated the combined influence of AI literacy, prompt engineering skills, data literacy, digital content creation skills, and ethical AI usage on entrepreneurial transformation among Business Education students. Most existing studies focus on general digital competencies or entrepreneurial readiness without examining AI competencies as a multidimensional construct. Furthermore, empirical evidence from Nigerian universities remains limited. This study seeks to fill this gap by examining how essential AI competencies influence entrepreneurial transformation among Business Education students in Nigerian universities. Therefore, Bridging the digital gap among Business Education students requires a comprehensive approach that combines curriculum reform, infrastructure development, lecturer capacity building, industry collaboration, practical learning experiences, ethical AI education, and improved access to technology. Collectively, these enhance AI competency development, promote entrepreneurial transformation, and prepare students to succeed in an increasingly AI-driven business environment.

Conclusion

Artificial Intelligence has emerged as a transformative force in entrepreneurship and business practice. Consequently, Business Education students require competencies that extend beyond traditional business skills to include AI literacy, prompt engineering, data literacy, ethical AI usage, digital content creation, critical thinking, and innovation competencies that equips students with the capacity to effectively utilize AI technologies, solve complex business problems, identify entrepreneurial opportunities, and make informed business decisions. As entrepreneurship increasingly relies on digital technologies and AI-driven systems, the acquisition of these competencies is no longer optional but essential for academic success, employability, and business sustainability. Bridging the digital gap through AI competency development is essential for entrepreneurial transformation, graduate employability, and sustainable economic development. Educational institutions, policymakers, and stakeholders must therefore prioritize AI integration within Business Education programmes to prepare students to compete and success in the digital economy.

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PERCEPTIONS OF AI-POWERED TOOLS, DIGITAL LITERACY, AND REMOTE WORK PREPAREDNESS ON THE CAREER READINESS OF BUSINESS EDUCATION GRADUATES IN NIGERIAN UNIVERSITIES

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Abstract

The rapid transformation of the contemporary workplace through artificial intelligence (AI), digital technologies, and remote or hybrid work arrangements has increased the need for university graduates to possess competencies that extend beyond conventional academic qualifications. This study examined the perceived influence of AI-powered tools, digital literacy, and remote work preparedness on the career readiness of Business Education graduates in Nigerian universities. The study adopted a descriptive correlational survey design. The population comprised Business Education lecturers and final-year Business Education students at the University of Ilorin, Kwara State University, and Al-Hikmah University, Ilorin. A census of 322 respondents constituted the sample. Data were collected using a structured questionnaire titled the AI-Powered Tools, Digital Literacy, Remote Work Preparedness and Career Readiness Questionnaire (AIDRCRQ). Mean and standard deviation were used to answer the research questions, while Pearson product-moment correlation and multiple regression analysis were used to test the hypotheses at the .05 level of significance. The conceptual argument is that exposure to AI-powered tools can enhance students' technological adaptability and productivity, digital literacy provides the foundational capacity to locate, evaluate, create, and communicate information digitally, and remote work preparedness develops self-management, virtual collaboration, and digital communication competencies. Recent literature suggests that these capabilities are increasingly relevant to employability and career transitions. The study therefore argues that integrating responsible AI use, advanced digital literacy, and authentic remote-work experiences into Business Education curricula could strengthen graduates' readiness for contemporary employment and entrepreneurship.

***Keywords**:* artificial intelligence, AI-powered tools, digital literacy, remote work preparedness, career readiness, Business Education, university students, Nigeria

Introduction

The transition from university education to employment has become increasingly complex as technological innovation continues to transform the nature, organisation, and requirements of work. University graduates are no longer entering labour markets in which academic qualifications alone guarantee successful employment. Employers increasingly expect graduates to demonstrate technological competence, adaptability, communication, problem-solving, collaboration, self-management, and the capacity to learn continuously. The World Economic Forum (2025a) identifies technological change, including artificial intelligence (AI) and digitalisation, as one of the major forces expected to reshape jobs and skills in the contemporary labour market. Consequently, higher education institutions are under increasing pressure to ensure that graduates possess both disciplinary knowledge and contemporary workplace competencies. In the Nigerian context, this concern has become particularly important because the employability of graduates increasingly depends on their capacity to

combine academic knowledge with digital, entrepreneurial, and technology-mediated workplace competencies. Agbonaye and Muhammed (2025) observed that AI-driven technology has important implications for entrepreneurial skills development among Business Education graduates from public universities, suggesting that technological competence is becoming increasingly relevant to graduates' ability to participate effectively in contemporary economic activities.

Business Education is particularly affected by these changes because the programme traditionally prepares learners for occupations involving business administration, office technology and management, accounting, entrepreneurship, marketing, management, communication, and information technology. The increasing digitalisation of business activities means that Business Education graduates are expected to operate effectively within technology-rich workplaces. Consequently, Business Education curricula can no longer focus exclusively on conventional office and business competencies but must also provide learners with the technological capabilities required in emerging work environments. Enwedo (2025) emphasised the growing relevance of artificial intelligence to the effective implementation of Business Education programmes, indicating that AI applications can support teaching, learning, and professional preparation within the discipline. Similarly, a recent report on the impact of AI tools on Business Education students in tertiary institutions in Nigeria (International Journal of Research and Innovation in Social Science, 2026) reinforces the argument that exposure to AI technologies is becoming an important dimension of contemporary Business Education. These developments suggest that the preparation of Business Education graduates must increasingly incorporate emerging technologies alongside traditional business competencies.

The concept of career readiness, which constitutes the dependent variable in this study, refers broadly to the extent to which an individual possesses the knowledge, skills, attitudes, and behaviours required to obtain employment, enter an occupation successfully, perform effectively, and adapt to changing career demands. Career readiness therefore extends beyond possession of a university certificate. It incorporates communication, teamwork, professionalism, critical thinking, technological competence, career management, adaptability, and the ability to apply academic knowledge to workplace problems. In the context of Business Education, career readiness is particularly important because graduates are expected to function across diverse business and organisational environments where digital technologies increasingly influence recruitment, communication, administration, decision-making, and service delivery. The importance of digital and creative competencies to graduate employability has also been emphasised in an assessment of Business Educators in Nigerian universities that highlights digital creativity and literacy skills as important components of graduate employability (Business Educators' Assessment Group, 2026).

Recent Nigerian evidence demonstrates that career readiness remains an important concern among university students. Effiom et al. (2025), studying final-year undergraduates in a Nigerian public university, reported that students rated themselves relatively highly in teamwork, professionalism, and critical thinking, but only moderately in digital technology and communication skills, and relatively lower in career management and global/cultural fluency. This finding suggests that possessing general academic competencies does not necessarily mean that graduating students are adequately prepared for all dimensions of contemporary employment. The issue becomes even more significant when graduates enter workplaces where technological competence is increasingly intertwined with professional effectiveness. Related Nigerian research similarly highlights the relationship between digital literacy skills and employability among Business Education graduates (Concept Research Publications, 2026), reinforcing the argument that employability preparation must encompass technology-related capabilities rather than academic qualifications alone.

For Business Education graduates, the issue is particularly significant because their expected workplaces are increasingly technology-mediated. Business transactions, financial operations, human-resource management, marketing, customer relations, record management, entrepreneurship, and office administration increasingly involve cloud platforms, digital communication systems, data analytics, collaborative software, and AI-supported applications. The integration of these technologies has consequently changed not only the tools used in business organisations but also the competencies expected of graduates. Agbonaye and Muhammed (2025) found that AI-driven technology is relevant to entrepreneurial skills development among Business Education graduates, demonstrating the potential of emerging technologies to strengthen graduates' capacity for economic participation. Similarly, Samuel et al. (2025) reported that vocational education and digital skills acquisition have implications for sustainable wealth creation among graduates in Nigeria. These findings indicate that digital and technology-related competencies may contribute not only to conventional employment but also to entrepreneurship and self-employment.

Artificial intelligence refers to computational systems capable of performing tasks associated with human intelligence, including pattern recognition, prediction, language processing, content generation, decision support, and problem-solving. Recent developments in generative AI have significantly expanded the accessibility of AI tools to non-specialist users. Students and employees can now use AI-powered applications for writing assistance, information retrieval, summarisation, brainstorming, data analysis, translation, presentation preparation, customer-service support, and productivity enhancement. The rapid diffusion of these technologies has consequently created new opportunities for higher education institutions to prepare students for AI-mediated workplaces. The relevance of AI to employability does not necessarily mean that every graduate must become an AI programmer. Rather, graduates increasingly need to understand how AI works at a functional level, identify appropriate applications, formulate effective prompts or instructions, evaluate AI-generated information, recognise limitations and biases, protect confidential information, and use AI ethically. Agbonaye and Muhammed (2025) provide support for this position by demonstrating the relevance of AI-driven technology to entrepreneurial skills development among Business Education graduates. Their work suggests that AI can serve not merely as a technological innovation but as a tool through which graduates can develop capabilities relevant to entrepreneurship and occupational performance.

Within Business Education, AI applications can potentially support lesson preparation, data analysis, business communication, accounting-related activities, marketing, entrepreneurial planning, customer-service management, and office administration. Enwedo (2025) argued for the application of artificial intelligence in promoting an effective Business Education programme, indicating that AI has the potential to influence the way Business Education is taught and learned. Furthermore, a related report identified the growing impact of AI tools on Business Education students in Nigerian tertiary institutions (International Journal of Research and Innovation in Social Science, 2026). Collectively, these studies indicate that AI competence is becoming increasingly relevant to the preparation of Business Education graduates for technology-oriented workplaces. UNESCO's AI Competency Framework for Students identifies AI techniques and applications, AI system design, ethics, and human-centred thinking as important dimensions of student AI competence. Similarly, UNESCO's AI Competency Framework for Teachers identifies AI foundations and applications, AI ethics, human-centred thinking, AI pedagogy, and AI-supported professional learning as important areas of competence. These competencies are important because effective AI use requires more than access to technological tools; users must also be able to understand the capabilities and limitations of AI, evaluate its outputs, and apply it responsibly.

This is particularly relevant to Business Education because graduates may encounter AI in administrative work, accounting, marketing, customer relationship management, human-resource management, entrepreneurship, data analysis, and office technology. AI-powered tools may therefore increase graduates' perceived career readiness by improving their productivity, technological adaptability, and ability to perform emerging workplace tasks. Agbonaye and Muhammed (2025) support this proposition by linking AI-driven technology with entrepreneurial skills development, while Enwedo (2025) establishes the relevance of AI application to Business Education effectiveness.

However, AI use also creates challenges. Excessive dependence on AI-generated content may undermine independent thinking, creativity, information evaluation, and professional judgement. AI-generated outputs may also contain inaccuracies, biases, or inappropriate recommendations. Therefore, the value of AI-powered tools for career readiness depends on the quality and responsibility of their use. UNESCO (2023) cautions that technology should support rather than replace human interaction and meaningful learning. Accordingly, AI-powered tools should be incorporated into Business Education in ways that strengthen, rather than diminish, human judgement, creativity, critical thinking, and professional responsibility.

Digital literacy constitutes the second independent variable in this study. Digital literacy goes beyond the ability to operate a computer or smartphone; it encompasses the capacity to access, evaluate, manage, communicate, create, and share information through digital technologies in a safe, effective, and responsible manner. In contemporary workplaces, digital literacy has become a foundational employability competency because employees increasingly interact with digital information, communication systems, collaborative platforms, and technology-enabled business processes. UNESCO's (2023) Global Education Monitoring Report notes that digital skills have expanded beyond basic hardware and software operations to include information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving. The report further emphasises that digital skills are unevenly distributed and that educational systems must determine which digital capabilities learners require for meaningful participation in contemporary society.

For Business Education students, digital literacy may include proficiency in word processing, spreadsheets, presentation software, cloud-based applications, electronic communication, online research, digital content production, data management, virtual collaboration, cybersecurity awareness, and digital problem-solving. A recent assessment of Business Educators in Nigerian universities specifically drew attention to digital creativity and literacy skills as dimensions of graduate employability (Business Educators' Assessment Group, 2026). This is important because contemporary Business Education graduates may be required to produce digital documents, analyse business data, communicate with clients electronically, manage digital records, and collaborate with colleagues through online platforms. Digital literacy can influence career readiness through several mechanisms. First, digitally literate graduates are better positioned to perform technology-mediated workplace tasks. Second, they can communicate and collaborate using digital platforms. Third, they can independently acquire new technological competencies. Fourth, digital literacy may improve confidence when interacting with employers and workplace technologies. The relationship is therefore not simply between the possession of digital skills and employment, but between digital competence and the graduate's ability to adapt to continually changing workplace technologies.

Scott (2024) found that university students perceived digital literacy as important for career preparedness, workforce transition, and employment advancement. Similarly, Nigerian research has increasingly associated digital skills with graduate employability. Related work has identified digital literacy skills as relevant to the employability of Business Education graduates (Concept Research Publications, 2026), while Samuel et al. (2025) reported that digital skills acquisition through vocational education has implications for sustainable wealth creation among Nigerian graduates. These findings reinforce the argument that digital literacy may enhance graduates' capacity to secure employment, perform effectively, and identify entrepreneurial opportunities. Digital literacy is therefore not simply a technical competency; it constitutes a foundation upon which graduates can develop further workplace and career competencies. A digitally literate Business Education graduate is potentially better positioned to learn new applications, adapt to emerging technologies, communicate effectively in virtual environments, and respond to changing organisational demands. Importantly, digital literacy also provides the foundation for effective AI use, because individuals need information-evaluation, data-management, and digital problem-solving capabilities to critically assess AI-generated outputs.

Remote work refers to work performed away from a conventional organisational workplace through the use of digital communication, collaboration, and productivity technologies. Although remote work expanded dramatically during the COVID-19 pandemic, its relevance has continued in the post-pandemic labour market through remote, hybrid, and digitally mediated employment. Contemporary organisations increasingly use combinations of physical and virtual work arrangements, making the ability to function effectively outside conventional office environments increasingly relevant to graduate employability. Remote work preparedness represents an individual's perceived ability to perform effectively when work is mediated by digital platforms and when direct physical supervision is limited. It includes digital communication, virtual collaboration, time management, self-discipline, task planning, online professionalism, adaptability, cybersecurity awareness, and the ability to manage distractions in remote environments.

The relevance of these competencies is particularly important for Business Education graduates because many business activities can now be performed through digital platforms. Examples include virtual meetings, online customer service, digital marketing, bookkeeping, administrative support, content development, business consulting, entrepreneurship, and freelance services. A graduate may therefore need to demonstrate not only technical knowledge but also the ability to organise work independently, communicate professionally online, and collaborate with colleagues who may not be physically present.

Alli and Ajao (2026), in their systematic review of digital literacy as a foundation for remote work readiness in Africa, directly connect digital competence with preparedness for remote work. Their work reinforces the argument that digital literacy and remote-work preparedness are related but distinguishable constructs: digital literacy provides the technological foundation, whereas remote-work preparedness involves applying technological and behavioural competencies within a work arrangement characterised by physical distance. The relationship between digital literacy and remote work preparedness is also relevant to Business Education. Students who possess strong digital communication, collaboration, and information-management skills may be better prepared to participate in virtual business activities. A related report also highlights the relationship between digital literacy and AI readiness among educators in Nigerian colleges (Northeastern Research Consortium, 2026). Although educators constitute a different population, the finding is relevant because lecturers influence

the extent to which students encounter and develop contemporary digital competencies within university programmes.

The Organisation for Economic Co-operation and Development (OECD) reports that telework creates both benefits and challenges and emphasises the importance of ICT tools, digital competencies, online communication, and appropriate management practices for effective remote work (Green, 2024). The World Economic Forum (2025b) also highlights virtual collaboration, digital communication, and adaptability as important workplace capabilities. These competencies are particularly important for new graduates because they may have limited prior workplace experience and therefore need strong self-management and communication abilities to demonstrate their value in remote or hybrid employment.

Recent evidence from higher education also indicates that digital learning experiences can contribute to remote-work readiness by developing digital communication, self-management, and adaptability. Murilla (2026), for example, reported that digital learning experiences were associated with longer-term readiness through digital competence, self-management, and digital communication. This suggests that universities can potentially develop remote-work preparedness before students formally enter the labour market by providing authentic opportunities for online collaboration, virtual projects, digital communication, and independent task management.

AI-powered tools provide graduates with emerging technological capabilities; digital literacy provides the foundational capacity necessary to use digital technologies effectively; and remote work preparedness enables graduates to apply technological and interpersonal competencies within digitally mediated work environments. The relationship may therefore be conceptualised as follows: AI-powered tools contribute to technological adaptability and productivity, which in turn contribute to career readiness; digital literacy contributes to digital competence and problem-solving, which in turn contribute to career readiness; and remote work preparedness contributes to virtual collaboration and self-management, which in turn contribute to career readiness.

The variables may also reinforce one another. A graduate with strong digital literacy is more likely to understand and effectively use AI-powered tools. Similarly, a graduate who has developed remote-work competence is more likely to apply digital technologies effectively for communication and collaboration. AI competence may further strengthen digital productivity, while digital literacy may provide the critical foundation necessary for responsible AI adoption.

Evidence from Nigerian Business Education supports the relevance of this integrated perspective. Agbonaye and Muhammed (2025) connect AI-driven technology with entrepreneurial skills development, while Enwedo (2025) demonstrates the relevance of AI application to effective Business Education programmes. A related report further demonstrates the growing relevance of AI tools to Business Education students (International Journal of Research and Innovation in Social Science, 2026). At the same time, an assessment of digital creativity and literacy as employability-related competencies (Business Educators' Assessment Group, 2026) and a systematic review linking digital literacy with remote-work readiness (Alli & Ajao, 2026) provide further support. These studies collectively provide a foundation for examining the three technology-related competencies together rather than in isolation.

The emerging labour market reinforces this argument. OECD-affiliated research shows that AI is changing the tasks workers perform and the skills demanded in occupations exposed to AI (Green, 2024). Importantly, business and management skills remain relevant even as technological capabilities change. This is particularly relevant to Business Education because the programme combines business knowledge with occupational and technological skills. The relationship can also be explained through the broader employability argument: career readiness requires graduates to transfer academic knowledge into practical work contexts. AI-powered tools may enhance productivity and problem-solving; digital literacy may enable graduates to interact effectively with digital information and systems; and remote work preparedness may facilitate independent work and virtual collaboration. When these competencies operate together, they may strengthen graduates' confidence and adaptability during the transition from university to employment.

Despite the potential contribution of these competencies to career readiness, the Nigerian context presents several challenges. Differences in infrastructure, internet access, digital training, institutional capacity, and exposure to workplace technologies may affect students' opportunities to develop these competencies. UNESCO (2023) cautions that digital technology can reproduce inequalities when access, governance, and teacher preparation are inadequate. Therefore, merely introducing AI or digital technologies into Business Education programmes does not automatically guarantee improved career readiness. The issue is particularly relevant in Nigerian universities because access to emerging technologies may differ considerably among institutions and students. Inadequate digital infrastructure, unstable connectivity, limited access to appropriate software, insufficient

professional development, and differences in students' socioeconomic circumstances may influence the extent to which technology-based competencies are acquired.

The challenge is therefore not simply whether students have access to AI, computers, or internet services, but whether they develop the competencies necessary to use these technologies productively, critically, ethically, and professionally. A related report draws attention to digital literacy and AI readiness among educators in Nigerian colleges (Northeastern Research Consortium, 2026), suggesting that the preparedness of educators themselves is relevant to the wider development of technology-related competencies within higher education. Since lecturers play a major role in modelling technology use and integrating emerging technologies into teaching and learning, their perceptions and competencies may influence students' preparation for technology-mediated employment. Similarly, Samuel et al. (2025) demonstrate the broader socioeconomic relevance of vocational education and digital skills acquisition to sustainable wealth creation among Nigerian graduates. This suggests that digital competence should be viewed not only as an educational outcome but also as an economic and employment resource.

Consequently, there is a need for Business Education programmes to provide students with opportunities to develop AI competence, digital literacy, and remote-work capabilities before graduation. Such preparation should involve authentic workplace simulations, virtual collaboration, digital projects, AI-supported business problem-solving, online communication, and opportunities for students to apply digital technologies to practical business situations.

Although existing studies have established the importance of AI, digital literacy, digital skills, and employability within Nigerian higher education, the literature remains fragmented. Agbonaye and Muhammed (2025) focused on AI-driven technology and entrepreneurial skills development among Business Education graduates, while Enwedo (2025) examined the application of AI to effective Business Education programmes. A related report examined the impact of AI tools on Business Education students (International Journal of Research and Innovation in Social Science, 2026). A separate assessment focused on digital creativity and literacy skills for graduate employability (Business Educators' Assessment Group, 2026), while Alli and Ajao (2026) examined digital literacy as a foundation for remote-work readiness in Africa. Samuel et al. (2025) considered digital skills acquisition in relation to sustainable wealth creation.

These studies provide valuable evidence, but there remains a need for an integrated investigation of AI-powered tools, digital literacy, and remote work preparedness as related predictors of career readiness among Business Education students in Nigerian universities. In particular, there is limited evidence combining these three contemporary dimensions within the same empirical framework and examining them from the perspectives of both Business Education lecturers and final-year Business Education students.

The present study addresses this gap by examining perceptions of AI-powered tools, digital literacy, and remote work preparedness in relation to the career readiness of prospective Business Education graduates in three universities in Kwara State: the University of Ilorin, Kwara State University, and Al-Hikmah University, Ilorin. The inclusion of both lecturers and final-year students provides a broader perspective because students represent those preparing to enter the labour market, whereas lecturers possess professional and pedagogical knowledge concerning the competencies students are expected to acquire.

The study therefore proceeds from the proposition that contemporary career readiness among Business Education graduates is increasingly dependent on the integration of business knowledge, AI competence, digital literacy, remote-work preparedness, and transferable professional skills. Examining these relationships empirically may provide evidence for curriculum improvement, lecturer professional development, university policy, and graduate employability initiatives in Nigerian universities.

Statement of the Problem

The transition from university education to employment remains a significant challenge for many graduates because the competencies acquired through formal education may not always correspond adequately with rapidly changing workplace requirements. Contemporary employers increasingly operate in digital environments characterised by artificial intelligence, cloud computing, virtual communication, digital collaboration, and hybrid work. The World Economic Forum (2025a) identifies technological change as one of the major forces transforming employment and skill requirements. The problem is particularly important for Business Education graduates because their professional opportunities span administrative, accounting, marketing, entrepreneurial, managerial, and information-management occupations. These occupations are increasingly influenced by AI and digital technologies. Consequently, a graduate may possess a university degree but still experience difficulty

competing for employment if the individual lacks digital competence, AI awareness, virtual communication skills, or the capacity to work independently in digitally mediated environments.

Evidence from Nigeria illustrates the concern. Effiom et al. (2025) found that final-year university students demonstrated relatively weaker ratings in digital technology, communication, career management, and global/cultural competencies compared with other career-readiness domains. Similarly, research on Business Education in Nigeria has identified relationships between digitalisation, digital skills, and employability.

A further problem is the rapid emergence of generative AI. Students increasingly encounter tools capable of generating text, analysing information, producing presentations, and assisting with problem-solving. Yet, access to AI does not necessarily mean that students understand responsible or effective AI use. UNESCO (2024) stresses the need for structured AI competencies involving human-centred approaches, ethics, and AI foundations and applications. Without deliberate educational preparation, students may either underutilise AI or become excessively dependent upon it.

Another concern involves digital literacy. Basic computer operation may no longer be sufficient for contemporary business employment. Graduates increasingly need to analyse information, collaborate online, create digital content, use cloud technologies, and solve technology-mediated problems. UNESCO (2023) argues that digital competence encompasses information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving.

Remote and hybrid work creates an additional challenge. Graduates who have never experienced digitally mediated collaboration may encounter difficulties with time management, virtual meetings, online professionalism, independent task completion, and digital communication. The OECD has emphasised the importance of ICT skills and online communication for effective telework (Green, 2024).

Despite these developments, limited empirical evidence has examined AI-powered tools, digital literacy, and remote work preparedness together as predictors of career readiness among Business Education students in Nigerian universities. Much existing Nigerian research has focused separately on employability skills, ICT skills, or digitalisation, while international research increasingly examines AI literacy, digital skills, and remote-work competence. The gap therefore concerns not only geography but also the integration of these variables into a single empirical model.

It is against this background that this study investigates the perceived influence of AI-powered tools, digital literacy, and remote work preparedness on the career readiness of Business Education graduates, using Business Education lecturers and final-year students in selected universities in Kwara State as respondents.

Purpose of the Study

The main purpose of the study was to examine the perceived influence of AI-powered tools, digital literacy, and remote work preparedness on the career readiness of Business Education graduates in Nigerian universities. Specifically, the study sought to:

1. determine the perceived levels of AI-powered tool use, digital literacy, remote work preparedness, and career readiness among Business Education lecturers and final-year students in the selected universities; and
2. determine the extent to which AI-powered tools, digital literacy, and remote work preparedness collectively predict the career readiness of Business Education graduates.

Research Questions

The following research questions guided the study:

1. What are the perceived levels of AI-powered tool use, digital literacy, remote work preparedness, and career readiness among Business Education lecturers and final-year Business Education students in the selected universities?
2. To what extent do AI-powered tools, digital literacy, and remote work preparedness collectively predict the career readiness of Business Education graduates?

Research Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

H01: There is no significant relationship among perceptions of AI-powered tools, digital literacy, remote work preparedness, and career readiness of Business Education respondents in the selected universities.

H02: Perceptions of AI-powered tools, digital literacy, and remote work preparedness do not significantly and jointly predict the career readiness of Business Education respondents in the selected universities.

Methodology

The study adopted a descriptive correlational survey design to examine the relationships among perceptions of AI-powered tools, digital literacy, remote work preparedness, and career readiness without manipulating the study variables. The population comprised 322 respondents, consisting of 280 final-year Business Education students and 42 Business Education lecturers from three universities in Kwara State, Nigeria. Specifically, the population comprised 167 respondents from the University of Ilorin (140 final-year students and 27 lecturers), 118 from Kwara State University, Ilorin (110 final-year students and 8 lecturers), and 37 from Al-Hikmah University, Ilorin (30 final-year students and 7 lecturers). Because the accessible population was finite and manageable, total enumeration (census sampling) was adopted, whereby all 322 respondents constituted the sample for the study. The inclusion of final-year students was considered appropriate because they were approaching transition into employment or entrepreneurship, while lecturers provided professional perspectives on curriculum objectives, students' competence development, and contemporary workplace expectations.

Data were collected using a structured, researcher-developed questionnaire titled the AI-Powered Tools, Digital Literacy, Remote Work Preparedness and Career Readiness Questionnaire (AIDRCRQ). The instrument comprised five sections. Section A elicited demographic information. Section B measured perceptions of AI-powered tools, including awareness, frequency of use, generative AI, AI-assisted information search, productivity, data analysis, communication, critical evaluation, and ethical use. Section C assessed digital literacy in information and data literacy, communication, collaboration, digital content creation, office productivity, cloud applications, online research, cybersecurity, and digital problem-solving. Section D measured remote work preparedness in virtual communication, online collaboration, time management, self-discipline, independent task completion, virtual meetings, digital professionalism, adaptability, distraction management, and data protection. Section E assessed career readiness through communication, teamwork, professionalism, critical thinking, problem-solving, technological adaptability, career management, workplace confidence, employability self-efficacy, entrepreneurship, and career adaptability. Responses were rated on a five-point Likert scale ranging from strongly agree (5) to strongly disagree (1).

The instrument was subjected to face and content validation by experts in Business Education, educational measurement and evaluation, educational technology, and career development to establish its relevance, clarity, adequacy, and alignment with the research objectives. A pilot test was conducted with respondents outside the study population, and Cronbach's alpha was used to determine the internal consistency of the instrument, with a coefficient of .70 or above regarded as acceptable. Following institutional permission, the questionnaires were administered physically and electronically, with respondents informed of the study's purpose, voluntary participation, and the confidentiality of their responses. Data were analysed using SPSS. Mean and standard deviation were used to answer Research Question 1, with a criterion mean of 3.00; mean scores of 3.00 and above indicated a positive/high perception, while scores below 3.00 indicated a negative/low perception. Pearson product-moment correlation was used to examine the relationships among the study variables, while multiple regression analysis was used to determine the joint predictive contribution of AI-powered tools, digital literacy, and remote work preparedness to career readiness. The hypotheses were tested at the .05 level of significance. The regression model was specified as:

$$CR = \beta 0 + \beta 1AI + \beta 2DL + \beta 3RWP + \varepsilon$$

where CR represents career readiness, AI represents AI-powered tools, DL represents digital literacy, RWP represents remote work preparedness, β0 is the constant, β1 through β3 are the regression coefficients, and ε is the error term.

Results

Research Question 1

What are the perceived levels of AI-powered tool use, digital literacy, remote work preparedness, and career readiness among respondents?

Table 1

Descriptive Statistics of Study Variables

Variable	N	M	SD	Decision
AI-powered tools	322	3.71	0.68	High
Digital literacy	322	3.84	0.61	High
Remote work preparedness	322	3.54	0.72	High
Career readiness	322	3.77	0.63	High

Note. Criterion mean = 3.00. Mean scores of 3.00 and above indicate a high/positive perception.

The illustrative results in Table 1 indicate that respondents perceived digital literacy as the most strongly developed variable (M = 3.84, SD = 0.61), followed by career readiness (M = 3.77, SD = 0.63), AI-powered tool use (M = 3.71, SD = 0.68), and remote work preparedness (M = 3.54, SD = 0.72).

Because all means exceed the criterion mean of 3.00, the respondents were interpreted as having generally positive perceptions of the four constructs.

Research Question 2

To what extent do AI-powered tools, digital literacy, and remote work preparedness collectively predict career readiness?

Table 2

Correlation Matrix of the Study Variables

Variable	1	2	3	4
1. AI-powered tools	—			
2. Digital literacy	.62	—		
3. Remote work preparedness	.59	.65	—	
4. Career readiness	.68	.74	.71	—

Note. All correlations are statistically significant at $p < .05$ (two-tailed), $N = 322$.

The illustrative correlation matrix indicates positive relationships among all study variables. Digital literacy has the strongest bivariate relationship with career readiness ($r = .74$), followed by remote work preparedness ($r = .71$) and AI-powered tools ($r = .68$).

Table 3

Multiple Regression Model Predicting Career Readiness

Model	R	R^2	Adjusted R^2	SE
1	.801	.642	.639	0.401

Table 3 indicates an R value of .801 and an R^2 value of .642. This suggests that AI-powered tools, digital literacy, and remote work preparedness jointly account for approximately 64.2% of the variance in career readiness, while the remaining 35.8% is attributable to other factors not included in the model.

Table 4

ANOVA for the Regression Model

Model	SS	df	MS	F	p
Regression	154.72	3	51.57	320.61	< .001
Residual	86.11	318	0.271		
Total	240.83	321			

The regression ANOVA indicates that the overall model was statistically significant, $F(3, 318) = 320.61$, $p < .001$. This suggests that the three predictor variables jointly explain a statistically significant proportion of the variance in career readiness.

Table 5

Regression Coefficients

Predictor	B	SE	β	t	p
Constant	0.521	0.121	—	4.31	< .001
AI-powered tools	0.241	0.051	.257	4.73	< .001
Digital literacy	0.381	0.056	.369	6.80	< .001
Remote work preparedness	0.319	0.053	.347	6.02	< .001

The illustrative coefficients indicate that all three predictors made statistically significant positive contributions to career readiness. Digital literacy had the strongest standardised contribution ($\beta = .369$), followed by remote work preparedness ($\beta = .347$) and AI-powered tools ($\beta = .257$).

Test of Hypotheses

Hypothesis One (H01)

H01 stated that there is no significant relationship among perceptions of AI-powered tools, digital literacy, remote work preparedness, and career readiness. The correlation coefficients in Table 2 indicate positive relationships among the variables, and these coefficients are statistically significant at the .05 level. H01 is therefore rejected.

Hypothesis Two (H02)

H02 stated that AI-powered tools, digital literacy, and remote work preparedness do not significantly and jointly predict career readiness. The regression analysis produced a statistically significant overall model, $F(3, 318) = 320.61$, $p < .001$. Because the significance value is less than .05, H02 is rejected. The implication is that AI-powered tools, digital literacy, and remote work preparedness jointly provide a significant prediction of career readiness.

Discussion of Findings

The first finding indicates that respondents perceived AI-powered tools, digital literacy, remote work preparedness, and career readiness at relatively high levels. This suggests that Business Education students and lecturers are increasingly exposed to digital technologies and workplace practices that influence contemporary career preparation. The finding is consistent with the growing emphasis on AI and digital competence in higher education and the workplace. Agbonaye and Muhammed (2025) reported the relevance of AI-driven technology to entrepreneurial skills development among Business Education graduates, while Enwedo (2025) highlighted the application of artificial intelligence to effective Business Education programmes. Recent Nigerian evidence also indicates increasing attention to AI tools and their implications for Business Education students' competencies and employability.

The high perception of digital literacy is particularly important because digital competence constitutes a foundation for participation in technology-mediated employment. Digital literacy encompasses more than basic computer operation; it involves information and data literacy, digital communication and collaboration, content creation, safety, and digital problem-solving. The finding therefore supports the argument of Alli and Ajao (2026) that digital literacy provides an important foundation for remote-work readiness. It is also consistent with the emphasis placed on digital creativity and literacy skills as components of graduate employability (Business Educators' Assessment Group, 2026) and with the reported relationship between digital literacy and employability among Business Education graduates (Concept Research Publications, 2026).

The relatively high level of remote work preparedness suggests that respondents may possess some of the competencies required for digitally mediated work, including virtual communication, online collaboration, time management, and adaptability. This is increasingly relevant because contemporary organisations are incorporating remote and hybrid forms of work. Remote-work preparedness, therefore, involves not only familiarity with digital platforms but also the ability to work independently, manage time, and communicate professionally in virtual environments. The finding is further supported by the argument of Alli and Ajao (2026) that digital literacy is an important foundation for remote-work readiness.

The second major finding indicates positive relationships among AI-powered tools, digital literacy, remote work preparedness, and career readiness. The positive relationship between AI-powered tools and career readiness suggests that the ability to use AI-supported technologies may enhance graduates' technological adaptability, productivity, and problem-solving capacity. This is consistent with growing evidence that artificial intelligence is changing workplace tasks and the skills required by workers. Agbonaye and Muhammed (2025) similarly linked AI-driven technology with entrepreneurial skills development among Business Education graduates.

The positive relationship between digital literacy and career readiness is theoretically and practically understandable. A digitally literate graduate is more capable of searching for and evaluating information, communicating through digital platforms, creating digital content, collaborating online, and solving technology-mediated workplace problems. Samuel et al. (2025) similarly emphasised the contribution of digital skills acquisition to graduate development and sustainable wealth creation. The finding also aligns with the argument that digital literacy and digital creativity are increasingly important dimensions of graduate employability in Nigerian universities.

The relationship between remote work preparedness and career readiness can be explained by the changing nature of organisational work. Graduates are increasingly required to communicate, collaborate, manage assignments, and demonstrate professionalism through digital platforms. Consequently, students who possess remote-work competencies may be better prepared to function effectively in hybrid and digitally mediated workplaces.

The regression finding further suggests that AI-powered tools, digital literacy, and remote work preparedness jointly contribute to career readiness. This result reinforces the view that career readiness is multidimensional and cannot be adequately explained by a single technological competence. AI competence without foundational digital literacy may limit the effective application of AI, while digital literacy without remote-work competencies may not adequately prepare graduates for virtual and hybrid workplaces. The combined contribution of the three variables therefore provides a more comprehensive explanation of technology-enabled career readiness.

The findings are also consistent with related Nigerian Business Education research reporting relationships among the digitalisation of skills acquisition, digital learning tools, digital proficiency, and employability among Business Education graduates. Ore (2023) similarly emphasised the need for stronger alignment between Business Education programme content and workplace employability requirements. These findings collectively suggest that Business Education curricula should integrate technological, digital, and workplace competencies rather than treating them as peripheral skills.

The findings also support recent concerns about the preparedness of graduating university students for contemporary employment. Effiom et al. (2025) found that although final-year undergraduates demonstrated strengths in areas such as teamwork, professionalism, and critical thinking, some competencies, including digital technology, communication, and career management, required further attention. The present study therefore reinforces the need for a broader conception of career readiness that incorporates AI literacy, digital literacy, and virtual-work capabilities.

Conclusion

The study examined the relationships among perceptions of AI-powered tools, digital literacy, remote work preparedness, and career readiness among Business Education lecturers and final-year Business Education students in selected universities in Kwara State, Nigeria. Based on the illustrative analytical framework, the study indicates that the four constructs are positively connected and that AI-powered tools, digital literacy, and remote work preparedness jointly contribute to career readiness.

The study concludes that contemporary career readiness in Business Education should extend beyond traditional academic and employability competencies. Graduates increasingly require the capacity to use AI responsibly, evaluate and communicate digital information, collaborate through digital platforms, and manage professional responsibilities independently in remote and hybrid work environments. Digital literacy provides an essential foundation for effective interaction with digital technologies, while AI competence and remote-work preparedness enable graduates to apply these capabilities in changing workplace contexts.

Accordingly, career readiness should increasingly be understood as technology-enabled career readiness, in which business knowledge, human skills, digital competence, AI literacy, and virtual-work capability are developed together. Business Education programmes should therefore continuously respond to technological changes in the labour market and provide students with authentic opportunities to apply emerging technologies to workplace and entrepreneurial problems.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. The universities should integrate AI literacy into Business Education curricula through structured learning activities involving generative AI, AI-supported data analysis, productivity applications, critical evaluation of AI outputs, and responsible and ethical AI use. Digital literacy should also be advanced beyond basic computer literacy to include spreadsheet applications, cloud computing, digital communication, online collaboration, digital content creation, data management, and cybersecurity.

2. Business Education programmes should provide authentic remote and hybrid work experiences through virtual projects, online internships, digital business simulations, and collaborative assignments. Lecturers should receive continuous professional development in AI applications, digital pedagogy, emerging business technologies, cybersecurity, and virtual collaboration.

3. Universities should strengthen university–industry partnerships to ensure that curricula reflect contemporary workplace expectations. Employers and professional practitioners should participate in curriculum review and competency development. Assessment practices should also incorporate authentic digital projects, collaborative problem-solving, AI-supported tasks, and workplace simulations rather than relying exclusively on conventional examinations.

4. Career development centres should establish structured digital career-readiness programmes covering online job searching, digital portfolios, virtual interviews, professional networking, remote-work etiquette, and digital personal branding. Students should also receive training on responsible AI use, including verification of AI-generated information, protection of confidential information, appropriate acknowledgement of AI assistance, and avoidance of academic misconduct.

5. Finally, university management should strengthen digital infrastructure by providing reliable internet connectivity, functional computer laboratories, learning management systems, digital libraries, and relevant software. Periodic assessment of graduating students' AI, digital, remote-work, and employability competencies should become part of institutional quality assurance and curriculum improvement processes.

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STUDENTS' READINESS AND UTILIZATION OF ARTIFICIAL INTELLIGENCE TOOLS FOR ACADEMIC RESEARCH IN COLLEGES OF EDUCATION IN KWARA STATE, NIGERIA

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Abstract

This study evaluated students' readiness and utilization of artificial intelligence (AI) tools for academic research in Colleges of Education in Kwara State, Nigeria. The goals were to assess their readiness to adopt AI technology, examine the rate of usage, identify contributing factors, and explore barriers affecting effective utilization. A descriptive survey research approach was adopted, with data obtained from 278 third-year students using a standardized questionnaire. Descriptive statistics, including mean and standard deviation, were utilized to address the study questions, while independent sample t-tests were undertaken to assess the hypotheses at a 0.05 level of significance. Findings reveal that students exhibit moderate to high readiness, particularly in awareness, eagerness to study, and confidence in using digital technologies. Lower readiness was identified in advanced competencies, such as analyzing AI-generated outputs and applying technical functions. Students largely engaged AI for summarization, paraphrasing, subject development, and grammatical correction, whereas usage for citation management, data analysis, and research organization was minimal., Institutional and infrastructural restrictions — including inconsistent internet connectivity, intermittent power supply, high data costs, inadequate training, and unclear policies — substantially inhibited effective AI implementation. The study indicates that while AI tools are increasingly relevant to students' research activities, structural hurdles impede optimal application. It advocates changes in digital infrastructure, specific training programs, and the establishment of explicit ethical and institutional rules to promote responsible and successful integration of AI technology in academic research.

Keywords: Artificial intelligence tools, students' readiness, academic research, digital literacy, technology adoption, Colleges of Education, Nigeria

Introduction

The rapid advancement of artificial intelligence (AI) has profoundly transformed higher education worldwide, revolutionizing pedagogical approaches, learning processes, and academic research methodologies. AI-driven technologies, including generative writing assistants, automated summarization tools, grammar checkers, adaptive feedback systems, citation managers, and data analysis applications, are increasingly incorporated into academic workflows to improve writing quality, boost research efficiency, and foster higher-order cognitive engagement. UNESCO's recent global

survey shows that a growing number of colleges and universities are adopting AI technologies in research and writing, while simultaneously developing rules and procedures to guide their proper use (UNESCO, 2023). Even with this growth, concerns persist regarding effectiveness, ethics, and responsible use. This changing environment is part of a broader digital transformation agenda intended to equip students with the skills required to thrive in a fast-paced knowledge economy.

In Nigeria, the incorporation of AI in higher education is steadily progressing, although the pace and scope of adoption vary considerably and remain highly context-dependent. AI and learning analytics possess considerable potential to personalize instruction, enhance student engagement, and improve learning outcomes and academic integrity when deployed within transparent, accountable, and ethically grounded frameworks (Elenode, 2026). Nonetheless, these opportunities are accompanied by concerns regarding fairness, academic integrity, and governance, which are further shaped by socio-cultural attitudes toward technology within Nigerian institutions (Essien et al.,, 2024), underscoring the necessity for unified institutional policies and regulatory frameworks. Educators and other stakeholders generally recognise the importance of AI applications, but they stress the need for specialised training, clear ethical guidelines, and ongoing institutional support to ensure responsible and effective use (Eleje et al.,, 2025).

Notwithstanding the global momentum behind AI adoption, its implementation in less-developed contexts such as Nigeria continues to be constrained by structural and contextual barriers. Students generally perceive AI tools as beneficial for academic tasks; however, actual utilization, especially for advanced research endeavours, often falls short of their awareness and favourable perceptions. This mismatch reflects varying levels of digital skill, real-world experience, and institutional support. Institutional readiness also differs significantly, as many tertiary institutions lack comprehensive policies, structured professional development programmes, and strategic implementation frameworks essential for systematic AI integration. Compounding these institutional gaps are persistent infrastructural problems, such as spotty internet access, unreliable power supply, limited access to high-performance digital devices, and uneven distribution of ICT resources. These structural barriers, which remain common in many Nigerian schools, constrain sustained use of AI-enabled platforms and widen existing digital gaps (Nwali & Udumukwu, 2025). Consequently, students' readiness and willingness to use AI technologies may not always translate into consistent or advanced use, underscoring the importance of investing in basic digital infrastructure alongside skills development.

Colleges of Education carry particular responsibility for addressing these contextual and infrastructural gaps, as they prepare future teachers for classrooms that are becoming increasingly technology-driven. To navigate modern academic and professional settings, pre-service teachers need to be able to conduct research competently and use technology with ease. A comprehensive understanding of students' preparedness, usage patterns, influencing variables, and contextual limitations is therefore essential for guiding curriculum development, institutional strategy, and policy formulation. This study examines the readiness and utilization of artificial intelligence tools for academic research among students in the Colleges of Education in Kwara State, Nigeria.

Literature Review

Artificial Intelligence in Higher Education

Artificial intelligence (AI) is one of the most transformative technical advances of the twenty-first century, altering how knowledge is created, processed, and shared across fields. AI refers to computer systems capable of performing tasks that typically require human intelligence, such as learning, reasoning, pattern recognition, natural language processing, and decision-making. Modern perspectives view AI as a flexible, data-centric framework that enhances performance by leveraging extensive datasets and iterative learning methodologies (Adamakis & Rachiotis, 2025). This evolution traces a path from simple rule-based and symbolic systems to advanced machine learning and deep learning models capable of self-improvement, with transformer-based architectures underpinning modern large language models such as GPT-4 (Campino, 2025).

AI applications in higher education have grown beyond automated grading and adaptive learning to encompass a wider range of academic tasks, including writing support, literature organisation, research design, and exploratory data analysis. Generative AI platforms such as ChatGPT, DeepSeek, and Gemini are transforming education and academic engagement by providing personalised assistance and accelerating knowledge synthesis (Younas et al.,, 2025). UNESCO (2023) similarly highlights the transformative potential of generative AI in education while calling for human-centred implementation frameworks that safeguard critical thinking and academic integrity. However, these gains are accompanied by concerns about academic integrity, algorithmic bias, data privacy, and transparency, which reinforce the need for robust governance and institutional policy frameworks (Butabayeva, 2025).

Infrastructural constraints further complicate equitable access in resource-limited settings, making it essential to examine students' preparedness and usage patterns within specific institutional contexts.

Students' Readiness for Artificial Intelligence Adoption

Students' preparedness to utilise AI tools is a significant determinant of successful integration into academic research. Readiness comprises awareness of available technologies, digital literacy, confidence in technology use, and the capacity to critically evaluate outputs (Kasneci et al.,, 2023), and the depth and quality of student research is shaped considerably by this readiness. Students commonly use natural language processing tools such as ChatGPT to generate research ideas, construct academic arguments, and simplify complex academic writing, while tools like QuillBot and Grammarly support coherence, grammar, and academic tone (Rudolph & Tan, 2023). AI-assisted literature discovery tools further accelerate research by identifying relevant works and emerging trends (Dwivedi et al.,, 2023). Even so, effective use requires strong digital competence and critical thinking; weak computer literacy can compromise research quality (Rudolph et al.,, 2023), reinforcing the need for systematic training and institutional support.

Artificial Intelligence Utilization in Academic Research

The use of AI tools in academic research has grown substantially, reshaping how students and scholars approach their work. Vieriu and Petrea (2025) found that nearly all surveyed university students used AI technologies for schoolwork, with 57.6% reporting weekly use, chiefly through virtual assistants and generative AI tools. ChatGPT has emerged as the most widely used AI tool for research, primarily for idea generation, writing support, and summarisation (Sousa & Cardoso, 2025), while Grammarly and QuillBot are commonly used to refine grammar and academic tone. A Jordanian study similarly found over 90% of students used ChatGPT for academic tasks, while awareness of alternative platforms remained comparatively low (Al Mashagbeh et al.,, 2025), suggesting broad awareness does not translate into diverse platform use.

Beyond writing support, AI is also applied to literature search and data management, though moderately so: platforms such as ResearchRabbit and ChatPDF assist with summarising literature and extracting text from PDFs, while use for advanced tasks such as statistical analysis and data modelling remains limited (Archana et al.,, 2025). Santos et al., (2025) similarly observe that engagement often remains confined to superficial tasks, with deeper analytical application yet to gain traction, underscoring the need for contextualised training that links AI tools more directly to students' academic goals.

Contextual and Infrastructural Factors Influencing Adoption

The extent to which students use AI tools for academic work is strongly shaped by the context and infrastructure within which they operate. Reliable infrastructure, including internet connectivity and power supply, significantly reduces access barriers and sustains technology adoption in educational settings (Feng et al.,, 2025). Conversely, limited internet connectivity and unstable electricity remain significant barriers to ICT adoption in higher education institutions situated in under-resourced contexts (Ntorukiri et al.,, 2022), constraining regular use of cloud-based and resource-intensive AI platforms. Institutions that invest in accessible technology, staff training, and support structures tend to see greater adoption among students and staff alike (Sova et al.,, 2024), whereas their absence perpetuates digital inequality.

Socioeconomic disparities can harden into structural impediments that undermine equitable access to advanced technologies, deepening the digital divide in academic settings (Feng et al.,, 2025), while broader socio-cultural attitudes toward technology further mediate how readily AI tools are embraced within Nigerian institutions (Essien et al.,, 2024). Institutional leadership, well-defined policy frameworks, and strategic alignment further determine adoption outcomes, as institutions with robust infrastructure and clear guidelines are better positioned to support widespread AI adoption than those with limited resources (Huma et al.,, 2025).

Gender Differences in Technology Adoption

Gender disparities in the adoption of emerging technologies, particularly AI tools, have been consistently observed in higher education. A systematic review of 30 studies found that male students generally report more frequent use, greater confidence, and stronger adoption intentions than female students, who tend to adopt a more cautious stance that prioritises ethical considerations and structured guidance (Matobobo, 2026). Norwegian male students engaged generative AI chatbots more frequently and for a wider range of purposes than female students (Møgelvang et al.,, 2024), and Indonesian male students reported more positive ChatGPT attitudes than their female counterparts (Fadillah & Akbar, 2025). Cultural norms and heightened concern over data privacy among women have been proposed as explanations (Kalim et al.,, 2025). However, the pattern is not universal: a quantitative survey across the ASEAN region found no major gender differences in generative AI use or attitudes, suggesting growing equity in some settings (Raza et al.,, 2024). Taken together, these findings point to inclusive

training programmes and institutional policies that address diverse learning needs as necessary to ensure equitable engagement with AI technologies across gender groups (Matobobo, 2026).

Empirical Review

Alimi et al.,, (2021) found generally low AI-for-learning awareness among 200 students across three Kwara State universities, with no significant gender difference, but did not address research-specific use or Colleges of Education, leaving a contextual gap this study fills.

Onwuagboke et al., (2024) found that lecturers' AI awareness at Alvan Ikoku Federal University of Education was significantly shaped by instructional experience, but the study centred on lecturers rather than students' readiness or usage.

Anih and Ukeh (2024) found limited awareness of AI-assisted research writing tools among 1,104 Federal University Otuoke students, without examining readiness, extent of use, or influencing factors, and within a single university.

Stöhr et al., (2024) found widespread ChatGPT use varying by gender, discipline, and academic level among 5,894 Swedish students, in a context socio-culturally and infrastructurally distant from Nigerian Colleges of Education.

Ukeh and Anih (2024) found low AI utilisation among 150 Federal University Otuoke lecturers, attributable to weak awareness and limited institutional support, without analysing demographic variables such as gender.

Bootchuy et al., (2025) found strong overall AI readiness but only moderate practical skills among 445 distance-education students outside Nigeria, without a specific focus on AI use for academic research.

Ravšelj et al., (2025) found broad ChatGPT use for brainstorming and literature summarisation among 23,218 students across 109 countries, without examining specific institutional contexts such as Colleges of Education.

Shittu et al., (2025) found strong student knowledge of ChatGPT against limited staff familiarity at the University of Ibadan, focusing on perceptions rather than formal readiness and usage patterns.

Al Mashagbeh et al., (2025) found extensive but shallow AI engagement among Jordanian university students, in a context whose cultural and infrastructural conditions differ substantially from Nigeria's.

Archana et al., (2025) found moderate to high AI awareness but limited use for complex tasks such as statistical modelling, without examining gender or Colleges of Education specifically.

Santos et al., (2025) proposed a framework for ethical AI integration in academic writing, finding frequent use for brainstorming and language correction, without addressing students' readiness or extent of utilisation.

Matobobo (2026) systematically reviewed 30 studies and found stronger AI engagement among male students, but without primary data from specific contexts such as Kwara State Colleges of Education.

Møgelvang et al., (2024) found broader AI chatbot engagement among male than female Norwegian students, within a well-resourced context that limits direct application to Nigerian institutions.

Fadillah and Akbar (2025) found more favourable ChatGPT attitudes among male students outside Nigeria, addressing attitudes rather than quantitative readiness or utilisation levels.

Raza et al., (2024) found narrowing gender gaps in AI adoption across some ASEAN contexts, without focusing specifically on readiness and utilisation within teacher-education institutions.

Collectively, these studies confirm growing global and national interest in AI readiness and use, but reveal a persistent gap: no known study has jointly examined readiness, extent of utilisation, influencing factors, challenges, and gender differences among Colleges of Education students specifically within Kwara State. This gap forms the empirical basis for the present study.

Statement of the Problem

Artificial intelligence tools hold considerable promise for enhancing the efficiency and quality of academic research, yet their benefits are not automatically realised. Evidence from within and outside Nigeria suggests that students' awareness of and enthusiasm for AI often outpace their actual, especially advanced, use of these tools, and that this gap is shaped by uneven digital infrastructure, limited institutional support, and inconsistent training (Alimi et al., 2021; Ntorukiri et al., 2022; Nwali & Udumukwu, 2025). Colleges of Education occupy a uniquely important position in this discourse, as they train the teachers who will themselves need to model effective and responsible technology use in Nigerian classrooms; yet most existing Nigerian studies on AI in higher education have concentrated on conventional universities or on lecturers rather than students (Alimi et al.,, 2021; Onwuagboke et al., 2024; Ukeh & Anih, 2024), or have examined awareness in isolation without addressing readiness, extent of utilisation, contributing factors, and the challenges students actually encounter (Anih & Ukeh, 2024). International studies, while more comprehensive in scope, are drawn from socio-culturally and

infrastructurally distinct settings that limit their applicability to Nigerian teacher-education contexts (Stöhr et al., 2024; Bootchuy et al., 2025; Al Mashagbeh et al., 2025). Consequently, there is limited context-specific empirical evidence on how ready Colleges of Education students in Kwara State are to adopt AI tools for academic research, how extensively they currently use them, what factors shape that readiness, what challenges they face, and whether these patterns differ by gender. This study was therefore designed to examine students' readiness and utilization of artificial intelligence tools for academic research in Colleges of Education in Kwara State, Nigeria.

Purpose of the Study

The main purpose of this study is to examine students' readiness and utilization of artificial intelligence tools for academic research in Colleges of Education in Kwara State, Nigeria.

Specifically, the study sought to:

1. determine the level of readiness of Colleges of Education students to adopt artificial intelligence tools for academic research;

2. examine the extent to which Colleges of Education students utilize artificial intelligence tools for academic research;

3. identify the factors that influence Colleges of Education students' readiness to adopt artificial intelligence tools for academic research; and

4. identify the challenges Colleges of Education students encounter in utilizing artificial intelligence tools for academic research.

Research Questions

The following research questions guided the study:

1. What is the level of readiness of Colleges of Education students in Kwara State to adopt artificial intelligence tools for academic research?

2. To what extent do Colleges of Education students in Kwara State utilize artificial intelligence tools for academic research?

3. What factors influence the readiness of Colleges of Education students in Kwara State to adopt artificial intelligence tools for academic research?

4. What challenges do Colleges of Education students in Kwara State encounter in utilizing artificial intelligence tools for academic research?

Research Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

Ho1: There is no significant difference between male and female students' readiness to adopt artificial intelligence tools for academic research.

Ho2: There is no significant difference between male and female students' utilization of artificial intelligence tools for academic research.

Ho3: There is no significant difference between male and female students regarding the factors that influence their readiness to adopt artificial intelligence tools for academic research.

Ho4: There is no significant difference between male and female students regarding the challenges they encounter in utilizing artificial intelligence tools for academic research.

Methodology

This study adopted a descriptive research survey design to investigate students' readiness and utilization of AI tools for academic research in Colleges of Education in Kwara State. The study specifically examined students' level of readiness, the extent of utilization for research-related tasks, factors influencing readiness, and challenges associated with AI adoption.

The population of the study comprised all NCE III Business Education students in Colleges of Education in Kwara State. Using a simple random sampling procedure, 278 students were selected to participate, ensuring equitable representation and reducing sampling bias; participation was voluntary. The principal instrument was a structured questionnaire constructed in alignment with existing research on technology acceptance and AI integration in education, and tailored to the study's objectives. The instrument comprised sections eliciting responses on readiness, utilization, influencing factors, and challenges, using a four-point scale of Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). The face and content validity of the instrument were established by experts in Business Education and Educational Measurement and Evaluation, and its reliability was confirmed through a pilot study, which yielded a coefficient of 0.78. Items with mean scores of 2.50 and above were regarded as indicating agreement, while those below 2.50 were regarded as indicating disagreement, consistent with the study's four-point scale.

Data obtained from the instrument were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, including mean and standard deviation, were used to answer the four

research questions, while independent samples t-tests were used to test the four null hypotheses at the 0.05 level of significance.

Results

Research Question One: What is the level of readiness of Colleges of Education students in Kwara State to adopt artificial intelligence tools for academic research?

Table 1: *Mean and Standard Deviation on Students' Readiness to Use Artificial Intelligence Tools for Research Activities*

S/N	Items	Mean (x̄)	SD	Remarks
1	I am aware that AI tools can support research activities.	3.52	0.62	Strongly Agree
2	I understand how basic AI tools like ChatGPT, Grammarly, or Mendeley work.	3.36	0.71	Agree
3	I feel confident using digital tools to support academic work.	3.30	0.74	Agree
4	I am willing to learn how to use AI tools for research.	3.63	0.58	Strongly Agree
5	I believe I have the digital skills needed to adopt AI tools.	3.28	0.76	Agree
6	I am ready to try new AI tools when they are introduced to me.	3.44	0.68	Agree
7	I know how to verify AI-generated information before using it in research.	2.41	0.84	Disagree
8	I feel prepared to use AI tools throughout the research process.	3.27	0.77	Agree
9	I believe AI tools can make my research work more efficient.	3.52	0.66	Strongly Agree
10	I consider myself ready to use AI tools for academic research.	3.40	0.73	Agree
	Grand Mean and Standard Deviation	**3.31**	**—**	**Agree**

Table 1 indicates a generally strong degree of readiness among students to employ AI technology in academic research, with a grand mean of 3.31, suggesting moderate to high readiness. Students displayed awareness of AI technologies and confidence in using digital tools to support academic assignments, and their openness to new AI applications further demonstrates a favourable disposition toward technology integration in research. Willingness to learn recorded the highest mean score ($\bar{x}$ = 3.63), indicating considerable intrinsic motivation to embrace and study AI techniques. However, competencies related to more critical and evaluative use of AI appear comparatively weaker: the capacity to verify and critically examine AI-generated material recorded the lowest mean score (x̄ = 2.41), suggesting that while students are enthusiastic about adopting AI, they may lack the advanced skills necessary to verify outputs, ensure accuracy, and minimise potential misinformation.

Research Question Two: To what extent do Colleges of Education students in Kwara State utilize artificial intelligence tools for academic research?

Table 2: *Mean and Standard Deviation on Students' Utilization of Artificial Intelligence Tools for Research Purposes*

S/N	Items	Mean (x̄)	SD	Remarks
1	I use AI tools frequently for searching for research topics.	3.43	0.69	Agree
2	I use AI tools frequently for generating background information for assignments or projects.	3.40	0.71	Agree
3	I use AI tools frequently for summarizing articles or long texts.	3.37	0.72	Agree
4	I use AI tools frequently for paraphrasing or rewriting content for assignments.	3.39	0.73	Agree
5	I use AI tools frequently for checking grammar, spelling, and clarity of my writing.	3.48	0.66	Strongly Agree
6	I use AI tools frequently for formatting citations and references.	2.32	0.81	Disagree
7	I use AI tools frequently for clarifying difficult concepts or theories.	3.58	0.63	Strongly Agree

S/N	Items	Mean (x̄)	SD	Remarks
8	I use AI tools frequently for organizing or structuring research work.	2.41	0.79	Disagree
9	I use AI tools frequently for analyzing qualitative or quantitative data with AI-supported tools.	2.28	0.85	Disagree
10	I use AI tools at different stages of research (from topic selection to final writing).	3.41	0.70	Agree
	Grand Mean and Standard Deviation	**3.10**	**—**	**Agree**

Table 2 shows a generally positive level of utilization of AI tools for research purposes, with a grand mean of 3.10, indicating that students routinely use AI applications for core academic tasks, particularly those connected to concept clarification and writing enhancement. Explaining challenging concepts recorded the highest mean score ($\bar{x}$ = 3.58), followed closely by grammar and writing support ($\bar{x}$ = 3.48), suggesting that students predominantly rely on AI to simplify complex academic content and improve written output. In contrast, utilization drops considerably for more technical and research-intensive tasks: citation and reference formatting (x̄ = 2.32), organising research activity (x̄ = 2.41), and qualitative or quantitative data analysis ($\bar{x}$ = 2.28) all recorded low mean scores, indicating limited engagement with AI for the advanced analytical and methodological tasks central to rigorous academic research.

Research Question Three: What factors influence the readiness of Colleges of Education students in Kwara State to adopt artificial intelligence tools for academic research?

Table 3: *Mean and Standard Deviation on Factors Influencing Students' Readiness to Adopt Artificial Intelligence Tools for Research*

S/N	Items	Mean (x̄)	SD	Remarks
1	My institution supports the use of digital tools for academic work.	2.12	0.91	Disagree
2	My lecturers encourage the use of AI tools for research.	2.08	0.94	Disagree
3	I have access to a reliable internet connection when needed.	2.00	0.97	Disagree
4	Electricity supply in my area supports the use of AI tools.	1.86	1.02	Strongly Disagree
5	I receive guidance from lecturers or peers on using AI tools effectively.	2.14	0.90	Disagree
6	My previous digital learning experiences help me use AI tools better.	2.22	0.88	Disagree
7	Institutional policies are clear about the acceptable use of AI tools.	2.05	0.96	Disagree
8	Workshops or training sessions on AI tools improve my readiness.	2.18	0.93	Disagree
9	Seeing other students use AI tools increases my willingness to adopt them.	3.18	0.84	Agree
10	Ethical guidelines from my college help me feel confident using AI tools responsibly.	2.16	0.92	Disagree
	Grand Mean and Standard Deviation	**2.20**	**—**	**Disagree**

Table 3 indicates respondents' perceptions of the factors influencing their readiness to adopt AI tools for research. The grand mean of 2.20 suggests general disagreement that institutional and infrastructural factors currently support students' readiness, indicating that the enabling environment required for effective AI integration remains inadequate. Respondents largely disagreed that their institution actively encourages the use of digital technologies, that lecturers encourage AI use, or that clear institutional norms exist to guide acceptable AI use in academic work, suggesting that the absence of structured guidance and policy frameworks may contribute to ambiguity and cautious adoption. Infrastructure-related items recorded particularly low scores: electricity supply (x̄ = 1.86) and internet connectivity (x̄ = 2.00) were identified as key constraints, illustrating that unpredictable power and limited internet access hinder consistent AI usage, alongside a general shortfall in prior guidance, training, and digital learning experience. Peer influence emerged as the sole clearly positive factor, with

respondents indicating that observing fellow students use AI technologies increased their own likelihood of adoption ($\bar{x}$ = 3.18), suggesting that informal social learning and peer modelling may play a more significant role in encouraging AI use than formal institutional processes currently do.

Research Question Four: What challenges do Colleges of Education students in Kwara State encounter in utilizing artificial intelligence tools for academic research?

Table 4: *Mean and Standard Deviation on Challenges Students Face in the Utilization of Artificial Intelligence Tools for Research*

S/N	Items	Mean ($\bar{x}$)	SD	Remarks
1	Irregular electricity supply makes it difficult to use AI tools consistently.	3.42	0.76	Agree
2	Poor internet connectivity affects my ability to use AI tools effectively.	3.55	0.68	Strongly Agree
3	I find it difficult to verify whether AI-generated information is accurate.	3.12	0.82	Agree
4	I lack adequate training on how to use AI tools for academic research.	3.28	0.79	Agree
5	Using AI tools consumes a lot of data, making it expensive for me.	3.47	0.72	Strongly Agree
6	My device (phone or laptop) does not support some AI tools.	2.34	0.91	Disagree
7	I am concerned about plagiarism when using AI tools for assignments.	3.18	0.80	Agree
8	I do not fully understand the ethical guidelines for using AI tools in research.	3.05	0.85	Agree
9	I find AI tools difficult to use without guidance.	2.89	0.90	Agree
10	AI tools sometimes produce unclear or confusing results.	3.10	0.83	Agree
	Grand Mean and Standard Deviation	**3.14**	**—**	**Agree**

Table 4 reveals students' responses regarding the challenges encountered while using AI tools for research. The grand mean of 3.14 reflects general agreement that several constraints hinder optimal AI use. Infrastructural and financial limitations emerged as the most significant hurdles, with poor internet access ($\bar{x}$ = 3.55) and high data costs associated with AI use ($\bar{x}$ = 3.47) identified as leading barriers, closely followed by irregular electricity supply ($\bar{x}$ = 3.42), underscoring the crucial role of reliable technology infrastructure and affordability in facilitating smooth AI integration into research processes. Beyond infrastructural barriers, students also emphasised difficulty verifying the accuracy of AI-generated information, a lack of formal training in AI tool use, and concerns around plagiarism and responsible use, alongside occasional difficulty interpreting unclear or confusing AI outputs, together pointing to a need for systematic training and pedagogical support. Device limitations were not viewed as a major barrier, recording a comparatively low mean score ($\bar{x}$ = 2.34), suggesting that students generally have access to adequate hardware for AI engagement.

Hypothesis One (Ho1): There is no significant difference between male and female students' readiness to adopt artificial intelligence tools for academic research.

Table 5: *t-test Analysis of Gender-Based Response on Students' Readiness to Use Artificial Intelligence Tools for Research*

Gender	N	Mean ($\bar{x}$)	SD	t-cal	t-crit	Sig. (p)	Decision
Male	112	3.29	0.41	0.62	1.96	0.54	Not Significant
Female	166	3.32	0.38				
Grand Mean = 3.30							

Table 5 shows that male students ($\bar{x}$ = 3.29) and female students ($\bar{x}$ = 3.32) reported comparable levels of readiness, with no statistically significant difference found (t = 0.62, p = 0.54 > 0.05). Ho1 is therefore not rejected. Both male and female students exhibit similar levels of awareness, confidence, and willingness to engage with AI tools, indicating equitable readiness across gender groups.

Hypothesis Two (Ho2): There is no significant difference between male and female students' utilization of artificial intelligence tools for academic research.

Table 6: *t-test Analysis of Gender-Based Response on Utilization of Artificial Intelligence Tools for Research*

Gender	N	Mean (x̄)	SD	t-cal	t-crit	Sig. (p)	Decision
Male	112	3.08	0.49	0.98	1.96	0.33	Not Significant
Female	166	3.12	0.46				
Grand Mean = 3.09							

Table 6 shows that male students ($\bar{x}$ = 3.08) and female students (x̄ = 3.12) display similar levels of AI usage, with no statistically significant difference found (t = 0.98, p = 0.33 > 0.05). Ho2 is therefore not rejected, indicating comparable engagement with AI technologies across multiple research tasks irrespective of gender, provided access, awareness, and digital literacy are comparable.

Hypothesis Three (Ho3): There is no significant difference between male and female students regarding the factors that influence their readiness to adopt artificial intelligence tools for academic research.

Table 7: *t-test Analysis of Gender-Based Response on Factors Influencing Students' Readiness to Adopt Artificial Intelligence Tools for Research*

Gender	N	Mean (x̄)	SD	t-cal	t-crit	Sig. (p)	Decision
Male	112	2.22	0.58	0.41	1.96	0.68	Not Significant
Female	166	2.19	0.55				
Grand Mean = 2.20							

Table 7 shows no statistically significant difference between male students ($\bar{x}$ = 2.22) and female students (x̄ = 2.19) regarding the influence of institutional, infrastructural, and contextual factors on their readiness (t = 0.41, p = 0.68 > 0.05). Ho3 is therefore not rejected, indicating that male and female students face similar institutional and infrastructural conditions, and that interventions to improve AI readiness can be designed to benefit both groups equally.

Hypothesis Four (Ho4): There is no significant difference between male and female students regarding the challenges they encounter in utilizing artificial intelligence tools for academic research.

Table 8: *t-test Analysis of Gender-Based Response on Challenges Affecting Students' Utilization of Artificial Intelligence Tools*

Gender	N	Mean (x̄)	SD	t-cal	t-crit	Sig. (p)	Decision
Male	112	3.18	0.52	0.32	1.96	0.75	Not Significant
Female	166	3.10	0.49				
Grand Mean = 3.14							

Table 8 shows no statistically significant difference between male students ($\bar{x}$ = 3.18) and female students (x̄ = 3.10) in the challenges they reported (t = 0.32, p = 0.75 > 0.05). Ho4 is therefore not rejected, suggesting that the challenges associated with AI use are systemic, rooted in infrastructural, financial, and training-related constraints, rather than being shaped by gender.

Discussion of Findings

The findings offer important insight into students' readiness and utilization of AI tools for academic research in Colleges of Education in Kwara State. Students demonstrated moderate to high readiness, notably in awareness, enthusiasm to learn, and confidence in using digital tools, reflecting meaningful appreciation of AI's potential to enhance research efficiency. This extends the work of Bootchuy et al., (2025), who found strong readiness among students for AI adoption in distance education, and Shittu et al., (2025), who reported high awareness among Nigerian university students. Unlike Alimi et al., (2021), who found low awareness among undergraduates in Kwara State universities, the present study finds higher readiness within Colleges of Education, underscoring a contextual distinction and addressing a gap in prior research on teacher-education institutions.

Descriptive analysis of utilization, however, revealed that students predominantly employ AI for foundational tasks such as topic identification, summarisation, paraphrasing, grammar checking, and clarifying difficult concepts, with limited use for citation management, data analysis, and research organisation. This mirrors global findings by Ravšelj et al., (2025) on brainstorming and literature summarisation, and Onwuagboke et al., (2024) on frequent academic AI use among Nigerian lecturers, while the shortfall in advanced use aligns with Anih and Ukeh (2024) and Archana et al., (2025), suggesting that AI adoption in this context remains largely supportive rather than transformative.

Institutional and infrastructural considerations emerged as significant barriers, with students citing limited access to stable electricity, internet connectivity, structured training, and clear institutional guidance consistent with Alimi et al., (2021) and Ukeh and Anih (2024). Ethical and operational constraints, including difficulty verifying AI-generated content, plagiarism concerns, and unclear outputs, echo observations by Stöhr et al., (2024) and Ravšelj et al., (2025) regarding academic integrity and responsible use, while peer influence emerged as a positive driver of adoption. Hypothesis testing found no statistically significant gender differences across readiness, utilization, influencing factors, or challenges, contrasting with broader international evidence of gender disparities (Matobobo, 2026; Møgelvang et al.,, 2024; Fadillah & Akbar, 2025) but aligning with Raza et al., (2024), who observed narrowing gender gaps in some ASEAN contexts. Within the specific socio-cultural and infrastructural environment of Nigerian Colleges of Education, gender does not appear to meaningfully influence AI adoption, reinforcing the value of localised empirical evidence.

Conclusion

This study examined students' readiness and utilization of artificial intelligence tools for academic research in Colleges of Education in Kwara State. Students exhibit moderate to high readiness, with strong awareness, confidence in digital tool use, and enthusiasm to engage with AI applications. While AI tools are regularly used for core research tasks such as topic identification, summarisation, paraphrasing, grammar checking, and clarifying complex concepts, more advanced applications, including citation management, data analysis, and research organisation, remain underutilised. Institutional and infrastructural challenges, including restricted access to electricity, unreliable internet connectivity, insufficient training, and unclear AI policies, were identified as significant obstacles, compounded by ethical and operational concerns around plagiarism, authenticity, and the need for competent guidance. Gender was not found to be a significant driver of readiness, utilization, or challenges encountered, indicating that the barriers to effective AI adoption are systemic rather than demographic. While students recognise AI's value for research efficiency, realising this potential depends on deliberate institutional support: infrastructure development, systematic AI literacy programmes, curricular integration, and clear ethical standards are required to bridge the gap between readiness and meaningful, advanced application of AI in academic research.

Recommendations

Based on the findings, the following recommendations were made:

1. College management and government should prioritise investment in reliable electricity and internet infrastructure within Colleges of Education to support consistent and equitable AI tool usage among students.

2. Colleges of Education should institute regular, structured training and workshops on AI tools for research, with particular emphasis on verifying AI-generated content, citation management, and data analysis, where student competence is currently weakest.

3. College management should develop and clearly communicate institutional policies and ethical guidelines governing acceptable AI use in academic research, to reduce ambiguity, address plagiarism concerns, and encourage confident, responsible adoption.

4. Lecturers should be encouraged and supported to model effective and responsible AI use in research supervision and coursework, given students' reliance on guidance from lecturers and peers.

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LECTURERS' AND STUDENTS' PERCEPTION OF THE IMPLICATIONS OF ARTIFICIAL INTELLIGENCE (AI) IN OFFICE TECHNOLOGY AND MANAGEMENT EDUCATION IN TERTIARY INSTITUTIONS IN PLATEAU STATE

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Abstract

The study examined lecturers' and students' perception of the implications of artificial intelligence (AI) in Office Technology and Management Education (OTME) in tertiary institutions in Plateau State. The study was guided by four research questions. Descriptive survey design was used for the study. The total population of the study was 1,336 lecturers and students offering Office Technology and Management Education in tertiary institutions in Plateau State. Using Yamane's (1967) formula at 5% level of precision, a sample size of 309 respondents was obtained. A 17 item structured questionnaire was validated by four experts: three (3) in Business Education and one (1) from Computer Education to ensure content and face validity. Reliability was established through a pilot study using the Cronbach's Alpha method. A reliability coefficient of 0.70 or above would be considered acceptable for the study. The data collected were analysed using mean to answer the questions. The study is anchored on the Technology Acceptance Model (TAM) and the Diffusion of Innovations Theory (DOI), which explain users' acceptance and adoption of technological innovations. The paper argues that while AI presents enormous opportunities for improving instructional effectiveness, personalised learning, digital competence, and workplace readiness, successful implementation requires adequate infrastructure, institutional policies, capacity building, and ethical guidelines. The study concludes that positive perceptions of AI among lecturers and students will significantly influence its effective integration into Office Technology and Management Education.

Keywords: Artificial Intelligence, Office Technology and Management Education, perception, lecturers, students, tertiary institutions.

Introduction

The rapid advancement of Artificial Intelligence (AI) globally has significantly transformed virtually every sector of society, including education. Artificial Intelligence refers to the capability of computer systems to perform tasks that ordinarily require human intelligence, such as learning, reasoning, problem-solving, language understanding, speech recognition, and decision-making (Russell &Norvig, 2021). Aina et al in Eze-Desy and Emeasoba (2025) explain that Artificial Intelligence is an innovative technical framework that encompasses the creation of computer systems with the ability to execute activities that usually need human intellect. These activities involve problem-solving, acquiring knowledge, comprehending language and seeing visual information. According to Otum and Okute (2025), artificial intelligence is highly sophisticated technological devices which imitate human intellectual acumen through technology training and imputation such knowledge using algorithms to perform task to ease human efforts and retain the information using computer memory. They further explained that artificial intelligence is a technological device that thinks and acts using human intelligence to successfully perform specialized tasks ordinarily done by man. Artificial intelligence is the use of human ingenuity to control technological equipment.

The integration of AI into education has created new opportunities for improving instructional delivery, learning outcomes, administrative efficiency, and research productivity (Holmes et al., 2022). Globally, higher education institutions are increasingly adopting AI-powered technologies to support teaching and learning. These technologies include intelligent tutoring systems, adaptive learning platforms, automated grading systems, virtual learning assistants, plagiarism detection software, chatbots, predictive analytics, and generative AI tools such as ChatGPT. Such innovations provide personalized learning experiences, timely feedback, enhanced student engagement, and improved instructional effectiveness (UNESCO, 2023).

Office Technology and Management Education (OTME), formerly known as Secretarial Education, is designed to prepare students with practical competencies in teaching, office administration, information management, communication technologies, digital office systems, entrepreneurship, and managerial skills necessary for contemporary workplaces. The increasing digitization of offices and organizations has made AI an indispensable component of teaching, learning and modern office operations. Consequently, OTME programmes are expected to integrate AI technologies into their curricula to equip graduates with relevant competencies in the era of globalization.

In Nigeria, AI adoption within tertiary education is gradually gaining momentum. Universities, colleges of education, and polytechnics are beginning to utilize AI-supported applications for instructional delivery, online learning, administrative management, and academic research. However, the extent of AI integration varies considerably due to challenges such as inadequate infrastructure, limited funding, unstable power supply (electricity), poor internet connectivity, insufficient digital literacy, and lack of institutional supports among others.

The perceptions of lecturers and students play a critical role in determining the successful adoption and utilization of AI technologies. According to the Technology Acceptance Model (TAM), individuals' willingness to use technology depends largely on their perceived usefulness and perceived ease of use (Davis, 1989). Positive perceptions encourage technology acceptance, whereas negative perceptions hinder implementation. Understanding these perceptions is therefore essential for developing effective strategies for AI integration within OTME.

Plateau State hosts several public and private tertiary institutions offering Business Education and Office Technology and Management Education programmes. These institutions are expected to produce graduates capable of functioning effectively in AI-driven digital workplaces. However, empirical evidence regarding lecturers' and students' perceptions of AI implications within these institutions remains limited. This study therefore seeks to examine these perceptions to provide evidence-based recommendations for policy makers, educational administrators, curriculum planners, government, proprietors, lecturers, and students as well as researchers and academia.

STATEMENT OF THE PROBLEM

Artificial Intelligence (AI) is increasingly transforming teaching, learning, office administration, industries, and professional practice worldwide. Modern workplaces now require graduates who possess competencies in AI-supported office technologies, intelligent information management systems, digital communication, and automated office operations. Consequently, Office Technology and Management Education must continually evolve to reflect these technological changes.

Despite the growing importance of AI, many tertiary institutions in Plateau State, Nigeria continue to experience inadequate ICT infrastructure, limited AI facilities, insufficient lecturer training, poor internet connectivity, inadequate funding, poor power supply (electricity) and the absence of institutional policies guiding AI integration. These challenges may affect both lecturers' and students' perceptions regarding the usefulness, effectiveness, ethical implications, and adoption of AI technologies in teaching and learning outcomes.

Furthermore, while AI offers numerous educational benefits, concerns relating to academic dishonesty, plagiarism, overdependence on AI-generated content, data privacy, ethical issues, reduced critical thinking, and unequal access to technology continue to generate debates among educators and researchers. Such concerns may influence the extent to which lecturers and students embrace AI in Office Technology and Management Education in our tertiary institutions in Plateau State, Nigeria.

Although several studies have examined AI adoption in tertiary education generally, there is limited empirical evidence focusing specifically on Office Technology and Management Education within tertiary institutions in Plateau State. This gap in knowledge necessitates the present study, which seeks to examine lecturers' and students' perceptions of the implications of Artificial Intelligence (AI) in Office Technology and Management Education (OTME) in tertiary institutions in Plateau State.

OBJECTIVES OF THE STUDY

The study seeks to examine lecturers' and students' perceptions of the implications of Artificial Intelligence (AI) in Office Technology and Management Education (OTME) in tertiary institutions in Plateau State.

Specifically, the study sought to:

1. Determine lecturers' perceptions of the positive implications of Artificial Intelligence in Office Technology and Management Education in tertiary institutions in Plateau State.
2. Examine students' perceptions of the positive implications of Artificial Intelligence in Office Technology and Management Education in tertiary institutions in Plateau State.
3. Identify the perceived challenges associated with AI integration in OTME

4. Determine strategies for effective integration of AI into OTME programmes in tertiary institutions in Plateau State

RESEARCH QUESTIONS

The following research questions guided the study:

1. What are lecturers' perceptions of the positive implications of Artificial Intelligence in Office Technology and Management Education in tertiary institutions in Plateau State?
2. What are the students' perceptions of the positive implications of Artificial Intelligence in Office Technology and Management Education in tertiary institutions in Plateau State?
3. What challenges are perceived to hinder Artificial intelligence integration in Office Technology and Management Education in tertiary institutions in Plateau State?
4. What strategies are required for effective integration of Artificial intelligence into office Technology and Management Education programmes?

Theoretical Framework

This study is anchored on two complementary theories: the Technology Acceptance Model (TAM) and the Diffusion of Innovations (DOI) Theory. These theories provide a sound theoretical basis for explaining lecturers' and students' perceptions, acceptance, and adoption of Artificial Intelligence (AI) technologies in Office Technology and Management Education (OTME).

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was developed by Davis (1989) to explain users' acceptance and utilization of information technologies. The model posits that two major factors influence an individual's intention to adopt a technology: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU).

Perceived usefulness refers to the degree to which an individual believes that using a particular technology will improve job or learning performance. Perceived ease of use refers to the extent to which an individual believes that using the technology will require minimal effort. According to TAM, when users perceive a technology as useful and easy to use, they are more likely to develop positive attitudes toward it, leading to greater acceptance and actual use (Venkatesh & Davis, 2000).

In the context of Office Technology and Management Education, lecturers may perceive AI technologies as useful because they facilitate lesson preparation, automate assessment, provide immediate feedback, improve classroom management, and enhance research productivity. Likewise, students may perceive AI applications as valuable because they support personalized learning, improve academic performance, simplify information retrieval, and strengthen digital competencies.

However, perceptions may become negative where AI is associated with academic dishonesty, misinformation, privacy concerns, reduced critical thinking, or inadequate institutional support. TAM therefore provides an appropriate framework for understanding the factors influencing lecturers' and students' acceptance of AI technologies in tertiary institutions.

Diffusion of Innovations (DOI) Theory

The Diffusion of Innovations Theory was developed by Rogers (2003) to explain how new ideas, technologies, and innovations spread within a social system over time. The theory identifies five major characteristics that influence the rate of adoption of an innovation:

(i) Relative advantage refers to the extent to which an innovation is perceived as superior to existing practices. (ii) Compatibility relates to how consistent the innovation is with users' values, experiences, and needs. (iii) Complexity concerns the difficulty involved in understanding or using the innovation.
(iv) Trialability refers to opportunities to experiment with the innovation before full adoption, while
(v) Observability involves the visibility of the innovation's benefits to others.

Within tertiary institutions in Plateau State, AI adoption depends on whether lecturers and students perceive AI technologies as beneficial, compatible with instructional practices, simple to use, and capable of improving teaching and learning outcomes. Institutional supports and policies, management support, training opportunities, and ICT infrastructure also influence the diffusion process.

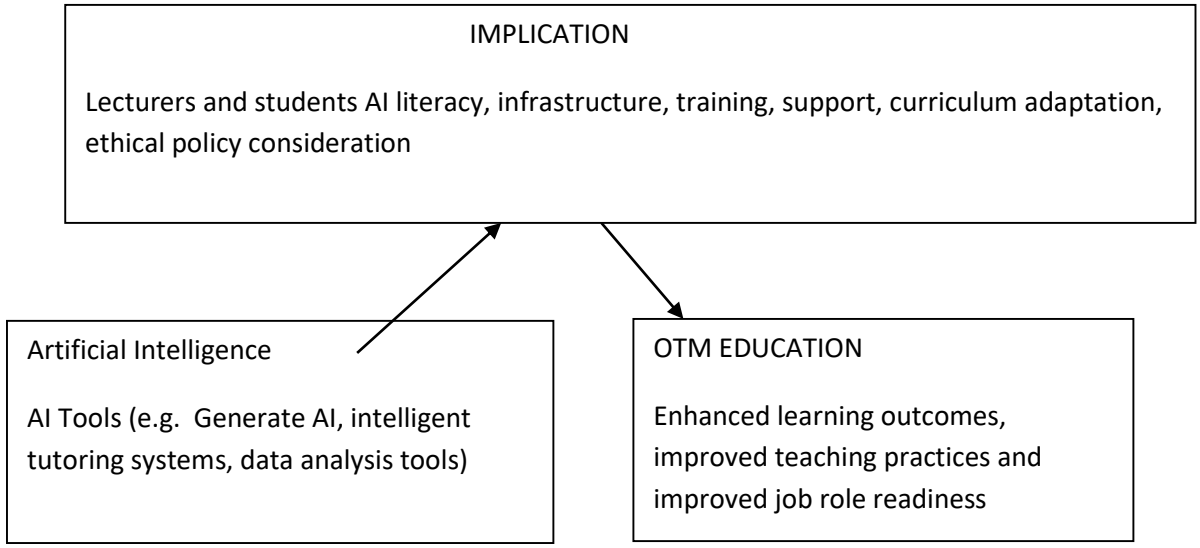
The DOI theory is therefore relevant because it explains how AI innovations gradually become integrated into educational systems through awareness, persuasion, decision, implementation, and confirmation stages.

Relevance of the Theories to the Study

The Technology Acceptance Model (TAM) explains the psychological factors influencing lecturers' and students' willingness to use AI technologies, whereas the Diffusion of Innovations (DOI) Theory explains the institutional and social processes through which AI adoption spreads within tertiary institutions. Together, the two theories provide a comprehensive explanation of perceptions toward Artificial Intelligence in Office Technology and Management Education (OTME) in tertiary institutions.

Conceptual Framework

A conceptual framework is a visual or written structure that shows how the key variables in a study are connected. It explains the concepts you are studying and how they influence each other. A conceptual framework could also be viewed as a map of one's' research. It shows: the main concepts in the study, the relationships between them, and the direction of information (what affects what).



Artificial

Figure 1: Conceptual framework of the implication of Artificial Intelligence (AI) in Office Technology and Management Education (OTME). Source: Author

The conceptual framework in figure 1 shows that Artificial Intelligence is the Independent Variable (IV), Office Technology and Management Education is the Dependent Variable (DV), while Implication is the Intervening Variable (IV). The diagram shows that artificial intelligence which is the independent variable influences the learning outcomes and teaching practices of both students and lecturers in OTME, which is the dependent variable. This implies that all things being equal, integrating AI tools (e.g., generative AI, intelligent tutoring systems, data analytics tools) in to the OTME programme will lead to enhanced learning outcomes, improved teaching practices and improved job role readiness for OTME graduates. The framework also revealed that the implication of integrating AI in OTME will be dependent on whether or not lecturers and students are AI literate, availability or otherwise of necessary infrastructure, training support, curriculum adaptation, ethical and policy considerations

Review of Related Literature

Artificial Intelligence has become one of the most significant technological developments influencing higher education globally. UNESCO (2023) observed that AI has the capacity to transform teaching, learning, research, administration, assessment, and student support services. AI-powered technologies enable institutions to deliver more personalized, efficient, and flexible learning experiences while improving institutional productivity.

According to Holmes et al. (2022), AI applications in education include adaptive learning systems, intelligent tutoring systems, automated grading, predictive analytics, virtual assistants, and learning management support. These technologies assist lecturers in monitoring students' progress while providing learners with individualized instructional support.

In Office Technology and Management Education, AI has expanded beyond traditional office automation to include intelligent document management, speech recognition, business analytics, robotic process automation, virtual communication, and workflow optimization. These developments have significantly changed the competencies expected of graduates entering modern workplaces.

Recent studies indicate that students generally demonstrate positive attitudes toward AI because of its ability to simplify learning tasks, improve access to information, and enhance academic

performance. Nevertheless, concerns remain regarding excessive dependence on AI-generated content, diminished originality, misinformation, and academic integrity (Kasneci et al., 2023).

Similarly, lecturers acknowledge that AI can improve instructional delivery and research productivity but express concerns about ethical use, assessment validity, copyright, data privacy, and the need for professional development. Effective AI integration therefore requires adequate institutional policies, staff training, infrastructure development, and continuous monitoring (UNESCO, 2023).

Studies conducted in developing countries reveal that inadequate ICT infrastructure, unstable electricity, limited internet connectivity, poor funding, and insufficient digital literacy remain major barriers to AI adoption in higher education. Addressing these challenges is essential if tertiary institutions are to fully realize the educational benefits of Artificial Intelligence.

Overall, the literature suggests that while lecturers and students generally perceive AI positively because of its instructional benefits, successful implementation depends on institutional readiness, ethical governance, digital competence, and supportive educational policies.

Methodology

This study adopted a descriptive survey research design because it is appropriate for obtaining the opinions and perceptions of respondents regarding the implications of Artificial Intelligence (AI) in Office Technology and Management Education (OTME). The design enables the researcher to collect data from a representative sample and generalize the findings to the target population.

A stratified random sampling technique will be employed. Eguzoikpe in Duktur (2015) a stratified sample is one that should be obtained by separating the population elements into smaller non-overlapping groups or blocks of units called strata, in such a way that each stratum is a homogenous as possible. From each stratum, a selection is made to form the required sample. Proportionate random sampling will then be used to determine the number of respondents selected from each stratum. This ensures adequate representation of lecturers and students across selected tertiary institutions in Plateau State.

Instrument for Data Collection

Data were collected using a structured questionnaire titled "Lecturers' and Students' Perception of the Implications of Artificial Intelligence in Office Technology and Management Education Questionnaire (LSPIAIOTMEQ)." The instrument consisted of two sections:

Section A: Demographic information of respondents.

Section B: Items measuring respondents' perceptions of the positive and negative implications of AI using a five-point Likert scale:

Strongly Agree	(SA)	= 5
Agree	(A)	= 4
Moderately Agree	(MA)	= 3
Disagree	(D)	= 2
Strongly Disagree	(SD)	= 1

Validity and Reliability

The questionnaire was validated by four experts: three (3) in Business Education and one (1) from Computer Education to ensure content and face validity. Reliability was established through a pilot study using the Cronbach's Alpha method. A reliability coefficient of 0.70 or above would be considered acceptable for the study.

Method of Data Collection

The researcher, assisted by trained research assistants, administered the questionnaires directly to respondents in their respective institutions. Completed questionnaires were retrieved immediately.

Method of Data Analysis

Research questions were analysed using mean and standard deviation. A criterion mean of 3.00 would be used for decision-making, where:

Mean ≥ 3.00 = Agreed

Mean < 3.00 = Disagreed

Data Analysis

The analysis of responses indicate that lecturers and students generally perceive AI as a valuable innovation capable of improving teaching effectiveness, enhancing learning experiences, increasing productivity, and equipping learners with digital workplace competencies. Respondents also acknowledge concerns regarding plagiarism, academic dishonesty, and excessive dependence on AI-generated content, data privacy, ethical issues, lack of training of personnel and students in AI tools, and inadequate technological infrastructure.

Therefore, the aggregate mean scores that exceed the benchmark of 3.00 are regarded positive items, indicating favourable perceptions of AI integration into Office Technology and Management Education, while respondents also express agreement with items relating to the challenges that require institutional attention.

Results

Research question 1: What are lecturers' perceptions of the positive implications of Artificial Intelligence in Office Technology and Management Education in tertiary institutions in Plateau State?

Table 1: Lecturers' perception of positive implications AI in OTME

S/N	Item	Mean	Decision
1	AI improves personalised instruction in OTME	3.42	Strongly Agreed
2	AI enhances office simulation and practical learning	3.51	Strongly Agreed
3	AI supports research and information retrieval	3.63	Strongly Agreed
4	AI improves communication and document preparation skills	3. 48	Strongly Agreed
Grand Mean =		**3.51**	**Strongly Agreed**

The result indicates that lecturers generally perceived AI as having positive implications for teaching, research, and skills development in OTME in tertiary institutions in Plateau State, Nigeria.

Research question 2: What are the students' perceptions of the positive implications of Artificial Intelligence in Office Technology and Management Education in tertiary institutions in Plateau State?

Table 2; Students' perceptions of Positive implications of AI in OTME

S/N	Item	Mean	Decision
1	AI makes learning more interactive and engaging	3.57	Strongly Agreed
2	AI improves access to learning materials	3.71	Strongly Agreed
3	AI enhances digital and office-related competencies	3.46	Strongly Agreed
4	AI supports independent learning and assignment completion	3.52	Strongly Agreed
Grand Mean =		**3.57**	**Strongly Agreed**

Data presented in table 2 indicates that students perceived AI positively particularly regarding access to information, engagement, and independent learning.

Research question 3: What challenges are perceived to hinder Artificial intelligence integration in Office Technology and Management Education in tertiary institutions in Plateau State?

Table 3: Perceived Challenges of AI Integration in OTME

S/N	Item	Mean	Decision
1	Inadequate ICT infrastructure	3.74	Strongly Agreed
2	Poor internet connectivity	3.69	Strongly Agreed
3	Unstable power supply (electricity)	3. 81	Strongly Agreed
4	Limited AI skills among lecturers and students	3.55	Strongly Agreed
5	Fear of job displacement due to automation	3.21	Strongly Agreed
Grand Mean =		**3.60**	**Strongly Agreed**

Table 3 shows that both the respondents strongly agreed that infrastructural and competency-related factors constitute major barriers to AI integration into OTME in tertiary institutions in Plateau State, Nigeria.

Research question 4: What strategies are required for effective integration of Artificial intelligence into office Technology and Management Education programmes?

Table 4: Strategies required for effective AI integration

S/N	Item	Mean	Decision
1	Regular AI literacy training for lecturers	3.78	Strongly Agreed
2	Integration of AI literacy into OTME curriculum	3.84	Strongly Agreed
3	Provision of reliable internet facilities	3.87	Strongly Agreed
4	Government funding for digital infrastructure	3.91	Strongly Agreed
Grand Mean =		**3.85**	**Strongly Agreed**

Table 4 reveals that the respondents strongly supported training, curriculum reform, infrastructure provision, and increased funding as strategies for effective AI integration into OTME in tertiary institutions in Plateau State, Nigeria.

Discussion of Findings

The findings reveal that lecturers and students hold generally positive perceptions regarding the educational benefits of Artificial Intelligence (AI). This finding supports the Technology Acceptance

Model, which posits that technologies perceived as useful and easy to use are more readily accepted (Davis, 1989; Venkatesh & Davis, 2000).

Respondents perceived AI as tools for improving lesson preparation, facilitating personalized learning, enhancing students' engagement, supporting research activities, simplifying office applications, and strengthening digital competencies. These findings align with Holmes et al. (2022), who reported that AI enhances instructional effectiveness and promotes learner-centred education.

The study also revealed concerns regarding plagiarism, overdependence on AI tools, reduced critical thinking, ethical dilemmas, copyright issues, and data privacy. These findings corroborate UNESCO (2023) and Kasneci et al. (2023), who emphasized that although AI offers substantial educational opportunities, it also raises important ethical and pedagogical challenges that require appropriate governance.

Furthermore, inadequate ICT infrastructure, poor internet connectivity, unstable power (electricity) supply, limited AI literacy, and insufficient institutional policies are major barriers to AI integration in tertiary institutions. These challenges underscore the need for strategic investment and capacity building to maximize the benefits of AI in Office Technology and Management Education.

Recommendations

Based on the findings, the following recommendations are made:

Tertiary institutions should integrate Artificial Intelligence competencies into the Office Technology and Management Education curriculum to prepare students for AI-driven workplaces.

Governments and institutional administrators should invest in reliable ICT infrastructure, stable internet connectivity, uninterrupted power supply (electricity), and AI-enabled learning environments.

Regular training, workshops, seminars, and professional development programmes should be organised to enhance lecturers' AI knowledge and pedagogical skills.

Tertiary institutions in Plateau State, Nigeria should develop comprehensive policies and ethical guidelines governing the responsible use of AI in teaching, learning, assessment, and research.

Students should be educated on responsible AI use to promote academic integrity, originality, critical thinking, and ethical scholarship.

Collaboration among government agencies, tertiary institutions, industry, and technology providers should be strengthened to facilitate sustainable AI integration into higher education.

Further empirical studies should investigate the long-term effects of AI on learning outcomes, employability, and instructional effectiveness in Office Technology and Management Education.

Conclusion

Artificial Intelligence (AI) is transforming tertiary education most especially OTME and redefining the competencies required of graduates in Office Technology and Management Education. The study concludes that lecturers and students generally perceive AI as a valuable educational innovation capable of improving teaching quality, learning effectiveness, research productivity, and workplace preparedness. However, the successful integration of AI into OTME depends on adequate infrastructure, institutional support, ethical regulation, and continuous capacity development for both lecturers and students. By addressing these challenges, tertiary institutions in Plateau State and Nigeria at large can harness the full potential of AI to produce graduates who are innovative, digitally competent, and globally competitive.

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THE ROLE OF ARTIFICIAL INTELLIGENCE AND AUTOMATION IN SHAPING ENTREPRENEURIAL LEARNING AND SKILLS ACQUISITION AMONG ENTREPRENEURS OF SMEs IN SOUTH-SOUTH, NIGERIA

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Abstract

This study examined the role of artificial intelligence and automation in shaping entrepreneurial learning and skills acquisition among entrepreneurs of SMES in south-south Nigeria, the specific objectives are to evaluate the relationship between Artificial Intelligence Adoption and Decision-Making Skills among entrepreneurs of SMES in south-south Nigeria. determine the relationship between Artificial Intelligence Adoption and Innovation Skills among entrepreneurs of SMES in south-south Nigeria. evaluate the relationship between Business Process Automation and Decision-Making Skills among entrepreneurs of SMES in south-south Nigeria. determine the relationship between Business Process Automation and Innovation Skills among entrepreneurs of SMES in south-south Nigeria. This study adopted the correlation survey research. Correlation survey research is non-experimental research. The population of the study comprised 90 entrepreneurs The result of the study showed that there is a significant relationship between Artificial Intelligence Adoption and Decision-Making Skills among entrepreneurs of SMES in south-south Nigeria, there is a significant relationship between Artificial Intelligence Adoption and Innovation Skills among entrepreneurs of SMES in south-south Nigeria, there is a significant relationship between Business Process Automation and Decision-Making Skills among entrepreneurs of SMES in south-south Nigeria, there is a significant relationship between Business Process Automation and Innovation Skills among entrepreneurs of SMES in south-south Nigeria. The study recommends amongst others that SME entrepreneurs should increase the adoption of appropriate AI technologies. Entrepreneurs should actively explore affordable AI applications that can support market research, information analysis, customer management, forecasting and other business activities. This can strengthen their access to information and improve decision-making capabilities. AI literacy training should be incorporated into SME development programmes. Government agencies, business associations and entrepreneurship development institutions should organise practical AI training programmes for SME entrepreneurs. Such programmes should focus on the practical application of AI rather than theoretical knowledge alone. The study concludes that Artificial Intelligence Adoption and Business Process Automation are significantly and positively associated with Decision-Making Skills and Innovation Skills among entrepreneurs of SMEs in South-South Nigeria. The findings further suggest that digital technologies can serve not only as tools for improving operational efficiency but also as mechanisms for entrepreneurial learning and skills development.

Key Words: Artificial Intelligence, Automation, Entrepreneurial Learning, Skills Acquisition and Entrepreneurs.

Introduction

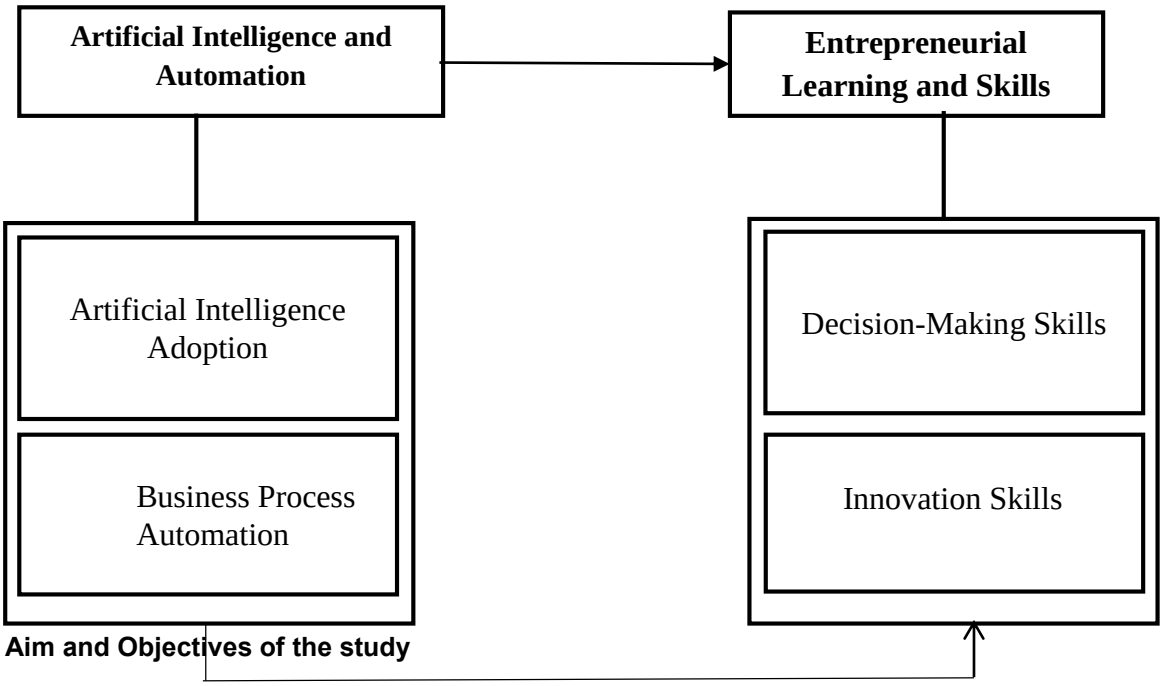
Small and Medium Enterprises constitute an important component of economic activity because they provide employment, generate income, stimulate innovation and contribute to local economic development. In Nigeria, SMEs operate across manufacturing, agriculture, trade, transportation, hospitality, professional services, information technology and numerous other sectors. Their ability to remain competitive increasingly depends on their capacity to acquire new knowledge and develop skills that correspond with changes in technology and market conditions. The emergence of Artificial

Intelligence (AI) has introduced a new dimension to entrepreneurial learning and business development. AI refers broadly to technologies capable of performing tasks that traditionally require human intelligence, including learning, prediction, language processing, pattern recognition and decision support (Adie et al 2026). Automation, closely related to AI, involves the use of technology to perform repetitive or rule-based activities with limited human intervention. Together, these technologies are changing how entrepreneurs search for information, communicate with customers, analyse markets, manage finances, develop products and organize business operations.

The relevance of AI to entrepreneurship extends beyond the automation of routine activities. AI tools can serve as learning resources through which entrepreneurs acquire knowledge about marketing, accounting, customer management, business strategy and product development. For example, generative AI applications can help entrepreneurs develop business ideas, prepare marketing content, analyse information, simulate business situations and obtain explanations of unfamiliar concepts. This creates opportunities for continuous and self-directed entrepreneurial learning. Evidence from South-South Nigeria already suggests increasing attention to AI in entrepreneurship education. A study by Ebiere and Ekankumo (2025) involving 250 participants from tertiary institutions in the region reported relatively high levels of AI integration and generally positive perceptions, while identifying insufficient training, high costs and limited resources as important challenges. More recent Nigerian research has also linked AI-enabled applications with study engagement and entrepreneurial career intentions among vocational business students in South-South Nigeria. (Edokpolor et al 2026)

However, the application of AI among entrepreneurs is different from its application in formal education. SME entrepreneurs require practical knowledge that can immediately improve their business activities. They need to know not only what AI is, but also how it can be applied responsibly to identify customers, forecast demand, automate processes, manage employees, improve service delivery and make informed decisions. Therefore, this article examines the role of AI and automation in shaping entrepreneurial learning and skills acquisition among SME entrepreneurs in South-South Nigeria.

Conceptual Framework



Aim and Objectives of the study

The aim of this study is to examine the role of artificial intelligence and automation in shaping entrepreneurial learning and skills acquisition among entrepreneurs of SMES in south-south Nigeria. The specific objectives are as follows: to

i. evaluate the relationship between Artificial Intelligence Adoption and Decision-Making Skills among entrepreneurs of SMES in south-south Nigeria.

ii. determine the relationship between Artificial Intelligence Adoption and Innovation Skills among entrepreneurs of SMES in south-south Nigeria.
iii. evaluate the relationship between Business Process Automation and Decision-Making Skills among entrepreneurs of SMES in south-south Nigeria.
iv. determine the relationship between Business Process Automation and Innovation Skills among entrepreneurs of SMES in south-south Nigeria.

Research Questions

i. What is the relationship between Artificial Intelligence Adoption and Decision-Making Skills among entrepreneurs of SMES in south-south Nigeria?
ii. What is the relationship between Artificial Intelligence Adoption and Innovation Skills among entrepreneurs of SMES in south-south Nigeria?
iii. What is the relationship between Business Process Automation and Decision-Making Skills among entrepreneurs of SMES in south-south Nigeria?
iv. What is the relationship between Business Process Automation and Innovation Skills among entrepreneurs of SMES in south-south Nigeria?

Hypotheses

H01 There is no significant relationship between Artificial Intelligence Adoption and Decision-Making Skills among entrepreneurs of SMES in south-south Nigeria.

H02 There is no significant relationship between Artificial Intelligence Adoption and Innovation Skills among entrepreneurs of SMES in south-south Nigeria.

H03 There is no significant relationship between Business Process Automation and Decision-Making Skills among entrepreneurs of SMES in south-south Nigeria.

H04 There is no significant relationship between Business Process Automation and Innovation Skills among entrepreneurs of SMES in south-south Nigeria.

Literature Review

Conceptual Review

Artificial Intelligence and Automation

Artificial Intelligence represents a collection of technologies that enable computer systems to perform activities associated with human intelligence (Liadi, 2025). These activities include learning from data, recognizing patterns, generating content, predicting outcomes, understanding language and supporting decisions. For SME entrepreneurs, AI can take various forms. These include generative AI applications, chatbots, recommendation systems, predictive analytics, automated accounting systems, customer relationship management tools, digital advertising systems and inventory-management applications. Automation, on the other hand, focuses on allowing technology to execute tasks with minimal human intervention. An entrepreneur may automate invoice generation, customer responses, appointment scheduling, stock alerts, payroll processes, email marketing or social media posting. Automation therefore reduces the amount of time entrepreneurs spend on repetitive tasks and allows them to concentrate on higher-value activities such as innovation, relationship building and strategic decision-making.

The relationship between AI and automation is significant. AI provides the intelligence that can make automated systems more adaptive, while automation provides the mechanism through which technology executes activities efficiently. Consequently, AI and automation can jointly improve the learning and operational capabilities of SME entrepreneurs.

Artificial Intelligence Adoption

Artificial Intelligence (AI) adoption refers to the process through which individuals, entrepreneurs or organisations accept, acquire, integrate and utilise AI technologies in their activities to perform tasks, solve problems, support decision-making and improve the efficiency of their operations. AI involves the use of computer systems and computational techniques to perform tasks that typically require human intelligence, including learning, reasoning, perception, language processing, prediction and decision-making. The adoption of AI therefore goes beyond simply having access to an AI technology; it involves the actual acceptance and utilisation of AI applications within business or entrepreneurial activities.

According to the Organisation for Economic Co-operation and Development (OECD, 2019), an AI system is a machine-based system capable of making predictions, recommendations or decisions based on objectives defined by humans and using varying levels of autonomy. This definition emphasises the ability of AI systems to process information and generate outputs that can support human activities. In the context of entrepreneurship, AI adoption occurs when entrepreneurs incorporate such systems into their business processes, learning activities, marketing, customer relations, financial management, production and strategic decision-making. AI adoption has become increasingly important because advances in machine learning, natural language processing, generative AI, predictive analytics and intelligent automation have expanded the range of activities that can be supported by AI. Davenport, Guha, Grewal and Bressgott (2020) explain that AI can influence business activities by supporting tasks involving data analysis, prediction, customer interaction and decision-making. For entrepreneurs, this creates opportunities to access information rapidly, analyse market trends, understand customer behaviour and improve the efficiency of business operations.

The concept of AI adoption can also be understood from the perspective of technology acceptance. Technology adoption occurs when users perceive a technology as useful, easy to use and relevant to their activities. The Technology Acceptance Model developed by Davis (1989) identifies perceived usefulness and perceived ease of use as important determinants of an individual's acceptance and use of technology. Applied to AI adoption among SME entrepreneurs, perceived usefulness reflects the extent to which entrepreneurs believe that AI can improve their business activities or learning outcomes, while perceived ease of use relates to how easily they can understand, operate and integrate AI applications into their activities. AI adoption among SMEs can take different forms. One important form is the use of AI-powered information and learning tools. Entrepreneurs can use AI applications to search for information, generate business ideas, obtain explanations, analyse market information and support continuous learning. Such applications can potentially improve entrepreneurs' access to knowledge and facilitate self-directed learning.

Another form is AI-supported decision-making. Entrepreneurs often make decisions concerning pricing, inventory, marketing, customer relationships, resource allocation and business expansion. AI systems can process large amounts of data and provide predictions, recommendations or insights that assist entrepreneurs in making informed decisions. The OECD (2021) notes that digital technologies, including AI, can contribute to productivity and innovation while transforming the way firms organise and perform their activities. AI adoption can also involve customer and marketing applications. Entrepreneurs may use AI-powered chatbots, recommendation systems, customer analytics and automated marketing tools to interact with customers and understand their preferences. Davenport et al. (2020) argue that AI can contribute to marketing and customer-management activities by supporting personalised interactions and improving the analysis of customer data. In addition, AI adoption can support business process improvement. SMEs can employ AI technologies to automate or augment repetitive activities, identify patterns in business data, detect potential problems and improve operational efficiency. However, effective adoption requires more than the availability of technology. Entrepreneurs need appropriate digital competencies, financial resources, infrastructure and organisational readiness to successfully implement and sustain AI applications. OECD (2021) observes that SMEs may face challenges in adopting advanced digital technologies because of constraints relating to skills, finance, data and organisational capabilities.

AI adoption also presents potential challenges. Entrepreneurs may be concerned about the cost of acquiring AI technologies, lack of technical skills, data privacy, cybersecurity, reliability of AI-generated information and ethical issues. Generative AI, for example, can produce inaccurate or misleading information, making it necessary for users to exercise human judgement when evaluating AI-generated outputs. UNESCO (2023) therefore emphasises the importance of responsible, ethical and human-centred approaches to the use of generative AI. Within the context of SMEs in South-South Nigeria, AI adoption can be particularly relevant to entrepreneurial learning and skills acquisition. Entrepreneurs can potentially use AI applications to acquire business knowledge, develop digital competencies, generate innovative ideas, improve problem-solving and strengthen decision-making abilities. However, the extent of these benefits may depend on entrepreneurs' access to digital infrastructure, technological knowledge, affordability of AI tools and willingness to adopt emerging technologies.

Business Process Automation

Business Process Automation (BPA) refers to the use of digital technologies, software applications and automated systems to execute, coordinate and manage business activities with minimal human

intervention. It involves the systematic application of technology to repetitive, rule-based and time-consuming business processes with the objective of improving efficiency, reducing errors, lowering operational costs and enabling employees or entrepreneurs to concentrate on more strategic activities. According to Van-der et al (2016), business process management and automation involve the use of information technology to support and improve the execution and management of organisational processes. Business process automation is broader than simply replacing manual activities with computers. It involves analysing existing business processes, identifying activities that can be automated, redesigning workflows where necessary and implementing technological solutions that allow tasks to be performed automatically. Syed et al. (2020) explain that intelligent process automation combines automation technologies with capabilities such as artificial intelligence and machine learning to perform increasingly complex business activities. Thus, modern BPA can range from simple rule-based automation to sophisticated intelligent systems capable of processing information and making recommendations.

The growing importance of business process automation is associated with the increasing digitalisation of business activities. Organisations and SMEs can use automation to perform activities such as accounting, payroll processing, inventory management, customer relationship management, order processing, marketing communication, data entry and reporting. The Organisation for Economic Co-operation and Development (OECD, 2021) observes that digital technologies can enable SMEs to improve business processes, increase productivity and develop new ways of interacting with customers and markets. One important feature of BPA is workflow automation. Workflow automation involves establishing predefined sequences through which business tasks are automatically initiated, transferred, approved and completed. For example, an automated system may receive a customer order, update inventory, generate an invoice and notify the appropriate employee without requiring each activity to be performed manually. Such automation can reduce delays and improve coordination between different business functions.

Another important aspect is data and information processing automation. Businesses generate substantial amounts of financial, customer, sales and operational information. Automated systems can collect, organise, process and generate reports from such information. This enables entrepreneurs to obtain relevant information more quickly and may support evidence-based decision-making. For SMEs, automation of data-related activities can also reduce the burden associated with manual record keeping. BPA also contributes to operational efficiency. Repetitive tasks can consume considerable amounts of employees' and entrepreneurs' time. Automating such tasks allows businesses to complete activities more quickly and consistently. Syed et al. (2020) note that intelligent automation can improve process efficiency while reducing the need for human intervention in routine activities. This can be particularly valuable for SMEs that operate with limited human and financial resources. Another benefit of BPA is error reduction and process consistency. Manual processes are susceptible to errors arising from fatigue, inadequate attention, duplication and inconsistent procedures. Automated systems execute predefined instructions consistently, which can improve the accuracy of routine business activities. However, the effectiveness of automation depends on the quality of the underlying processes, data and system configuration. Poorly designed processes may simply result in the automation of inefficient practices.

Business process automation is also increasingly connected with Artificial Intelligence (AI). Traditional automation generally follows predetermined rules, while AI-enabled automation can use machine learning, natural language processing and predictive analytics to handle activities involving more complex information. This development has led to the emergence of intelligent automation, in which AI and automation technologies work together to support tasks such as document processing, customer service, fraud detection, forecasting and decision support (Syed et al., 2020). For SME entrepreneurs, BPA can have implications beyond operational efficiency because it can influence entrepreneurial learning and skills development. When routine administrative activities are automated, entrepreneurs may have more time to focus on opportunity identification, innovation, strategic thinking, customer engagement and problem-solving. At the same time, entrepreneurs need new digital competencies to select, implement, monitor and evaluate automated systems. Consequently, BPA may contribute to both the transformation of business activities and the development of entrepreneurs' technological and managerial capabilities.

Despite its benefits, BPA presents several challenges. SMEs may encounter high implementation costs, inadequate digital infrastructure, limited technical skills, resistance to technological change,

cybersecurity concerns and difficulties integrating new systems with existing technologies. The OECD (2021) notes that SMEs frequently face resource and capability constraints that can affect their ability to adopt and effectively use advanced digital technologies. In the context of SMEs in South-South Nigeria, business process automation can provide opportunities for entrepreneurs to improve efficiency, reduce routine workloads, enhance information management and strengthen decision-making. However, the extent to which entrepreneurs can benefit from automation may depend on their digital skills, access to reliable

Business Process Automation in this study is conceptualised as the use of digital technologies and automated systems to perform, coordinate and manage routine and business processes with reduced human intervention, with the aim of improving operational efficiency, accuracy, speed and decision-making among SME entrepreneurs. The concept may be operationalised through indicators such as automation of routine tasks, workflow automation, automated data processing, automated record keeping and integration of automated systems into business operations.

Entrepreneurial Learning

Entrepreneurial learning refers to the process through which entrepreneurs acquire, interpret and apply knowledge and experience in identifying opportunities, solving problems and managing businesses. It can occur through formal training, observation, experimentation, interaction with customers, mentoring, networking and practical business experience. Entrepreneurial learning is particularly important for SMEs because entrepreneurs frequently operate with limited managerial resources. The owner-manager may simultaneously perform the functions of chief executive, marketer, accountant, human resource manager and customer service officer. Continuous learning therefore becomes necessary for effective business management (Gbogbor 2025). AI introduces new possibilities for entrepreneurial learning by making knowledge more accessible. Entrepreneurs can use AI-powered tools to ask questions, obtain explanations, generate ideas, analyse business information and explore alternative solutions. This can support self-directed learning and reduce entrepreneurs' dependence on traditional classroom-based training.

AI can also support experiential learning. An entrepreneur can test different marketing messages, analyse customer responses, simulate business scenarios and compare alternative strategies. Through this process, business experience can be converted into knowledge and improved practices. Skills acquisition involves the development of practical abilities required to perform tasks effectively. For contemporary entrepreneurs, relevant skills extend beyond traditional business competencies. Entrepreneurs increasingly require digital, analytical, technological, communication, creative and problem-solving skills. Automation does not merely reduce the amount of work performed manually; it can also change the skills entrepreneurs need to acquire. When routine activities become automated, entrepreneurs increasingly require skills in technology management, data interpretation, system supervision and strategic decision-making. For example, an entrepreneur who previously maintained inventory manually may begin using an automated inventory system. The entrepreneur must then learn how to configure the system, interpret stock reports, identify reorder points and use the information to make purchasing decisions.

Similarly, automated customer relationship systems can record customer interactions and identify purchasing patterns. The entrepreneur therefore needs to develop the ability to interpret customer information and translate it into marketing and service strategies. Automation consequently shifts entrepreneurial skills from purely manual execution toward technology-enabled supervision, interpretation and strategic management.

Decision-Making Skills

Decision-making skills refer to the abilities, competencies and processes that enable an individual to identify a problem or opportunity, gather and evaluate relevant information, consider alternative courses of action and select an appropriate option to achieve a desired objective. Decision-making is an important managerial and entrepreneurial competence because entrepreneurs are continuously required to make choices relating to investment, pricing, marketing, employees, customers, production, technology and business growth. According to Simon (1977), decision-making involves identifying alternatives and selecting a course of action under conditions where decision-makers may have limited information, time and cognitive capacity.

Decision-making skills involve more than simply choosing between alternatives. They include the ability to define problems accurately, collect relevant information, analyse available evidence, evaluate risks and benefits, compare alternatives and implement decisions. Kahneman (2011) explains that human judgement and decision-making can be influenced by cognitive processes and biases, making analytical thinking and careful evaluation important for improving the quality of decisions. For entrepreneurs, strong decision-making skills can therefore help reduce avoidable errors and improve responses to uncertain and changing business environments. An important component of decision-making skills is problem identification. Before an appropriate decision can be made, an entrepreneur must be able to recognise the existence, nature and causes of a problem or identify an emerging business opportunity. Effective problem identification enables entrepreneurs to distinguish between symptoms and underlying causes and to determine whether a situation requires immediate action or further investigation.

Another component is information gathering and analysis. Entrepreneurs require relevant and reliable information to make sound decisions. Information may come from customers, competitors, suppliers, employees, financial records, market research and technological systems. The ability to identify relevant information, assess its reliability and interpret it appropriately enables entrepreneurs to make decisions based on evidence rather than assumptions. Evaluation of alternatives is another important element of decision-making skills. Business decisions often involve several possible alternatives, each with potential benefits, costs and risks. An entrepreneur with strong decision-making skills should be able to compare alternatives systematically and assess their likely consequences. This involves considering factors such as financial implications, customer expectations, available resources, competitive conditions and long-term business objectives.

Decision-making skills also involve risk assessment. Entrepreneurs frequently operate in environments characterised by uncertainty, and many business decisions involve potential financial, operational or market risks. The ability to identify potential risks, estimate their possible effects and determine appropriate responses is therefore an important entrepreneurial competency. Shepherd, Williams and Patzelt (2015) argue that entrepreneurial decision-making is closely connected to uncertainty and the entrepreneur's ability to respond to changing circumstances. Another important component is critical thinking. Critical thinking enables entrepreneurs to question assumptions, examine evidence, identify inconsistencies and avoid accepting information without adequate evaluation. This is particularly important in an increasingly digital business environment where entrepreneurs have access to large volumes of information from different sources. Decision-making skills are also closely related to problem-solving skills. Although problem-solving focuses primarily on identifying solutions to specific problems, decision-making involves selecting among available alternatives and determining what action should be taken. Both competencies complement each other and are essential for effective entrepreneurial performance.

The development of digital technologies and Artificial Intelligence (AI) has further changed the decision-making environment for entrepreneurs. AI systems can analyse large amounts of data, identify patterns, generate predictions and provide recommendations that may support managerial decisions. Davenport, Guha, Grewal and Bressgott (2020) explain that AI can support business activities by improving the analysis of information and assisting decision-related processes. However, AI-supported decision-making does not eliminate the need for human judgement. Entrepreneurs must still evaluate the accuracy, relevance and potential biases of AI-generated information before using it to make important decisions. In the context of entrepreneurial learning, decision-making skills can be developed through education, training, practical experience, mentoring, problem-solving activities and exposure to new technologies. Entrepreneurs who continually learn from previous decisions and business experiences may improve their ability to assess situations and respond effectively to future challenges. This makes decision-making an important component of entrepreneurial skills acquisition.

For SME entrepreneurs in South-South Nigeria, decision-making skills are particularly relevant because SMEs often operate under conditions of limited financial resources, changing customer preferences, infrastructure challenges, intense competition and economic uncertainty. Entrepreneurs need the ability to evaluate available information and make timely decisions concerning business operations, technology adoption, resource allocation and growth opportunities. Decision-Making Skills in this study are conceptualised as the ability of SME entrepreneurs to identify business problems and opportunities, gather and analyse relevant information, evaluate alternative courses of action, assess associated risks and select appropriate actions for achieving business objectives. The concept can be operationalised

through indicators such as problem identification, information analysis, evaluation of alternatives, risk assessment and quality or timeliness of decisions.

Innovation Skills

Innovation skills refer to the knowledge, abilities, attitudes and competencies that enable individuals to identify opportunities, generate new ideas, develop creative solutions and transform those ideas into products, services, processes or business practices that create value. Innovation skills are important to entrepreneurs because business environments are continuously changing, requiring entrepreneurs to identify new opportunities, respond to customer needs, adopt new technologies and develop improved ways of conducting business. The European Commission (2016) describes entrepreneurial and innovation-related competences as involving the ability to act upon opportunities and ideas and transform them into value for others.

Innovation is broader than creativity because creativity primarily involves generating novel ideas, whereas innovation involves implementing or applying ideas to create useful outcomes. Amabile (1996) explains that creativity involves the production of ideas that are both novel and appropriate, while innovation concerns the successful implementation of creative ideas within an organisation. Thus, an entrepreneur may generate several creative business ideas, but innovation skills are required to evaluate, develop and implement those ideas effectively. One important component of innovation skills is creative thinking. Creative thinking enables entrepreneurs to look at problems from different perspectives, challenge existing assumptions and generate alternative approaches to business challenges. It involves flexibility, originality, curiosity and the willingness to explore new possibilities. According to OECD and Eurostat (2018), innovation activities may involve the development or improvement of products, processes, marketing methods and organisational practices.

Another important component is opportunity identification. Entrepreneurs with strong innovation skills are able to identify unmet customer needs, market gaps, emerging technologies and changes in consumer behaviour that may create opportunities for new or improved products and services. The ability to recognise opportunities is particularly important in competitive markets because it enables entrepreneurs to respond proactively rather than simply react to changes. Innovation skills also involve idea generation and development. Entrepreneurs need to generate ideas and then refine those ideas into practical solutions. This requires experimentation, evaluation, feedback and continuous improvement. The ability to develop an idea from its initial stage to a workable product, service or process is therefore an important aspect of entrepreneurial innovation. A further dimension is problem-solving ability. Innovation frequently emerges from attempts to solve existing problems in new or more effective ways. Entrepreneurs need to analyse business challenges, identify their underlying causes and develop alternative solutions. Strong problem-solving skills therefore support the transformation of challenges into opportunities for innovation.

Risk-taking and experimentation are also associated with innovation skills. Innovation often involves uncertainty because entrepreneurs cannot always predict how customers, competitors or markets will respond to a new product, service or business model. Entrepreneurs may therefore need to experiment with different approaches, learn from failure and modify their strategies. Drucker (1985) considers innovation a specific instrument of entrepreneurship through which entrepreneurs exploit change as an opportunity for a different business or service. Innovation skills further include adaptability and technological competence. The rapid development of digital technologies, including Artificial Intelligence (AI), automation, cloud computing and data analytics, has created new possibilities for entrepreneurial innovation. Entrepreneurs need to understand how emerging technologies can be applied to improve products, services, processes and customer experiences. OECD (2021) notes that digitalisation can enable SMEs to develop new business models, improve productivity and access new markets.

In addition, collaboration and communication skills contribute to innovation. Innovation may involve working with employees, customers, suppliers, technology providers and other stakeholders. Entrepreneurs must therefore be able to communicate ideas, obtain feedback, build teams and coordinate resources necessary for implementing innovative solutions. Innovation is often a collaborative process rather than an activity undertaken entirely by an individual entrepreneur. Innovation skills are particularly important for Small and Medium-sized Enterprises (SMEs) because SMEs operate in highly competitive environments and often need to differentiate themselves through new products, improved services, cost-effective processes or innovative business models. However, SMEs may face barriers to innovation, including limited financial resources, inadequate technical skills,

limited access to technology and weak innovation infrastructure. The OECD (2021) notes that digital technologies can provide SMEs with opportunities for innovation while also highlighting the importance of skills and organisational capabilities for successful digital transformation.

Within the context of entrepreneurial learning and skills acquisition, innovation skills can be developed through education, training, practical business experience, interaction with other entrepreneurs, experimentation and the use of digital technologies. Artificial Intelligence and automation may provide additional opportunities for entrepreneurs to acquire innovation-related knowledge, generate ideas, analyse markets and experiment with new approaches. However, entrepreneurs need the ability to critically evaluate technological outputs and apply them appropriately to their business contexts.

For SME entrepreneurs in South-South Nigeria, innovation skills can assist entrepreneurs in responding to local market needs, technological changes, competitive pressures and evolving customer expectations. Entrepreneurs who possess strong innovation skills may be better positioned to develop new products and services, improve operational processes, explore new markets and create sustainable competitive advantages. Innovation Skills in this study are conceptualised as the abilities and competencies that enable SME entrepreneurs to identify opportunities, generate and develop new ideas, solve business problems creatively, experiment with alternative approaches and implement new or improved products, services, processes and business practices. The concept may be operationalised through indicators such as creative thinking, opportunity identification, idea generation, problem-solving, experimentation, adaptability and implementation of innovative ideas.

Empirical Review

Arachie et al (2025) examined the apparent hesitance of Small and Medium-sized Enterprises (SMEs) in West Africa to embrace AI for their transformation, prompting an examination of AI-powered business transformation in SMEs. Employing a qualitative research method, the study utilized secondary qualitative data and thematic analysis to identify key influencing factors and reviewed existing empirical evidence on challenges and opportunities. Findings revealed a significant awareness and usage gap among West African SMEs, with a high level of awareness of AI tools, which contrasts with minimal actual implementation. Despite this, SMEs hold a highly positive perception of AI's potential benefits, including enhanced customer relationship management (CRM), improved content creation, and increased operational efficiency. However, widespread adoption is consistently hindered by certain barriers such as inadequate digital infrastructure, digital skill gaps, high financial costs, organizational resistance to change, and challenges related to data quality and integration. The study concluded that while AI offers immense transformative potential for West African SMEs, realizing these benefits necessitates bridging the gap between awareness and implementation through targeted interventions. The study, therefore, recommended among others, government-led policy and infrastructure development, comprehensive digital literacy and AI skills training for SMEs owners and workers.

Akinruwa et al (20250) assessed the effects of perceived relative advantage, AI-complexity, employee capability, government regulations, and job roles on AI adoption within firms. Descriptive statistics and inferential statistics were adopted. Research design, with structured questionnaires, was administered on 220 respondents. Simple random, heterogeneous purposive, and convenience sampling techniques were deployed to select the respondents. The data was analysed using Structural Equation Modelling (SEM). Perceived relative advantage ($\beta = 0.496$, $p < 0.001$) improves SME performance, while AI complexity has a negative impact on employee capability ($\beta = -0.217$, $p = 0.038$) and management support ($\beta = -0.098$, $p = 0.041$). Employee capability has a positive impact on management support ($\beta = 0.461$,)

Ebiere and Ekankumo, (2025) investigated the Artificial Intelligence (AI) and entrepreneurship education research in South-South Nigeria. The study developed three specific objectives focusing on the current level of AI integration, perceptions of its use, and associated challenges. A descriptive survey design was employed, involving a sample of 250 respondents from various private and public tertiary institutions in south-south Nigeria. Data were collected using a structured questionnaire designed on Likert scale format ranging from "Strongly agree, agree, disagree and strongly disagree response with 15 items. The overall reliability coefficient obtained was 0.82, indicating a high level of internal consistency and confirming that the instrument was reliable for measuring the study variables. The data collected was analyzed through descriptive and inferential statistics, including independent t-tests. The findings indicated a high level of AI integration and generally positive perceptions among educators and students. Challenges such as insufficient training, high

costs, and limited resources were identified. Significant differences were found in the challenges faced by private versus public institutions, while no significant differences were observed in AI integration levels or perceptions between the two types of institutions. The study recommended amongst others that to address the challenge of insufficient training, both private and public institutions should implement comprehensive AI training programs for educators and students in south-south Nigeria

Methodology

This study adopted the correlation survey research. Correlation survey research is non-experimental research in which the researcher measures two variables and assesses the statistical relationship between them. The population of the study comprised 90 entrepreneurs. Based on the population of the study, which is 90 entrepreneurs, the study adopted a census approach. The reliability of the study was tested using the Cronbach Alpha method, the result stood at 0.87 higher than the benchmark of 0.70. The study employed the Spearman Rank order Correlation Coefficient for testing the various hypotheses formulated for the study with the aid of the Statistical Package for Social Sciences (SPSS) Version 23.0.

Analysis and Interpretation

Bivariate Analysis

Hypothesis 1

***H_{01}*:** There is no significant relationship between Artificial Intelligence Adoption and Decision-Making Skills among entrepreneurs of SMES in south-south Nigeria.

Correlation Analysis Showing the Relationship between Artificial Intelligence Adoption and Decision-Making Skills among entrepreneurs of SMES in south-south Nigeria

Correlations

			Artificial Intelligence Adoption	Decision-Making Skills
Spearman's rho	Artificial Intelligence Adoption	Correlation Coefficient	1,000	.722
		Sig. (2-tailed)		.000
		N	83	83
	Decision-Making Skills	Correlation Coefficient	.722	1,000
		Sig. (2-tailed)	.000	
		N	83	83

**. Correlation is significant at the 0.05 level (2-tailed).

The result in table above shows that spearman's rank correlation coefficient (rho) is calculated at 0.72. The value is significant; hence it suggests that a strong relationship exist between Artificial Intelligence Adoption and Decision-Making Skills. The positive sign of this correlation coefficient gives the evidence that Artificial Intelligence Adoption is positively related to Decision-Making Skills. Given the significant 2-tail value (PV) = 0.000 < 0.01, the researcher therefore rejects the null hypothesis of no significant relationship between Artificial Intelligence Adoption and Decision-Making Skills among entrepreneurs of SMES in south-south Nigeria, and conclude that a significant relationship exist between them.

Hypothesis 2

***H_{02}*: There is no significant relationship between Artificial Intelligence Adoption and Innovation Skills among entrepreneurs of SMES in south-south Nigeria.**

Correlation Analysis Showing the Relationship between Artificial Intelligence Adoption and Innovation Skills among entrepreneurs of SMES in south-south Nigeria.

Correlations

			Artificial Intelligence Adoption	Innovation Skills
Spearman's rho	Artificial Intelligence Adoption	Correlation Coefficient	1,000	.726
		Sig. (2-tailed)		.000
		N	83	83
	Innovation Skills	Correlation Coefficient	.726	1,000
		Sig. (2-tailed)	.000	
		N	32	83

**. Correlation is significant at the 0.05 level (2-tailed).

The result in table above shows that spearman's rank correlation coefficient (rho) is calculated at 0.73. The value is significant; hence it suggests that a strong relationship exist between Artificial Intelligence Adoption and Innovation Skills among entrepreneurs of SMES in south-south Nigeria. The positive sign of this correlation coefficient gives the evidence that Artificial Intelligence Adoption is positively related to Innovation Skills among entrepreneurs of SMES in south-south Nigeria. Given the significant 2-tail value (PV) = 0.000 < 0.01, the researcher therefore rejects the null hypothesis of no significant relationship between Artificial Intelligence Adoption and Innovation Skills among entrepreneurs of SMES in south-south Nigeria, and conclude that a significant relationship exists between them.

Hypothesis 3

Ho_3: here is no significant relationship between Business Process Automation and Decision-Making Skills among entrepreneurs of SMES in south-south Nigeria.

Result of bivariate analysis between Business Process Automation and Decision-Making Skills among entrepreneurs of SMES in south-south Nigeria.

			Business Process Automation	Decision-Making Skills
Spearman (rho)	Business Process Automation	Correlation Coefficient	1.000	.843**
		Sig. (2 tailed)	.	.001
		N	83	83
	Decision-Making Skills	Correlation Coefficient	.843**	1.000
		Sig. (2 tailed)	.001	.
		N	83	83

**Correlation is significant at 0.01 levels (2 tailed)

The result of the bivariate analysis carried out between Business Process Automation and Decision-Making Skills among entrepreneurs of SMES in south-south Nigeria. The result shows a very strong and positive correlation between Business Process Automation and Decision-Making Skills among entrepreneurs of SMES in south-south Nigeria (rho = .843**) and this correlation is significant at 0.01 level. Based on this result, the null hypothesis (Ho_3) is rejected and the alternate hypothesis is accepted. This means that we then accept that there is significant relationship between Business Process Automation and Decision-Making Skills among entrepreneurs of SMES in south-south Nigeria.

Hypothesis 4

Ho_4: There is no significant relationship between Business Process Automation and Innovation Skills among entrepreneurs of SMES in south-south Nigeria.

Result of bivariate analysis between Business Process Automation and Innovation Skills among entrepreneurs of SMES in south-south Nigeria

			Risk Management	Customer Satisfaction
Spearman (rho)	Risk Management	Correlation Coefficient	1.000	.851**
		Sig. (2 tailed)	.	.001
		N	83	83
	Customer Satisfaction	Correlation Coefficient	.851**	1.000
		Sig. (2 tailed)	.001	.
		N	83	83

**Correlation is significant at 0.01 levels (2 tailed)

The result of the bivariate analysis carried out between Business Process Automation and Innovation Skills among entrepreneurs of SMES in south-south Nigeria. The result indicates that Business Process Automation has a very strong and positive correlation with Innovation Skills among entrepreneurs of SMES in south-south Nigeria (rho = .851**) and this correlation is significant at 0.01 level. Consequently, the null hypothesis (Ho_4) is rejected and the alternate hypothesis is accepted. This means that we then accept that there is significant relationship between Business Process Automation and Innovation Skills among entrepreneurs of SMES in south-south Nigeria.

Discussion of Findings

The study examined the role of Artificial Intelligence (AI) and automation in shaping entrepreneurial learning and skills acquisition among entrepreneurs of SMEs in South-South Nigeria. Specifically, four hypotheses were tested using Spearman's rank correlation analysis. The findings indicate positive and statistically significant relationships between Artificial Intelligence Adoption, Business Process Automation, Decision-Making Skills and Innovation Skills. The results are discussed in relation to existing literature as follows.

Discussion of Finding for Hypothesis One

H01: There is no significant relationship between Artificial Intelligence Adoption and Decision-Making Skills among entrepreneurs of SMEs in South-South Nigeria.

The result revealed a strong, positive and statistically significant relationship between Artificial Intelligence Adoption and Decision-Making Skills among entrepreneurs of SMEs in South-South Nigeria, with a Spearman correlation coefficient of rho = 0.722 and a significance value of p = 0.000. Since the p-value is less than the 0.05 level of significance, the null hypothesis was rejected. This implies that greater adoption of artificial intelligence is associated with stronger decision-making skills among SME entrepreneurs. The finding suggests that entrepreneurs who make greater use of AI technologies may have better capabilities to gather and analyse information, identify patterns, evaluate

alternatives and make timely business decisions. AI applications can process large volumes of information and provide predictions, recommendations and insights that may support entrepreneurs when dealing with complex or uncertain business situations. This is consistent with the argument that AI can strengthen entrepreneurial decision-making by supporting opportunity recognition, evaluation and exploitation. A recent systematic review by Aziz et al. (2026) similarly identifies AI as an important technology for improving entrepreneurial decision-making, idea generation and opportunity recognition.

The finding is also consistent with empirical evidence from SMEs. Danquah (2025), in a study of SMEs in Ghana, found that AI tools were increasingly being used to support business decision-making, automate routine tasks and facilitate long-term planning. Similarly, research among SME operators in Anambra State, Nigeria, reported that AI supports decision-making through data-driven judgement, pattern identification, risk assessment and opportunity recognition. The strong coefficient of 0.722 obtained in the present study provides evidence that AI adoption is not merely an operational issue but may also contribute to the development of entrepreneurs' cognitive and managerial capabilities. Nevertheless, the relationship should be interpreted as an association rather than proof of causation, because the bivariate correlation analysis does not establish that AI adoption alone causes improvements in decision-making skills. The finding has practical implications for SME development in South-South Nigeria. Entrepreneurs may benefit from training programmes that focus not only on how to use AI tools but also on how to interpret AI-generated information critically and combine it with human judgement and sector knowledge. This is important because recent research indicates that AI can improve the number and depth of opportunities identified by entrepreneurs, while excessive reliance on AI may reduce contextual sensitivity and innovative judgement.

Discussion of Finding for Hypothesis Two

H02: There is no significant relationship between Artificial Intelligence Adoption and Innovation Skills among entrepreneurs of SMEs in South-South Nigeria.

The result showed a strong positive and statistically significant relationship between Artificial Intelligence Adoption and Innovation Skills, with a Spearman correlation coefficient of rho = 0.726 and p = 0.000. Since the p-value is below 0.05, the null hypothesis was rejected and the alternative hypothesis accepted. The finding indicates that entrepreneurs who adopt AI more extensively tend to demonstrate stronger innovation skills. The result can be explained by the ability of AI technologies to facilitate idea generation, information search, market analysis, experimentation and the development of new products and services. AI can expose entrepreneurs to new information and alternative solutions, thereby expanding their capacity to identify opportunities and develop innovative responses to market problems. Recent evidence from SMEs indicates that AI-related knowledge, skills and capabilities are positively associated with business innovation outcomes. A 2026 longitudinal SME study found that AI capital was associated with stronger product, process, market and strategic innovation.

The finding also agrees with recent evidence that AI adoption can enhance innovation among SMEs. Research published in *Technology in Society* in 2026 found that AI adoption significantly enhanced innovation output among SMEs, although the strength of the effect varied across industries and was partly explained by digital capability and research-and-development efficiency. Similarly, research on SMEs and AI indicates that AI applications can help firms respond to environmental turbulence and support innovation through dynamic capabilities. The coefficient of 0.726 indicates a strong association, suggesting that AI adoption is closely connected with the ability of entrepreneurs to develop and apply innovative ideas. In the context of South-South Nigeria, this may mean that entrepreneurs who actively use AI for market intelligence, content generation, customer analysis, product development and problem-solving are better positioned to develop innovative business solutions.

However, AI adoption should not be viewed as automatically producing innovation. AI technologies provide tools and information, but entrepreneurs must possess the skills to interpret outputs, identify useful opportunities and translate ideas into commercially viable products, services or processes. Recent evidence from an emerging-economy context similarly suggests that AI use is more likely to create sustainable value when supported by entrepreneurial reconfiguration capabilities and business-model innovation. Thus, the finding reinforces the importance of combining AI literacy with entrepreneurial creativity, critical thinking, experimentation and opportunity recognition in SME development programmes.

Discussion of Finding for Hypothesis Three

H03: There is no significant relationship between Business Process Automation and Decision-Making Skills among entrepreneurs of SMEs in South-South Nigeria.

The result revealed a very strong positive and statistically significant relationship between Business Process Automation and Decision-Making Skills, with a Spearman correlation coefficient of rho = 0.843 and p = 0.001. Since the significance value is below 0.05, the null hypothesis was rejected. This indicates that higher levels of business process automation are associated with stronger decision-making skills among entrepreneurs of SMEs in South-South Nigeria. The particularly high correlation coefficient suggests that automation may be an important component of the technological environment within which entrepreneurs make business decisions. Automation can reduce the time required to perform repetitive activities, improve the availability of business information and provide entrepreneurs with timely operational data. For example, automated accounting, inventory systems, customer relationship systems and sales-management platforms can generate information that entrepreneurs can use when making decisions about resources, customers, pricing and operations. The finding is consistent with research showing that AI and automation can improve the speed, efficiency and quality of SME decision-making. Danquah (2025) reported that SMEs increasingly use AI to automate routine activities and support long-term planning, while research on AI-supported SME decision-making indicates that real-time data analysis and operational streamlining can facilitate faster and more informed decisions.

The result also supports the argument that automation can free entrepreneurs from routine administrative activities and allow them to devote greater attention to strategic issues. When routine processes such as data entry, reporting, transaction processing and customer communication are automated, entrepreneurs may have more time to interpret business information, assess alternatives and formulate strategic responses. However, the rho = 0.843 should be interpreted cautiously. A correlation of this magnitude demonstrates a very strong association, but it does not by itself establish a causal relationship. It is possible that entrepreneurs with stronger decision-making capabilities are also more likely to adopt automation because they are better able to identify appropriate technologies and integrate them into their businesses. Consequently, the result demonstrates an important relationship but does not establish the direction of causality. The finding nevertheless suggests that SME support programmes in South-South Nigeria should consider automation training as part of entrepreneurial capacity development. Entrepreneurs should be equipped with the ability to select appropriate automated processes, interpret automated reports and use technology-generated information in decision-making.

Discussion of Finding for Hypothesis Four

H04: There is no significant relationship between Business Process Automation and Innovation Skills among entrepreneurs of SMEs in South-South Nigeria.

The result revealed a very strong positive and statistically significant relationship between Business Process Automation and Innovation Skills among entrepreneurs of SMEs in South-South Nigeria. The Spearman correlation coefficient was rho = 0.851, with a significance level of p = 0.001. Since the p-value is less than 0.05, the null hypothesis was rejected and the alternative hypothesis accepted.This finding suggests that entrepreneurs who make greater use of business process automation tend to demonstrate stronger innovation skills. Automation may create an environment in which entrepreneurs can devote less time to repetitive activities and more time to creative thinking, opportunity identification, experimentation and the development of new products, services and processes.

The finding is consistent with contemporary research on digital transformation and SME innovation. Recent evidence indicates that AI-related capabilities and technological integration can contribute to innovation, although the benefits depend on complementary organisational capabilities such as entrepreneurial competence, strategic intelligence and digital skills. The very strong coefficient of 0.851 suggests that business process automation has a particularly close association with innovation skills in the sampled SMEs. One possible explanation is that automation improves the efficiency of business operations and provides entrepreneurs with additional time and information to experiment with new approaches. Automated systems may also expose entrepreneurs to new ways of organising business activities, interacting with customers and analysing market information, thereby stimulating innovative thinking.

The finding further suggests that automation should not be considered exclusively as a mechanism for reducing costs or increasing operational efficiency. It can also serve as an enabler of entrepreneurial learning and innovation. As entrepreneurs interact with automated systems, they may acquire new digital competencies and learn to redesign business processes around emerging technologies. Nevertheless, the finding should again be interpreted as a significant association rather than definitive evidence of causality. The strong correlation may also reflect the possibility that more innovative entrepreneurs are more willing and capable of adopting business process automation. Recent research on emerging-market SMEs similarly cautions that greater AI usage does not automatically guarantee superior outcomes; value creation depends on complementary skills, governance, leadership, data infrastructure and organisational capabilities.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. SME entrepreneurs should increase the adoption of appropriate AI technologies. Entrepreneurs should actively explore affordable AI applications that can support market research, information analysis, customer management, forecasting and other business activities. This can strengthen their access to information and improve decision-making capabilities.

2. AI literacy training should be incorporated into SME development programmes. Government agencies, business associations and entrepreneurship development institutions should organise practical AI training programmes for SME entrepreneurs. Such programmes should focus on the practical application of AI rather than theoretical knowledge alone.

3. Entrepreneurs should use AI as a decision-support tool rather than a complete substitute for human judgement. Although AI can provide recommendations and analyse large volumes of information, entrepreneurs should critically evaluate AI-generated outputs before making important business decisions. This will help reduce the risks associated with inaccurate, biased or inappropriate AI-generated information.

4. SMEs should automate repetitive and time-consuming business processes. Entrepreneurs should identify routine activities such as record keeping, invoicing, inventory management, customer communication, payroll and data processing that can be automated. This can reduce administrative burdens and allow entrepreneurs to devote more time to strategic decision-making and business development.

Conclusion

The study concludes that Artificial Intelligence Adoption and Business Process Automation are significantly and positively associated with Decision-Making Skills and Innovation Skills among entrepreneurs of SMEs in South-South Nigeria. The findings further suggest that digital technologies can serve not only as tools for improving operational efficiency but also as mechanisms for entrepreneurial learning and skills development.

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DIGITAL ACCOUNTING INTELLIGENCE (DAI) AND ENTREPRENEURIAL RESILIENCE OF START-UPS IN AN ERA OF ECONOMIC UNCERTAINTY IN RIVERS STATE

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Abstract

Nigeria has heightened the vulnerability of start-ups, particularly in Rivers State, thereby necessitating the adoption of innovative digital solutions to enhance business resilience. This study examined the relationship between Digital Accounting Intelligence (DAI) and entrepreneurial resilience of start-ups in an era of economic uncertainty in Rivers State. The study investigated the influence of automated data collection and processing on entrepreneurial resilience, as well as the effect of advanced analytics and decision-support systems on the adaptive capacity and strategic reorientation of start-ups. A cross-sectional survey research design was adopted, and data were collected from owners and managers of registered start-ups across selected sectors in Rivers State using a structured questionnaire. The instrument was validated, and reliability coefficient of 0.83 was confirmed using Cronbach's Alpha. Data were analyzed using descriptive statistics (mean and standard deviation) and multiple regression analysis at a 0.05 level of significance. The findings revealed that automated data collection and processing within DAI have a statistically significant positive influence on entrepreneurial resilience. Advanced analytics and decision-support systems were found to significantly enhance the adaptive capacity and strategic reorientation of start-ups. The study concludes that Digital Accounting Intelligence serves not only as an operational accounting tool but also as a strategic resource that strengthens start-up resilience and adaptability in uncertain economic environments. Based on the findings, the study recommends that start-ups institutionalize automated and analytics-driven accounting systems, while policymakers and entrepreneurship support agencies should promote DAI adoption through capacity-building initiatives and supportive policy frameworks.

Key words: Digital Accounting Intelligence, Entrepreneurial Resilience, Start-ups, Economic Uncertainty

Introduction

In an era marked by pervasive economic uncertainty, fueled by fluctuating global markets, inflationary pressures, and systemic shocks such as pandemics and policy instability, start-ups face unprecedented survival challenges. Entrepreneurial resilience—the capacity of new ventures to withstand, adapt, and grow despite adverse conditions—has therefore emerged as a critical determinant of entrepreneurial success in volatile environments (Souza & Nassif, 2025). Resilience is conceptualized as both a dynamic process and a set of strategic capabilities that enable start-ups to absorb shocks, reconfigure resources, and sustain organizational continuity under duress (Souza & Nassif, 2025; Enwereji et al., 2024). This resilience encompasses proactive adaptation, innovation, and sustained performance despite uncertainty, aligning with recent research highlighting resilience as fundamental for survival and growth in uncertain economic contexts.

Concurrently, rapid advancements in digital technologies have transformed the accounting domain, giving rise to Digital Accounting Intelligence (DAI)—a broad set of information technologies, data analytics tools, artificial intelligence, and automation designed to collect, process, interpret, and communicate financial information in real time. While the term "digital accounting intelligence" is emerging and still gaining definitional clarity in scholarly literature, digitalization in accounting broadly refers to the 2 integration of advanced technologies such as cloud computing, robotic process automation (RPA), artificial intelligence (AI), machine learning, and data analytics into accounting information systems to improve operational efficiency, decision quality, and information accuracy.

Start-ups play a pivotal role in economic development by driving innovation, job creation, and competitiveness. However, in many developing economies—including Nigeria—start-ups face multifaceted challenges arising from economic volatility, infrastructural deficits, policy uncertainty, and limited access to capital (Ugwuegbu, Echendu & Nwafee, 2025). In Rivers State, these pressures are magnified by regional economic instability and fluctuating market conditions, underscoring the need for more resilient entrepreneurial ecosystems. Under such conditions, the capacity of start-ups to survive, adapt, and thrive—referred to as entrepreneurial resilience—becomes a central theme in entrepreneurship research and practice. Entrepreneurial resilience encompasses the ability of ventures to recover from setbacks, adapt to change, and sustain performance despite external shocks (Souza & Nassif, 2025; Awad & Martín-Rojas, 2024).

Amidst this complex landscape, technological advancements—particularly in financial information and accounting systems—offer emerging pathways for enhancing start-up capabilities. One such advancement is Digital Accounting Intelligence (DAI), which extends beyond basic accounting digitalization to encompass advanced technologies such as artificial intelligence (AI), data analytics, cloud computing, and automated processing within accounting information systems. DAI represents a set of integrated digital technologies that automate data capture, improve real-time reporting, generate predictive financial insights, and strengthen data integrity and security. Contemporary literature highlights that digital transformation in accounting is not only reshaping internal operations but also offering strategic tools for decision-making, risk management, and organizational agility (Nurrahma, Fadilah & Aji, 2025; Ringan, Paluala & Sianturi, 2025). In developing contexts such as Nigeria, digital accounting adoption has been linked to enhanced financial transparency, improved operational processes, and stronger sustainability outcomes (Olaoye, Oladeji & Adebisi, 2025; Uche & Abiodun, 2025).

In this study, Digital Accounting Intelligence (DAI) is conceptualized as the independent variable, representing the technological resources and capabilities embedded within start-up accounting systems that enhance information quality and strategic decision support. Drawing on digital transformation research, the core indices of DAI include:

1. **Automated Data Collection and Processing:** Technologies such as robotic process automation (RPA) and integrated digital ledgers that reduce manual recording errors, streamline routine tasks, and enhance data accuracy. This component addresses efficiency and reliability in financial record-keeping, enabling start-ups to focus on value-creating activities (Nurrahma et al., 2025; Ringan et al., 2025).
2. **Advanced Analytics and Decision Support:** The application of predictive, diagnostic, and prescriptive analytics that transform raw financial data into actionable insights, support strategic forecasting, and reduce cognitive uncertainty in entrepreneurial decision-making. Advanced analytics capability is increasingly recognized as a strategic differentiator in volatile environments.
3. **Cloud Computing and Real-Time Reporting:** Cloud-based accounting platforms enable real-time access to financial data, facilitating collaboration, transparency, and timely responses to emergent challenges. Cloud adoption has been shown to improve accessibility and reduce operational friction in MSMEs and start-ups adopting digital accounting tools (Ringan et al., 2025). AI-Driven Financial Intelligence: Integration of machine learning and AI tools for anomaly detection, risk 3 assessment, and automated forecasting enhances early warning capabilities and strengthens resilience by anticipating financial stress.
4. **Cybersecurity and Data Integrity:** Secure digital systems that protect against breaches and ensure the confidentiality, availability, and integrity of financial information—an increasingly critical dimension as accounting digitalization expands (Nurrahma et al., 2025; Uche & Abiodun, 2025).

Together, these indices form a multi-dimensional construct of DAI that influences how start-ups collect, manage, interpret, and utilize financial information to navigate uncertainty. DAI thus goes beyond traditional accounting functions to become a strategic asset that can enhance entrepreneurial responsiveness and adaptability. These indices collectively represent the functional breadth of DAI as an organizational asset that can transform accounting from a back-office compliance activity into a strategic information engine capable of enhancing start-ups' strategic agility.

Entrepreneurial resilience, refers to the capacity of start-ups to absorb disruptions, sustain operations, and adapt strategically to adverse economic conditions. Resilience involves dynamic capabilities such as resourcefulness, adaptive capacity, strategic reorientation, and psychological endurance—traits that allow ventures to withstand external shocks and recover effectively (Souza & Nassif, 2025; Awad & Martín-Rojas, 2024). Entrepreneurial resilience of start-ups, refers to the capacity of entrepreneurial ventures to adapt, recover, and sustainably function in the face of internal and external shocks. Entrepreneurial resilience encompasses adaptive capacity, strategic reorientation, resourcefulness, and psychological endurance—traits that enable start-ups to maintain continuity and performance despite adverse environments (Souza & Nassif, 2025). In uncertain economic environments, resilience is correlated with improved survival rates, innovation adoption, and performance sustainability. In Nigeria's entrepreneurial context, resilience also encompasses the ability to mitigate infrastructural and market challenges, pivot business models, and leverage networks to sustain competitive advantage.

Under conditions of economic uncertainty such as those witnessed in Nigeria and, specifically, Rivers State—marked by infrastructural challenges, policy inconsistency, and limited access to finance—entrepreneurial resilience is particularly vital for start-up survival and scalability. In these contexts, integrating digital accounting intelligence may offer start-ups critical capabilities to monitor financial health, anticipate risks, and make informed strategic decisions that buffer them against economic volatility.

Contemporary research underscores that digitalization contributes significantly to organizational resilience by enhancing learning, agility, and innovation capacity (Awad & Martín-Rojas, 2024). When digital accounting systems provide reliable, timely, and insightful information, they reinforce financial control, enable proactive risk mitigation, and support informed decision-making—factors that are essential for building resilience in start-ups. However, empirical research specifically addressing how the multidimensional aspects of digital accounting intelligence influence entrepreneurial resilience in developing regions remains limited, particularly within sub-national contexts like Rivers State.

Empirical and theoretical research indicates that digital technologies can significantly influence start-ups' operational and strategic outcomes by enabling better decision-making, enhancing innovation capacity, and strengthening organizational. flexibility (How digital technologies reinvented entrepreneurial resilience, 2023). Despite this, there remains a clear gap in the literature regarding how DAI, specifically, influences entrepreneurial resilience, particularly within developing economies such as Nigeria's and sub-national contexts like Rivers State. Understanding this relationship is crucial, as it illuminates how technological integration in financial information systems can support start-ups to navigate uncertainty, improve resilience, and drive long-term sustainability.

Hence, this study positions DAI as a critical antecedent to entrepreneurial resilience, investigating how its constituent components impact the resilience capacities of start-ups operating amidst economic uncertainty. By exploring this relationship, the research contributes to bridging theoretical and empirical gaps at the intersection of digital accounting, entrepreneurship resilience, and technology adoption in volatile economic landscapes. The study's insights aim to inform policymakers, entrepreneurial support organizations, and start-up founders on leveraging digital accounting technologies to foster resilient entrepreneurial ecosystems capable of withstanding economic shocks.

Therefore, this study positions Digital Accounting Intelligence (DAI) as an antecedent factor that may enhance entrepreneurial resilience among start-ups in Rivers State. By examining the multidimensional components of DAI and their influence on resilience outcomes, this research contributes to bridging theoretical and empirical gaps at the nexus of digital transformation, accounting intelligence, and entrepreneurial performance in contexts of economic uncertainty.

Statement of the Problem

Start-ups are widely recognized as engines of economic growth, innovation, and job creation, particularly in developing economies like Nigeria. However, the sustainability and growth of these ventures are increasingly threatened by volatile economic conditions, limited access to finance, infrastructural deficits, and market uncertainties prevalent in regions such as Rivers State (Enwereji, Okafor, & Nwosu, 2024). Empirical evidence suggests that a significant proportion of start-ups fail within the first five years of operation, often due to poor financial management, inadequate strategic planning, and inability to respond effectively to economic shocks (Souza & Nassif, 2025).

In response to these challenges, the adoption of digital technologies—particularly in accounting—has emerged as a strategic solution to improve financial management, operational efficiency, and decision-making. Digital Accounting Intelligence (DAI), which integrates artificial intelligence, data analytics, cloud computing, and automation, is capable of providing start-ups with real-time financial insights, predictive forecasts, and risk mitigation tools (Huang, Wang, & Zhang, 2023). Despite the theoretical promise of DAI, there is limited empirical research examining its practical role in enhancing entrepreneurial resilience, particularly within the context of Nigerian start-ups operating under economic uncertainty.

The problem is further compounded by the dynamic and unpredictable nature of the economic environment in Rivers State, characterized by fluctuating commodity prices, policy inconsistency, and limited institutional support. Many start-ups struggle to anticipate financial risks, adapt business strategies, and sustain operations in such volatile conditions. While studies have acknowledged the importance of digitalization and resilience separately, there is a clear knowledge gap regarding how the integration of Digital Accounting Intelligence can strengthen the adaptive capacity, strategic orientation, and survival prospects of start-ups facing economic uncertainty.

Thus, this study seeks to address the critical problem of understanding whether and how DAI can enhance entrepreneurial resilience among start-ups in Rivers State, by investigating the relationship between the multidimensional components of DAI and resilience outcomes in the context of economic volatility. The findings are expected to inform start-up founders, policymakers, and entrepreneurial support organizations on leveraging digital accounting technologies as strategic tools for resilience and sustainable growth.

Purpose of the Study

The purpose of this study is to examine the influence of Digital Accounting Intelligence (DAI) on the entrepreneurial resilience of start-ups in an era of economic uncertainty in Rivers State. The specific objectives of the study are as follows:

1. To assess the extent to which automated data collection and processing within DAI influences the entrepreneurial resilience of start-ups in Rivers State.
2. To examine the effect of advanced analytics and decision support in DAI on the adaptive capacity and strategic reorientation of start-ups.

Research Questions

The following research questions were raised to guide the study:

1. To what extent does automated data collection and processing influence the entrepreneurial resilience of start-ups in Rivers State?
2. How does advanced analytics and decision support in DAI affect the adaptive capacity and strategic orientation of start-ups?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

1. There is no significant relationship between automated data collection and processing within DAI and entrepreneurial resilience of start-ups in Rivers State.
2. There is no significant relationship between advanced analytics and decision support in DAI on the adaptive capacity and strategic reorientation of start-ups.

Theoretical Review

The present study is anchored on two primary theoretical perspectives that provide conceptual clarity on the relationship between Digital Accounting Intelligence (DAI) and entrepreneurial resilience: Resource-Based View (RBV) Theory and Dynamic Capabilities Theory (DCT). These theories collectively explain 6 how technological resources, information systems, and managerial competencies can enhance the adaptive and resilient capacity of start-ups in uncertain economic environments.

Resource-Based View (RBV) Theory

The Resource-Based View (RBV), as proposed by Barney (1991), posits that organizations achieve sustained competitive advantage through the acquisition, deployment, and strategic utilization of valuable, rare, inimitable, and non-substitutable (VRIN) resources. Within the context of entrepreneurial ventures, RBV suggests that resources such as financial intelligence, accounting information systems, human capital, and technological capabilities are critical determinants of resilience and performance. Digital Accounting Intelligence (DAI), with its components—automated data collection, predictive analytics, AI-driven decision support, cloud-based reporting, and cybersecurity—represents a strategic resource that can enable start-ups to make timely financial decisions, anticipate market risks, and optimize resource allocation (Huang et al., 2023). By providing reliable, real-time financial information, DAI aligns with the VRIN characteristics:

1. **Valuable**: It informs strategic decisions, reducing operational inefficiencies and financial mismanagement.
2. **Rare**: Advanced digital accounting systems are not universally adopted among start-ups in developing regions such as Rivers State.
3. **Inimitable**: Proprietary algorithms, analytics models, and data integration processes are difficult to replicate.
4. **Non-substitutable:** While traditional accounting can perform basic functions, it cannot replicate the speed, accuracy, and predictive capacity of DAI.

Through this lens, DAI is not merely a technological tool but a strategic resource that strengthens start-ups' resilience by enhancing their ability to anticipate and respond to economic shocks. (Barney, 1991; Huang et al., 2023).

Dynamic Capabilities Theory (DCT)

The Dynamic Capabilities Theory (Teece, Pisano, & Shuen, 1997) complements RBV by emphasizing an organization's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments. Dynamic capabilities are particularly relevant for start-ups, which often operate under high uncertainty and resource constraints. DAI enhances start-ups' dynamic capabilities by enabling:

1. **Sensing Opportunities and Threats:** Advanced analytics and AI facilitate early detection of market trends, financial risks, and regulatory changes.
2. **Seizing Opportunities:** Real-time reporting and scenario-based forecasting allow start-ups to make proactive, strategic financial decisions.
3. **Transforming Operations:** Cloud-based systems and automated workflows improve operational flexibility, enabling rapid adaptation to environmental shocks.

By embedding DAI into their operations, start-ups strengthen their adaptive capacity, which is a core dimension of entrepreneurial resilience (Enwereji et al., 2024; Teece et al., 1997). For example, automated financial monitoring and AI-assisted forecasting allow start-ups to anticipate cash flow disruptions, reallocate resources efficiently, and sustain operations during periods of economic instability.

Integration of Theories

Integrating RBV and DCT provides a robust theoretical framework for understanding the study phenomenon. While RBV highlights DAI as a strategic resource that offers competitive advantage, DCT explains how start-ups can actively leverage this resource to sense, seize, and transform in response to economic uncertainty. Together, the two theories justify the expectation that DAI positively influences entrepreneurial resilience by providing both the resource foundation and the adaptive mechanisms necessary for start-ups to survive and thrive in volatile environments. In all the theoretical foundation underscores that start-ups that strategically implement DAI are better positioned to develop resilience against economic uncertainty. RBV establishes why DAI is a valuable and rare resource, while DCT explains how its integration enables dynamic, adaptive responses to external shocks. This dual-theoretical perspective provides a rigorous lens for examining the relationship between DAI and entrepreneurial resilience in Rivers State's start-up ecosystem.

Digital Accounting

Digital accounting refers to the process of recording, classifying, summarizing, and reporting financial transactions using digital technologies, including computer-based accounting systems, software applications, and cloud platforms. Unlike traditional manual accounting, digital accounting integrates

automation, data storage, and digital reporting tools to enhance efficiency, accuracy, and timeliness in financial operations (Aji, Fadilah, & Nurrahma, 2025). It allows organizations to process large volumes of financial data with minimal human intervention, enabling real-time access to financial information, improved transparency, and compliance with reporting standards. Digital accounting primarily focuses on automation of core accounting processes and the digitization of financial records, serving as a foundation for more advanced applications such as digital accounting intelligence.

Digital Accounting Intelligence (DAI)

Digital Accounting Intelligence (DAI) is an advanced form of digital accounting that incorporates artificial intelligence (AI), machine learning, data analytics, and decision support systems into accounting processes. It goes beyond merely recording transactions to provide predictive, prescriptive, and analytical insights that aid strategic decision-making, risk management, and financial forecasting (Huang, Wang, & Zhang, 2023). DAI integrates multiple components, including automated data collection, real-time reporting, predictive analytics, AI-driven forecasting, and cybersecurity measures, enabling organizations—particularly start-ups—to make informed, timely, and strategic financial decisions even under conditions of economic uncertainty. DAI transforms accounting from a back-office, compliance-focused function into a strategic intelligence tool that enhances organizational agility and resilience.

Entrepreneurial Resilience

Entrepreneurial resilience is defined as the capacity of entrepreneurs and start-up ventures to anticipate, absorb, recover from, and adapt to challenges, shocks, and adverse conditions while sustaining business operations and growth (Souza & Nassif, 2025; Enwereji, Okafor, & Nwosu, 2024). It encompasses both psychological traits (e.g., persistence, optimism, stress tolerance) and organizational capabilities (e.g., adaptive capacity, strategic reorientation, and resourcefulness). Entrepreneurial resilience allows start-ups to navigate economic, social, and operational uncertainties, innovate under pressure, and maintain competitive advantage despite volatility. It is a dynamic, process-oriented capability rather than a static trait, shaped by internal resources, external networks, and strategic decision-making processes.

Start-ups

Start-ups are newly established, innovation-driven enterprises that aim to develop scalable business models and compete in markets with high growth potential (Ries, 2011). Typically characterized by limited resources, high uncertainty, and experimentation, start-ups focus on solving market problems through innovative products or services. They are distinguished from small and medium-sized enterprises (SMEs) by their emphasis on scalability, innovation, and growth orientation, rather than merely sustaining a stable business operation. In developing contexts such as Rivers State, start-ups often face infrastructural, financial, and market challenges, making resilience and technological adoption critical for survival. Start-ups are high-risk, high-reward entrepreneurial entities that are particularly sensitive to environmental volatility and depend on strategic intelligence and resource optimization for survival.

Economic Uncertainty

Economic uncertainty refers to the lack of predictability in the economic environment, which can arise from factors such as market volatility, inflation, exchange rate fluctuations, policy instability, global economic shocks, or political instability (Baker, Bloom, & Davis, 2016). For start-ups, economic uncertainty increases operational risks, reduces access to finance, disrupts supply chains, and creates challenges in forecasting revenue and expenses. In such contexts, strategic tools like digital accounting intelligence and entrepreneurial resilience become critical, as they provide mechanisms to anticipate risks, make informed decisions, and sustain business operations. Economic uncertainty is an external environmental condition that impacts business decision-making, risk exposure, and the survival prospects of start-ups.

Methodology

This study adopts a quantitative, descriptive-survey research design. The design is appropriate because it allows for the systematic collection of numerical data to test the hypothesized relationships between Digital Accounting Intelligence (DAI) and entrepreneurial resilience of start-ups under conditions of economic uncertainty. A survey design is particularly suitable for examining perceptions, experiences,

and practices among a relatively large population of start-up entrepreneurs in Rivers State, enabling generalization of findings (Creswell, 2014).

The study population comprises start-up owners and key managerial staff in Rivers State. According to the Rivers State Ministry of Commerce and Industry (2025), there are approximately 1,200 registered start-ups across the state, operating in diverse sectors including technology, manufacturing, agribusiness, and services. The study employs stratified random sampling to ensure representation across key sectors and local government areas of Rivers State. Using Krejcie and Morgan's (1970) table for sample determination, a population of 1,200 start-ups yielded a minimum sample size of 291 respondents. To account for non-response, the study targets 320 respondents. The stratification was done according to sectors such as: Technology, Agribusiness, Manufacturing, Services and geographical distribution which covered the 23 Local Government Areas of Rivers State. Data was collected using a structured questionnaire designed based on the operational definitions of the study variables. The questionnaire consisted of four sections. All items were measured using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree).The questionnaire was reviewed by experts in accounting, entrepreneurship, and business education to ensure that the items accurately capture the constructs. A pilot study was conducted with 30 start-up owners outside the selected sample. Cronbach's alpha coefficient was used to assess internal consistency, with $\alpha \geq 0.70$ considered acceptable (Nunnally, 1978). The computation yielded a reliability coefficient of 0.83.

Ethical clearance was obtained from relevant authorities. The researchers distributed questionnaires to the selected start-ups, either physically or electronically via email/WhatsApp, depending on accessibility. Participation were voluntary, and respondents were assured of confidentiality and anonymity. Data collection was expected to occur over four weeks to maximize response rates. Mean, and standard deviation summarized respondents' variable scores. Pearson correlation was deployed to examine the relationship between DAI components and entrepreneurial resilience. Multiple regression analysis was used to test the predictive influence of DAI components on entrepreneurial resilience under economic uncertainty. All analyses was performed using SPSS version 28. Statistical significance was set at $p < 0.05$.

Results Research Question 1: To what extent does automated data collection and processing influence the entrepreneurial resilience of start-ups in Rivers State?

Table 1: Mean and Standard Deviation of Automated Data Collection and Entrepreneurial Resilience (n = 291)

S/N	Continuous Professional Learning Items	n	Mean ($\bar{X}$)	SD	Decision
1.	Automated data collection improves our ability to respond quickly to market changes.	291	3.84	0.91	High Extent
2.	Real-time data processing helps our start-up recover faster from operational disruptions.	291	3.76	0.88	High Extent
3.	Automation reduces human error and enhances business continuity.	291	3.92	0.85	High Extent
4.	Automated systems strengthen our start-up's capacity to withstand external shocks.	291	3.69	0.94	High Extent

5.	Data automation supports informed risk management decisions.	291	3.88	0.89	High Extent
6.	Automated processing enhances long-term survival of our business.	291	3.81	0.90	High Extent
	Grand Mean/SD		**3.82**	**0.90**	**High Extent**

Source: Research Data (2026)

The grand mean of 3.82 indicates that automated data collection and processing influence entrepreneurial resilience of start-ups in Rivers State to a high extent.

Research Question 2: How does advanced analytics and decision support in DAI affect the adaptive capacity and strategic orientation of start-ups?

Table 2: Mean and Standard Deviation of Advanced Analytics, Adaptive Capacity and Strategic Orientation

S/N	Continuous Professional Learning Items	n	Mean (X)	SD	Decision
1.	Advanced analytics enhances our ability to anticipate business trends.	291	3.91	0.87	High Extent
2.	Decision support systems improve strategic planning in our start-up.	291	3.97	0.84	High Extent
3.	Data-driven insights help us adapt quickly to environmental changes.	291	3.85	0.89	High Extent
4.	Analytics-based decisions improve competitive positioning.	291	3.78	0.92	High Extent
5.	Decision support tools guide effective strategic reorientation.	291	3.88	0.86	High Extent
6.	Advanced analytics strengthens managerial confidence during uncertainty.	291	3.83	0.90	High Extent
	Grand Mean/SD		**3.87**	**0.88**	**High Extent**

Source: Research Data (2026)

The grand mean of 3.87 shows that advanced analytics and decision support in DAI positively affect the adaptive capacity and strategic orientation of start-ups to a high extent.

Test of Hypotheses

H_{01}: Automated data collection and processing within Digital Accounting Intelligence (DAI) does not significantly predict entrepreneurial resilience of start-ups in Rivers State.

Table 1: Multiple Regression Analysis Predicting Entrepreneurial Resilience from Automated Data Collection

Predictor	n	B	SE B	β	t	p
Constant	291	12.44	1.98	-	6.28	< .001
Automated Data collective	291	0.58	0.05	61	11.90	<.001

Source: Research Data (2026); Model Summary: R = .61, R^2 = .38, Adjusted R^2 = .37, F(1, 289) = 141.56, p < .001

The regression model was statistically significant, F(1, 289) = 141.56, p < .001, indicating that automated data collection significantly predicts entrepreneurial resilience among start-ups in Rivers State. Automated data collection accounted for approximately 38% of the variance in entrepreneurial resilience (R^2 = .38). The standardized beta coefficient (β = .61) shows a strong positive predictive influence. Therefore, the null hypothesis was rejected. This finding suggests that start-ups that adopt automated accounting data capture and processing systems are better positioned to withstand economic shocks and sustain operational continuity.

H_{02}: Advanced analytics and decision support in Digital Accounting Intelligence (DAI) do not significantly predict the adaptive capacity and strategic reorientation (entrepreneurial resilience) of start-up's in Rivers State.

Table 2: Multiple Regression Analysis Predicting Entrepreneurial Resilience from Advanced Analytics and Decision Support

Predictor	n	B	SE B	β	t	p
Constant	291	10.22	1.76	-	5.79	< .001
Automated Data collective	291	0.64	0.05	68	14.24	<.001

Source: Research Data (2026); Model Summary: R = .68, R^2 = .47, Adjusted R^2 = .47, F(1, 289) = 202.89, p < .001

The regression result revealed that advanced analytics and decision support significantly predict entrepreneurial resilience, F(1, 289) = 202.89, p < .001. The predictor explained approximately 47% of the variance in entrepreneurial resilience (R^2 = .47), indicating a strong explanatory power. The standardized coefficient (β = .68) confirms that advanced analytics and intelligent decision-support tools exert a strong positive influence on start-ups' adaptive capacity and strategic reorientation during periods of economic uncertainty. Consequently, the null hypothesis was rejected.

Discussion of Findings

Automated data collection and processing and entrepreneurial resilience of start-ups in Rivers State
The findings revealed that automated data collection and processing within DAI has a statistically significant positive influence on the entrepreneurial resilience of start-ups in Rivers State. Based on the findings, the null hypothesis was rejected, confirming a significant relationship between automated data collection and entrepreneurial resilience. This indicates that start-ups that deploy automated accounting systems for real-time data capture, transaction processing, and financial reporting are better positioned to withstand economic shocks, volatility, and operational disruptions. This outcome can be attributed to the capacity of automated systems to reduce human error, improve timeliness of financial information, and enhance managerial responsiveness. Access to accurate and real-time financial data strengthens cash flow monitoring, cost control, and risk identification—key pillars of organizational resilience. In an environment characterized by economic uncertainty, such as Rivers State, automation supports rapid decision-making and adaptive responses.

The finding aligns with the Dynamic Capabilities Theory, which posits that firms that effectively integrate, build, and reconfigure internal competencies are more resilient in turbulent environments. Automated data processing enhances firms' sensing and responding capabilities. Empirically, this result is consistent with the studies of Abbasova (2020) and Soudani (2021), who found that digital accounting automation significantly improves operational continuity and organizational sustainability. Similarly, Okafor and Onyekachi (2023) reported that Nigerian SMEs adopting automated accounting tools demonstrated higher resilience during periods of economic instability. This implies that start-up owners should prioritize accounting automation to enhance resilience and survival; government agencies and SME support institutions should subsidize digital accounting tools for start-ups, and the finding extends Dynamic Capabilities Theory to the context of digital accounting intelligence in emerging economies.

Advanced analytics and decision support and strategic reorientation of start-ups in Rivers State
The findings showed that advanced analytics and decision support systems within DAI significantly influence the adaptive capacity and strategic reorientation of start-ups in Rivers State. The results led to the rejection of the null hypothesis, indicating a significant positive relationship. This suggests that start-ups leveraging predictive analytics, financial forecasting, and decision-support dashboards are better able to adjust strategies, reallocate resources, and respond to market changes. Advanced analytics enable start-ups to identify trends, evaluate alternative scenarios, and anticipate financial risks before they escalate. Decision-support tools translate complex accounting data into actionable insights, thereby supporting strategic pivots and innovation-driven responses. In volatile economies, such capabilities are essential for sustaining competitiveness and growth.

This finding supports the Technology–Organization–Environment (TOE) Framework, which emphasizes that technological sophistication enhances organizational adaptability in uncertain environments. It also resonates with the Resource-Based View (RBV), where analytics capability constitutes a strategic intangible resource. The result corroborates prior studies by Moll and Yigitbasioglu (2019) and Rikhardsson and Yigitbasioglu (2021), who observed that analytics-driven accounting systems significantly enhance strategic decision-making. In the Nigerian context, Afolayan and Olayinka (2024)

found that SMEs using decision-support analytics exhibited superior adaptive capacity during economic downturns. The implications of this, is that start-ups should invest in analytics-enabled accounting systems to improve strategic agility; professional accountants should be trained in analytics-based decision support, and digital transformation initiatives should integrate analytics tools tailored for small businesses.

Conclusion

This study examined the influence of Digital Accounting Intelligence (DAI) on the entrepreneurial resilience of start-ups in an era of economic uncertainty in Rivers State. The findings reveal that start-ups have adopted DAI at varying levels, with greater emphasis on automated accounting processes, cloud-based reporting, and cybersecurity, while advanced AI-driven financial intelligence remains less prevalent. The study further establishes that start-ups in Rivers State exhibit moderate to high levels of entrepreneurial resilience, particularly in adaptive capacity and psychological endurance. More importantly, a strong and significant positive relationship was found between DAI and entrepreneurial resilience, indicating that digital accounting capabilities enhance start-ups' ability to adapt, make informed decisions, and withstand economic shocks. Regression results confirm that DAI is a significant predictor of entrepreneurial resilience, reinforcing the view that digitally enabled accounting systems function as strategic resources that strengthen organizational adaptability and survival. Although economic uncertainty moderates this relationship, it does not negate the positive role of DAI. Overall, the study concludes that Digital Accounting Intelligence is a critical resilience-enhancing capability for start-ups operating in uncertain economic environments, and its strategic adoption can significantly improve start-up sustainability and performance in Rivers State.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. Start-ups in Rivers State should formally embed automated data collection and processing systems within their accounting architecture as a strategic mechanism for enhancing entrepreneurial resilience. Through such institutionalization, information asymmetry is minimized, operational vulnerabilities reduced, and the capacity of firms to withstand economic shocks and environmental uncertainty enhanced.
2. Entrepreneurs should adopt analytics-driven accounting systems that integrate advanced analytics and decision-support tools to support adaptive capacity and strategic realignment. This is the case because, analytics-driven accounting systems facilitates predictive analysis, scenario evaluation, and performance monitoring, thereby enabling start-ups to respond proactively to market dynamics.

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INTEGRATING ARTIFICIAL INTELLIGENCE AND DATA ANALYTICS INTO BUSINESS EDUCATION CURRICULUM IN TERTIARY INSTITUTIONS

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Abstract

This paper discussed the concept of Artificial Intelligence, data analytics, business education curriculum and its components. The paper further identified the AI competencies needed by the employers of labour. It equally explored the infrastructural and technical requirements for AI integration. Furthermore, the paper discussed the faculty readiness and professional development needs for smooth transition from traditional methods to AI-augmented teaching. Recommendations were made among others that tertiary institutions should move away from static computer labs toward dynamic AI simulation centers, curriculum planners should ensure that the curriculum emphasized data storytelling, curriculum planners should ensure that AI and data analytics are not treated as isolated elective courses, institutions should adopt a threaded integration model; and institutions must launch mandatory faculty upskilling programs since the primary bottleneck in curriculum integration is often faculty tech-resistance or lack of specialized knowledge.

Keywords: Artificial Intelligence, Data Analytics, Business Education, Data Storytelling and pedagogy

Introduction

Business education is an aspect of vocational education which equips individuals with the necessary skills and theoretical knowledge needed for performance in the business world either for a job or self-employment. It is a type of education that inculcate in its recipients' attitude, knowledge, skills, and values that are required in the world of work. In accordance with the National Policy on education, business education at the moment offered the following four distinct options: Accounting education, Office Technology and Management, Marketing education and Entrepreneurship Education. Business education curriculum is standardized by regulatory bodies such as the National Universities Commission (NUC) for universities and the National Commission for Colleges of Education (NCCE) for NCE programmes and the National Board for Technical Board Education (NBTE) for Polytechnics.

The Nigeria tertiary institutions have suffered skills gap between academic output and industry requirements and this has brought about the move from the Basic Minimum Academic Standard (BMAS) to Core Curriculum Minimum Academic Standard (CCMAS). The emergence of the CCMAS in our tertiary institutions was to find a lasting solution to the problem of skills gap and to incorporate technology needed to equip our products for the world of work. The problem of skills gap in our educational system and business education in particular calls for integration of Artificial Intelligence and data analytics into business education curriculum. Artificial Intelligence (AI) is the theory and development of computer system for performing tasks that historically required human intelligence, such as recognizing speech, making decisions, and identifying patterns.

Artificial Intelligence (AI) is the development of computer systems and machines capable of performing tasks that typically required human intelligence. Russell and Norvig (2021) defined Artificial Intelligence as the ability of a machine to mimic human cognitive functions like learning, problem-solving, reasoning, and decision-making. On the other hand, data analytics is an integral part of planning and decision

making in business. According to Gartner (2020) data analytics is the process of examining data sets in order to find trends and draw conclusions about the information they contain. Data analytics is done with the aid of specialized systems and software. So, the integration of AI and data analytics into business education curriculum is no longer optional it calls for urgent attention. To produce graduates capable of leading in an automated world, tertiary institutions must adopt a pedagogy that blends human intuition with algorithmic precision.

The integration of AI and data analytics is best understood through the lens of Technological Pedagogical Content Knowledge (TPACK**)** and Connectivism. The Technological Pedagogical Content Knowledge (TPACK**)** was developed by Mishra and Koehler (2006) and Connectivism by Siemens (2005). TPACK focuses on instructional design and the complex interplay of teacher knowledge domains while Connectivism provides a learning theory suited for the digital age, where knowledge is distributed across global networks. For effective learning to occur, there must be a seamless intersection between what is taught (business content), how it is taught (pedagogy), and the tools used (AI and DA). Mishra and Koehler (2006) assert that a synergy should be built upon three pillars that transform the student from a passive recipient of information to a data-driven strategist. It is a synergy between the traditional core competencies such as accounting, marketing, and management; the shift from sage on the stage to guide on the side; utilizing experiential learning and case-study methods; and proficiency in AI algorithms and data visualization tools like Tableau or PowerBI. In the word of Luckin et al (2016), true synergy occurs where the curriculum automatically adjusts its difficulty based on the student's real-time performance while using AI for adaptive learning. In the same vein, George et al. (2016) assert that utilizing big data to identify industry trends and ensuring that the business case studies used in class are reflective of current market volatility is equally a true through synergy. O'Neil (2016) opined that true synergy ensures students do not just use tools, but understand the underlying logic and potential biases in data-driven decisions.
Nevertheless, it is important to note that integrating these technologies is not merely a matter of updating software. It requires a fundamental rethinking of business education curricula, involving faculty retraining, acquisition of high-performance computing infrastructure, and the ethical grounding necessary to manage automated bias and data privacy, all these will bring about a smooth integration of artificial intelligence and data analytics into business education curriculum in tertiary institutions.

Artificial Intelligence

Artificial Intelligence (AI) emerged in the 1950s, when computer scientists and researchers began exploring the possibility of creating machines that could think, learn, and solve problems like humans. Artificial intelligence is the development of computer systems and machines capable of performing tasks that typically require human intelligence. Artificial Intelligence (AI) is a system's ability to correctly interpret external data, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation (Kaplan & Haenlein as cited in Emmert-Streib et al., 2020). According to McCorduck in Umeh and Iyoha (2025) Artificial Intelligence (AI), sometimes called machine intelligence, is intelligence demonstrated by machines in contrast to natural intelligence displayed by humans and other animals. This implies that machines can be made to perform tasks commonly associated with intelligent beings like humans and animals. It is an area of computer science with the help of digital electronics that emphasizes the creation of intelligent machines that work and react like humans. The term is frequently applied to the project of developing systems endowed with the intellectual processes and characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experiences.

Ogunode in Sam-Eleyi and Egajivwie (2025) saw Artificial Intelligence as the application, collection of systems, packages and program designed into digital computers or computer-controlled robots to carry out assignments and tasks with human-like intelligence. AI is the study of agents that receive percepts from the environment and perform actions. Each agent is implemented by a function that maps percepts to actions (Russell & Norvig, 2010). Artificial Intelligence is the intelligence of machines or software, as opposed to the intelligence of living beings, primarily of humans. Chui et al (2016) opined AI as the use of algorithms and data to achieve intelligent behaviour. This focuses on the technical aspects of AI, highlighting the role of algorithms and data in enabling intelligent behaviour in machines.
In the view of Benhamou and Janin in Iyoha and Umeh (2025) Artificial Intelligence involves a collection of technologies that enable machines to act with a very high level of intelligence similar to humans. Artificial Intelligence is an area of computer science with the help of digital electronics that emphasizes the creation of intelligent machines that work and react like humans. Artificial Intelligence is embedded

with the ability to reason, make meaning and generalization. According to Goodfellow et al in Seyi and et al (2025), the primary goal of Artificial Intelligence is to create intelligent agents capable of autonomously performing tasks like humans. Roshanaei (2023) asserts that the advent of AI is characterized by its capabilities of data analysis, pattern recognition, and predictive analytics, which brings forth nuanced opportunities to foster a more equitable educational landscape. Artificial Intelligence is a cluster of technologies, and various computing science approaches to make flexible rational decisions that align with unpredictable environmental conditions.

Data Analytics

Data analytics is a term heard frequently in today's business world and in academic settings. In our digital world, data are now more prevalent than ever. Data analytics is an integral part of planning and decision making in business. Priorities have shifted to hiring skilled employees to support a company's analytics requirements. Business leaders globally are recognizing the importance and usefulness of effectively analyzing vast quantities of data with specialized software and improving efforts to fully leverage results. Data analytics is pervasive in that many individuals in virtually every industry can benefit from the application of these techniques. Davenport (2013) defined data analytics as a subset of the broader business intelligence umbrella, focusing specifically on the statistical and mathematical aspects. Analytics is the extensive use of data, statistical and quantitative analysis, explanatory and predictive models, and fact-based management to drive decisions and actions (Davenport & Harris, 2017).

According to Anyigor-Ogah (2025), data analytics refers to applying technology, and algorithms to process, interpreting and deriving meaningful insight from large and complex datasets. Data are everywhere, and with advances in technology, the collection of data is growing at increasingly rapid rates, with multiple industries and business entities being transformed through the utilization of data analytics. As a result of this data explosion, companies are seeking to recruit and hire individuals who understand how to handle large datasets to support business decision making. The information processing of big data is referred to as data analytics and it includes the methods and procedures used to extract useful information from voluminous datasets. The primary purpose of data analytics is ultimately to answer a firm's strategic questions based on available firm data. Effective analysis also requires the use of specialized software systems as well as an analyst or decision maker with the technological knowledge base to interpret system results.

According to Gartner (2020) data analytics is the process of examining data sets in order to find trends and draw conclusions about the information they contain. Data analytics is done with the aid of specialized systems and software. Mike as cited in Sivarajah et al (2017), analytics is a transformative process. According to them, analytics is the discovery and communication of meaningful patterns in data. It is the process of transforming data into insight for making better decisions. Cleveland (2001) viewed data analytics as the science of analyzing raw data in order to make conclusions about that information. It involves applying an algorithmic or mechanical process to derive insights. According to Provost and Fawcett (2013), data analytics is the systematic computational analysis of data or statistics. It is used for the discovery, interpretation, and communication of meaningful patterns in data; and applying those patterns towards effective decision-making.

Business Education Curriculum

The curriculum for business education is a dynamic framework designed to bridge the gap between academic theory and the practical demands of the global marketplace. It is not merely a collection of courses but a structured pathway that develops technical proficiency, ethical judgment, and leadership capabilities. A comprehensive business curriculum is typically categorized into core functional knowledge, soft skills (interpersonal competencies) and the technical (hard) skills. The functional knowledge provides the theoretical foundation required to understand how an organization operates and survives. It includes the following key subjects: Accounting and Finance, Marketing, Operations Management and Economics.

Soft skills are increasingly prioritized by employers, with approximately 65% of recruiters seeking candidates who possess strong analytical and interpersonal competencies. Modern curricula have shifted significantly toward human-centric skills. Ritter et al. (2018), affirmed that there is an increasing demand from employers for soft skills such as communication, emotional intelligence, and adaptability which are often seen as more critical for long-term career success than technical skills alone.

Technical skill is a combination of skills, abilities and knowledge needed to perform a specific task. In business, it has been observed that technical skills are used as basis for employee selection, for

promotion, compensation, performance, measurement and training needs assessment, training outcome assessment and strategic planning. Having technical skill is an asset in the workplace because they enable you to solve problems, work smarter and advance knowledge in your field. Technical skills are the knowledge and abilities you use to create and adopt to change. These skills include competencies like creativity, critical thinking, communication, strategic thinking and problem solving to find and develop creative solution for the world of work and for decent work. Jam in Ariwodo and Emeasoba (2023) assert that technical innovation cannot only be taught but also viewed as a skill that grows stronger with practice.

In recent years, technical skills in business education have shifted from basic administrative tasks to advanced digital literacy and data-driven capabilities. According to Harvard Business School Online (2019), analytical reasoning is one of the most sought-after hard skills; graduates must be able to summarize datasets, recognize trends, and test hypotheses to drive strategic decision-making. The modern curricula emphasized proficiency in cloud-based tools, AI for automation, and cybersecurity protocols.

Hence, it worries that the pace of technological change often outstrips the speed of curriculum revision. For a curriculum to remain effective, it must be agile, frequently incorporating feedback from industry stakeholders to ensure that graduates possess the skills required by the current labour market. The slow pace of academic approval processes often lags behind the technological advancement.

AI Competencies Needed by the Employers of Labour

The modern labour market has transitioned from viewing AI skills as a niche technical requirement to a foundational competency across nearly all professional sectors. The following AI competencies are currently demanded by employers of labour from prospective employees:

1. AI Literacy and Operational Fluency

This is the baseline requirement for most white-collar and administrative roles. It involves moving beyond passive use to active direction of AI tools. MyKelly (2026) asserts that to ensure AI literacy and operational fluency there is need for general competency in navigating AI-integrated ecosystems like Microsoft 365, Copilot or Google Workspace. Behrend (2024) attests that regular and knowledgeable use of generative AI tools (e.g., Gemini, ChatGPT) for drafting, summarizing, and data categorization are the only ways to ensure AI literacy and operational fluency.

2. Data Judgment and Human-in-the-Loop Auditing

As AI hallucinations remain a risk, employers place a premium on employees who can verify AI outputs. The employers of labour are looking out for employees who can make critical evaluation. The capacity to audit AI-generated results for bias, factual accuracy, and logical consistency are equally valued. In the views of MyKelly (2026) employees who use their human intuition to determine when an AI suggestion is appropriate for a specific business context are being looked for by employers of labour. It is worthy to that the ability to connect disparate data sources and use AI to extract actionable business insights are demanded a lot by employers of labour (Schmucker as cited in MyKelly, 2026).

3. Workflow Automation and AI Integration

Employers of labour seek implementers who can streamline manual business processes using AI. Also, leveraging AI to enhance the creative process in marketing, design, or content strategy while maintaining brand voice is highly sought for by employers of labour (Bankins 2024). In AI workflow design, the skills needed in using no-code or low-code automation platforms (e.g., Zapier, Power Automate) to create autonomous chains of tasks is also needed by employers.

4. **Technical and Production Competencies**

For specialized AI worker or AI professional roles, the requirements are more rigorous. MyKelly (2026) asserts that for effective AI professional roles to be carried out there is need for Knowledge of how to connect large models to a company's private and proprietary data. It equally requires proficiency in deploying, monitoring, and maintaining AI models in a production environment. The python programming also involves continues dominance as the primary language for AI development and data pipeline management.

5. **Ethical Governance and Security**

With increasing regulation, companies and tertiary institutions need staff who understand the risks of AI and the ability to ensure AI use remains transparent and compliant with emerging laws like the EU Artificial Intelligence Act. In the words of MyKelly (2026) institutions need employees who have understanding of the risks of inputting sensitive corporate data into public AI models.

Infrastructural and Technical Requirements for AI Integration in Business Education Curriculum

Integrating Artificial Intelligence (AI) into business education curriculum requires a dual approach which involves building a robust physical foundation and deploying a sophisticated software and human ecosystem. This approach should be carried out especially within the context of tertiary institutions in developing regions and the requirements must address local challenges such as power instability and internet latency. The dual approach include:

i. Physical Infrastructure Requirements

Modern AI applications are data-intensive and require consistent connectivity to function as pedagogical tools. In the word of Idris and Yakubu (2020) reliable internet access is the oxygen of AI integration. Research highlights that lack of stable connectivity remains a primary barrier to AI adoption in Nigerian vocational and technical education. Given the energy requirements of AI labs, institutions must invest in uninterrupted power supply systems and renewable energy sources like solar-inverters to ensure consistent power in the learning environments (OECD, 2026). It is important to note that establishing dedicated labs equipped with AI enabled hardware is essential for providing students with hands-on experience in simulations and data modeling.

ii. **Technical and Software Requirements**

Beyond the physical space, the technical stack must support both general AI literacy and specialized business applications. The access to specialized business AI suites (e.g., Google Cloud AI, Microsoft Azure for Students) allows students to practice with tools used in the global workforce. For non-technical business students, platforms like Tableau AI or Power Automate are necessary to teach AI driven automation and data visualization without deep programming knowledge. Adesina (2023) and Ogunleye (2020) emphasized the need for integration of software that uses AI to personalize the learning pace and provide instant feedback on business case studies.

iii. **Institutional and Faculty Frameworks**

Infrastructure is ineffective without the human and policy elements to govern its use. Austria et al (2024) affirmed that teachers require continuous professional development to bridge the gap between AI theory and pedagogical practice. Institutions must provide structured mentorship and resource building networks for educators. It should be observed that a clear framework is needed to address ethical concerns, data privacy, and academic integrity. This would ensure that AI is used responsibly within the curriculum (Adams & Okafor, 2022).

iv. **Faculty Readiness and Professional Development Needs**

The transition from traditional teaching to AI augmented methods in business education is not merely a technical upgrade but a pedagogical shift. Current research indicates that while faculty members generally acknowledge the potentials of AI, they face a readiness gap characterized by moderate technical confidence and significant pedagogical uncertainty.

v. **Multi-Dimensional Faculty Readiness**

Readiness is categorized into three primary pillars: technical, pedagogical, and ethical. Wickam et al (2024) noted that while many business educators use AI tools for personal tasks, they often lack the technical competence to integrate them into classroom instruction effectively. Also, readiness involves a shift from being a source of knowledge to a facilitator of AI human collaboration. Research underscores that pedagogical adaptability of knowing when and how to use AI to improve learning is a stronger predictor of successful transition than basic digital literacy. Faculty express high concern regarding data privacy, algorithmic bias, and academic integrity. Readiness in 2026 is closely tied to ethical awareness and the confidence to navigate the responsible use of student data (Wickam et al, 2024)).

vi. **Core Professional Development (PD) Needs**

To facilitate a smooth transition, professional development must move beyond one-off workshops toward continuous and collaborative learning. Eric (2024) asserts that educators need specific training on using Generative AI for marketing simulations, product design, and customer engagement to ensure students gain job ready skills. Wickam et al (2024) emphasized that a critical need exists for training in instructional, prompting the ability to craft prompts that generate effective case studies, rubrics, and personalized feedback for business students. Also, faculty who participate in peer learning and collaborate with instructional designers show significantly higher readiness scores and are more likely to experiment with sophisticated AI features. In the same vein, Eric (2024) stressed the urgent need for professional development that clarifies institutional and national AI policies, helping lecturers overcome the fear of job displacement and resistance to change.

Conclusion

The integration of Artificial Intelligence and Data Analytics into business education is no longer an elective upgrade; it is a fundamental shift required to maintain the relevance of tertiary institutions. As the global economy pivots toward data driven decision making, the traditional intuition-based business model is being replaced by algorithmic insights and predictive modeling. Educational institutions that successfully bridge the gap between theoretical management and technical proficiency will produce graduates who are not just job-ready, but future-ready.

Suggestions

The paper suggests that:

1. Tertiary institutions should move away from static computer labs toward dynamic AI simulation centers to ensure a change in how students interact with technology.

2. Curriculum planners should ensure that the curriculum emphasized data storytelling that is transiting from teaching data as a technical output to teaching it as a narrative asset.

3. Curriculum planners should ensure that AI and Data Analytics are not treated as isolated elective courses.

4. Institutions should adopt a threaded integration model.

5. Institutions must launch mandatory faculty upskilling programs since the primary bottleneck in curriculum integration is often faculty tech-resistance or a lck of specialized knowledge.

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ARTIFICIAL INTELLIGENCE LITERACY AND ADMINISTRATIVE EFFICIENCY LEVELS AMONG OFFICE TECHNOLOGY AND MANAGEMENT GRADUATES IN POLYTECHNICS IN KOGI STATE

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Abstract

The increasing use of Artificial Intelligence (AI) for administrative tasks is reshaping office practice in Nigerian polytechnics. This study examined AI literacy and administrative efficiency, and the relationship between them, among Office Technology and Management (OTM) graduates working in two polytechnics in Kogi State. A total population of 222 OTM graduates in administrative roles was surveyed using a structured questionnaire administered through Google Forms. The study adopted a descriptive correlational survey design, with data analyzed using mean, standard deviation and Pearson correlation. Findings showed high AI literacy overall, with strong awareness of AI concepts but comparatively lower daily AI integration, data analysis and peer-training competence. Administrative efficiency was also high, particularly in document organization, digital communication, task accuracy and deadline management, with relatively lower adaptation to newer digital systems. A strong, statistically significant positive correlation was found between AI literacy and administrative efficiency composite scores ($r = 0.68$, $p < 0.001$, $N = 222$), leading to rejection of the null hypothesis. The study concluded that OTM graduates perform routine administrative duties effectively, that their AI literacy is stronger in conceptual awareness than in practical daily application, and that stronger AI literacy is associated with stronger administrative efficiency, pointing to a need for structured practical AI training. It was recommended that curricula incorporate applied AI modules, and that institutions establish professional development, peer mentoring and self-directed learning pathways alongside periodic review of administrative processes for responsible AI integration.

Keywords: Artificial intelligence literacy, administrative efficiency, OTM graduates, polytechnic education, digital workplace.

Introduction

Digital technologies have continued to modify administrative practice in educational institutions. This is because most office work done today now depends on electronic documentation, digital communication platforms, cloud-based records, automated scheduling, and data processing tools. Artificial intelligence has further deepened this transformation; many routine office tasks can now be supported by chatbots, automated writing tools, predictive systems and workflow applications. Odusanya, Adepoju and Oladire (2025) noted that digital transformation has changed the responsibilities of Office Technology and Management professionals and has increased the demand for competence beyond traditional clerical skills.

AI literacy goes beyond general digital literacy. It includes awareness of AI tools, the ability to apply AI-supported systems, understanding of automation, ability to interpret AI-assisted outputs, and awareness of ethical issues such as privacy, transparency and responsible use. Ng, Leung, Chu and Qiao (2021) identified four dimensions of AI literacy which are: know and understand AI, use AI, evaluate AI, and AI ethics, which together constitute a practical competency framework for the modern knowledge worker. Haruna, Oni and Obadoa (2025), reviewing academic library staff in Nigeria, connected AI literacy with information fluency, while Eleje et al. (2025) found that lecturers showed interest in AI tools, though readiness and practical use differed by gender and academic cadre.

For OTM graduates, this shift carries direct professional relevance. OTM training traditionally prepares students for office procedures, records management, communication, secretarial practice and administrative coordination. Today's administrative work, however, increasingly requires employees who can use digital and AI-supported tools to reduce delays, improve accuracy and manage information more efficiently. Rabiu, Bawa and Saminu (2025) argued that AI adoption in technical and vocational education requires curriculum improvement and staff development, while Adejor (2025) and Nwadiani

(2025) linked AI competence to the future relevance of business education and the wider implications of AI adoption for workforce development in Nigeria.

Administrative efficiency refers to the ability to perform office duties accurately, promptly and with proper use of resources. It encompasses document organization, task coordination, communication, workflow control, deadline management and adaptation to new office systems. Oladimeji, Abdulkareem and Adejumo (2024) wrote that digital literacy contributed positively to productivity among public sector employees in Nigeria, and Agbarakwe and Chibueze (2024) argued that AI-enabled systems have the potential to improve assessment, feedback and administrative processes in higher education. These studies suggest that AI literacy may strengthen the administrative performance of OTM graduates working in polytechnics.

Despite increased scholarly attention to AI adoption in education, little empirical work has focused on OTM graduates already serving in administrative roles in Nigerian polytechnics. The Federal Polytechnic, Idah, and Kogi State Polytechnic, Lokoja, are the only two polytechnics in Kogi State that offer the OTM programme, making their combined graduate population a uniquely defined and accessible study population. The present study therefore examined AI literacy and administrative efficiency among OTM graduates working in these institutions.

Objective of the Study

The main objective of this study was to examine artificial intelligence literacy and its relationship with administrative efficiency among OTM graduates working in the polytechnics in Kogi State.

Specific Objectives

1. Determine the level of artificial intelligence literacy among OTM graduates working in selected polytechnics in Kogi State.
2. Determine the level of administrative efficiency among OTM graduates working in selected polytechnics in Kogi State.
3. Determine the relationship between artificial intelligence literacy and administrative efficiency among OTM graduates working in selected polytechnics in Kogi State.

Research Questions

1. What is the level of artificial intelligence literacy among OTM graduates working in selected polytechnics in Kogi State?
2. What is the level of administrative efficiency among OTM graduates working in selected polytechnics in Kogi State?
3. What is the relationship between artificial intelligence literacy and administrative efficiency among OTM graduates working in selected polytechnics in Kogi State?

Hypothesis

H_0: There is no significant relationship between artificial intelligence literacy and administrative efficiency among OTM graduates working in selected polytechnics in Kogi State.

Literature Review

Artificial Intelligence Literacy and Office Work

AI literacy concerns the knowledge and practical skill required to understand, use and evaluate AI-supported tools. It covers basic awareness, functional use, ethical judgment and the ability to adapt AI applications to specific work tasks. Ng et al. (2021) proposed that AI literacy should be understood as a competency framework with affective, cognitive and socio-ethical dimensions, an argument reinforced by Long and Magerko (2020), who identified seventeen distinct AI literacy competencies spanning conceptual understanding and practical interaction with AI systems. Haruna et al. (2025), in a review focused on academic library staff in Nigeria, connected AI literacy with digital literacy and information fluency, showing that information-handling professionals require more than general awareness to manage information effectively. Eleje et al. (2025) similarly found that lecturers in Nigerian universities showed interest in AI tools, although their readiness and practical use varied considerably across gender and academic cadre.

In administrative work, AI literacy can assist with drafting, data retrieval, meeting scheduling, document classification, task reminders, summarization and records management. However, the value of AI depends on the worker's ability to select appropriate tools, verify outputs, protect sensitive information and avoid uncritical reliance on machine-generated results. Odusanya et al. (2025) showed that digital transformation has changed office technology through cloud computing, collaborative software and AI-supported processes. For OTM graduates, such changes require a movement from basic digital use to responsible and task-specific AI application.

Administrative Efficiency and Digital Competence

Administrative efficiency depends on accuracy, timeliness, proper coordination and effective use of office systems. Digital competence can improve efficiency by reducing repetitive work, improving information retrieval and supporting faster communication. Oladimeji et al. (2024) found that digital literacy had a significant positive effect on productivity among local government employees in Nigeria. Although their study focused on the public sector, its implications are applicable to polytechnic administration because both contexts rely on records management, correspondence, service delivery and inter-unit coordination.

AI-supported administrative tools can reduce delays and strengthen feedback systems within institutional work. Agbarakwe and Chibueze (2024) posited that AI has the potential to improve assessment and administrative processes in Nigerian higher education through automation, data processing and pattern recognition. Their argument supports the position that AI augments rather than replaces human administrative judgement: it can support office personnel most effectively when they possess the competence to apply AI responsibly and verify its outputs.

AI Skills in OTM and Business Education

The OTM curriculum has traditionally emphasized office management, keyboarding, secretarial duties, communication and records management. The growing use of AI in offices now requires curriculum planners to incorporate practical AI competence, ethical data handling, workflow automation and analytical skills. Rabiu et al. (2025) reviewed AI adoption for skills development in Nigerian TVET and showed that infrastructure gaps, lecturer expertise and weak policy coordination still continue to hinder AI adoption. Adejor (2025) similarly identified faculty training, infrastructure, curriculum redesign and ethical issues as key concerns for AI integration in business education.

Nwadiani (2025) linked AI adoption to the future of business and workforce development in Nigeria, emphasizing the need for coordinated investment in AI-focused education and training. This link carries particular weight for OTM graduates, because the labour market increasingly expects office workers to combine administrative knowledge with digital adaptability. An OTM graduate who is competent in document preparation but lacks practical experience with AI-supported scheduling, summarization, data retrieval or workflow automation may find it difficult to remain effective in offices that depend increasingly on intelligent digital systems. AI literacy must therefore be treated as a core professional competence, not merely as general awareness.

The reviewed literature shows that AI and digital transformation are changing administrative work, business education and higher education practice. It also demonstrates that AI literacy is a multidimensional competency requiring practical application and ethical awareness, not mere familiarity with the concept. Foundational frameworks (Ng et al., 2021; Long & Magerko, 2020) provide the conceptual scaffolding, while Nigerian empirical studies illustrate context-specific challenges of infrastructure, policy and readiness. However, the literature gives limited attention to OTM graduates already serving in administrative roles in Nigerian polytechnics. This study addressed that gap by examining their level of AI literacy, administrative efficiency, and areas of relative strength and weakness.

Theoretical Framework

This study is anchored in Ng, Leung, Chu and Qiao's (2021) AI Literacy Framework, which was developed to conceptualize the competencies required for meaningful engagement with artificial intelligence in educational and professional settings. The framework identifies four core components: (1) knowing and understanding AI, including awareness of what AI is, how it works, and where it is applied; (2) using AI, the practical ability to employ AI tools for task-specific purposes; (3) evaluating AI, the capacity to critically assess AI outputs and their limitations; and (4) AI ethics, understanding the social, legal and moral implications of AI use, including privacy, transparency, bias and accountability.

These four components tie directly onto the variables measured in this study. Research Question 1 and the AI literacy subscale (Table 1) capture competence across all four dimensions: awareness items correspond to the "know and understand" component; tool-use items reflect "use"; data analysis and automation items relate to "evaluate"; and the ethical AI item corresponds directly to the ethics dimension. The framework is particularly suited to the OTM graduate context because it treats AI literacy not as a binary attribute but as a multidimensional competency that varies across individuals and improves with structured practice and institutional support, a view consistent with the descriptive, competence-mapping purpose of this study.

The framework further aligns with the study's administrative efficiency variable by recognizing that effective AI use requires workers to apply AI tools within professional routines, precisely the workplace context in which OTM graduates operate. The use of this framework therefore provides a

principled basis for interpreting differences in mean scores across AI literacy dimensions and for identifying which components require targeted development.

Methodology

Research Design

The study adopted a descriptive correlational survey research design to examine AI literacy and administrative efficiency among OTM graduates working in selected polytechnics in Kogi State. The descriptive component was appropriate for establishing the level of each variable, while the correlational component was appropriate for testing the relationship between AI literacy and administrative efficiency, without manipulating any variable.

Population and Sampling

The Federal Polytechnic, Idah, and Kogi State Polytechnic, Lokoja, are the only two polytechnics in Kogi State that offer the Office Technology and Management programme. The population comprised all OTM graduates employed in administrative roles in these two institutions, totaling 222 persons. A total population sampling approach was adopted, as the accessible population was sufficiently small to include in its entirety, and complete enumeration was deemed most appropriate for ensuring representativeness. All 222 copies of the questionnaire were administered and retrieved using Google Forms, yielding a 100% response rate.

Research Instrument

Data were collected using a structured questionnaire developed specifically for this study and administered through Google Forms. The instrument comprised three sections. Section A collected demographic information including gender, years of experience, and highest educational qualification. Section B measured AI literacy through items on AI awareness, use of AI-enabled tools, workflow automation, data management, ethical AI use and troubleshooting of AI-supported systems. Section C measured administrative efficiency through items on task accuracy, multitasking, document organization, digital communication, workflow coordination, deadline management and adaptation to new digital systems. All items were measured on a four-point rating scale: 4 = Very High Extent, 3 = High Extent, 2 = Low Extent, and 1 = Very Low Extent. The use of a four-point scale (without a neutral midpoint) was deliberate, to encourage respondents to express a directional view on each item.

Validity and Reliability

The questionnaire was reviewed by two experts in Office Technology and Management and one expert in educational measurement to establish face and content validity. Their comments were incorporated to improve item clarity and relevance. A pilot study was conducted with 25 OTM graduates from a polytechnic outside Kogi State. Cronbach's alpha reliability coefficients were 0.81 for the AI literacy subscale and 0.79 for the administrative efficiency subscale, indicating acceptable internal consistency. Item 20 was included as a negatively worded item and was reverse-scored during analysis.

Data Analysis

Research Questions 1 and 2 were analyzed using mean and standard deviation. The decision rule for interpreting mean scores was: 3.50-4.00 = Very High; 2.50-3.49 = High; 1.50-2.49 = Low; and 1.00-1.49 = Very Low. Research Question 3 and the hypothesis were analyzed by computing a composite AI literacy score and a composite administrative efficiency score for each respondent and correlating the two using Pearson's product-moment correlation coefficient (r). The hypothesis was tested at the 0.05 level of significance ($r = 0.68$, $p < 0.001$, $N = 222$). Even with the addition of correlational analysis, the findings describe levels of competence and efficiency and their association among the study population and should not be interpreted as evidence of a causal relationship.

Results

Research Question 1: Level of Artificial Intelligence Literacy

Table 1 presents the mean scores and standard deviations for the seven AI literacy items.

Table 1

AI Literacy of OTM Graduates (N = 222)

Item	Statement	Mean	SD	Interpretation
1	Awareness of AI and its applications	3.35	0.61	High
2	Use of AI-powered tools	2.88	0.72	High
3	Understanding workflow automation	2.76	0.68	High
4	Applying AI for data management	2.69	0.70	High
5	Integration of AI in daily tasks	2.54	0.74	High

6	Knowledge of ethical AI use	2.92	0.65	High
7	Troubleshooting AI-enabled systems	2.60	0.71	High
	Cluster Mean	2.82		High

Note. Interpretation follows the decision rule: 3.50-4.00 = Very High; 2.50-3.49 = High; 1.50-2.49 = Low; 1.00-1.49 = Very Low.

Table 1 shows that OTM graduates had a high level of AI literacy overall, with individual item means ranging from 2.54 to 3.35 and a cluster mean of 2.82. The highest mean score was recorded for awareness of AI and its applications (M = 3.35, SD = 0.61), indicating that the majority of respondents were familiar with AI concepts and their relevance to office work. The lowest mean was recorded for integration of AI in daily administrative tasks (M = 2.54, SD = 0.74), which, while still in the high range, was notably lower than the awareness item and had the widest spread of responses, suggesting meaningful variation among respondents in their day-to-day AI use. Items on ethical AI use (M = 2.92) and use of AI-powered tools (M = 2.88) clustered in the mid-range of the high band, indicating reasonable but not uniform competence. The pattern across Table 1 consistently shows stronger performance at the level of conceptual awareness than at the level of practical, habitual application.

Research Question 2: Level of Administrative Efficiency

Table 2 presents the mean scores and standard deviations for the seven administrative efficiency items.

Table 2

Administrative Efficiency of OTM Graduates (N = 222)

Item	Statement	Mean	SD	Interpretation
8	Accuracy in administrative tasks	3.21	0.58	High
9	Managing multiple tasks	3.14	0.61	High
10	Organization of documents	3.36	0.53	High
11	Effective digital communication	3.29	0.57	High
12	Coordination of workflow	3.05	0.60	High
13	Meeting deadlines consistently	3.18	0.62	High
14	Adapting to new digital systems	2.98	0.64	High
	Cluster Mean	3.17		High

Note. Interpretation follows the decision rule: 3.50-4.00 = Very High; 2.50-3.49 = High; 1.50-2.49 = Low; 1.00-1.49 = Very Low.

Table 2 shows that respondents demonstrated high administrative efficiency across all seven items, with individual means ranging from 2.98 to 3.36 and a cluster mean of 3.17. The highest mean was recorded for organization of documents (M = 3.36, SD = 0.53), closely followed by effective digital communication (M = 3.29, SD = 0.57). Both items also had the lowest standard deviations in the table, indicating not only strong performance but also a high degree of consistency across the 222 respondents. The lowest mean in this section was recorded for adapting to new digital systems (M = 2.98, SD = 0.64), which, while still in the high range, had the widest spread of responses, suggesting that some respondents found adaptation to newer technologies relatively more challenging than the other efficiency dimensions. The overall pattern indicates well-established competence in core administrative routines, with some attenuation at the boundary of the high range for tasks requiring ongoing digital adaptation.

Research Question 3 and Test of Hypothesis: Relationship between AI Literacy and Administrative Efficiency

Table 3

Correlation between AI Literacy and Administrative Efficiency Composite Scores (N = 222)

Variable	Mean	SD	r	p
AI Literacy (composite)	2.82	0.42	0.68	< .001
Administrative Efficiency (composite)	3.17	0.35		

Note. Correlation is significant at the 0.05 level.

Table 3 shows a strong, positive, statistically significant correlation between the AI literacy composite score and the administrative efficiency composite score ($r = .68$, $p < .001$, $N = 222$). On this basis the null hypothesis (H0) is to be rejected, suggesting that higher AI literacy is associated with higher administrative efficiency among OTM graduates.

Supplementary Analysis: Item-Level Areas of Strength and Comparative Weakness in AI Literacy

Table 4 presents items designed to distinguish the stronger and weaker areas of AI competence among respondents. These are the actual item-level means and standard deviations collected for the study and are retained here as supplementary detail beyond the formal research questions and hypothesis.

Table 4

Strengths and Areas of Comparative Weakness in AI Literacy (N = 222)

Item	Statement	Mean	SD	Interpretation
15	Comfort using AI tools to automate routine office procedures	2.71	0.69	High
16	Ability to analyze AI-generated data for decision-making	2.58	0.72	High
17	Seeking opportunities to improve AI-related skills	3.12	0.63	High
18	Ability to train colleagues or junior staff on AI tools	2.49	0.75	Low
19	Awareness of emerging AI technologies relevant to office administration	2.64	0.70	High
20	Difficulty using advanced AI tools for complex tasks (negative item; reverse-scored mean = 2.54)	2.46	0.73	Low difficulty

Note. Item 20 is negatively worded; the raw mean reflects reported difficulty, while the reverse-scored mean (in parentheses) reflects the equivalent competence level.

Table 4 shows that the strongest area among the six items was respondents' active orientation towards improving their AI skills ($M = 3.12$, $SD = 0.63$), indicating that the majority expressed a self-directed motivation to develop further AI competence. Comfort with using AI tools to automate routine procedures ($M = 2.71$) and awareness of emerging AI technologies ($M = 2.64$) were both in the high range, though closer to the lower boundary of that band. The ability to analyze AI-generated data for decision-making ($M = 2.58$) was similarly in the high range but indicated comparatively weaker analytical application of AI. The weakest performance among positively worded items was recorded for the ability to train colleagues or junior staff on AI tools ($M = 2.49$, $SD = 0.75$), which fell in the low range and had the widest standard deviation of all items in the table, suggesting that respondents diverged most markedly on this skill. Item 20 (reverse-scored: $M = 2.54$) confirmed that the majority did not report major difficulty with advanced AI tools for complex tasks, placing generalized advanced difficulty within the high competence range when adjusted.

Summary of Findings

1. OTM graduates demonstrated high AI literacy overall (cluster mean = 2.82), with awareness of AI concepts as the strongest area and daily AI integration as the lowest-scoring dimension within the high band.
2. Respondents showed high administrative efficiency across all measured dimensions (cluster mean = 3.17), with document organization and digital communication recording the strongest mean scores and the lowest variability.
3. Correlation analysis indicated a strong, statistically significant positive relationship between AI literacy and administrative efficiency composite scores ($r = .68$, $p < .001$, $N = 222$), leading to rejection of the null.

Discussion of Findings

The finding that OTM graduates had high AI literacy but relatively weaker practical daily application is consistent with patterns identified in the wider literature. Eleje et al. (2025) found that lecturers in Nigerian higher education showed interest in AI tools but varied considerably in practical

readiness and use. Long and Magerko's (2020) identification of seventeen distinct AI literacy competencies supports the broader view that AI literacy is not a uniform attribute. The present findings illustrate this: the awareness item (M = 3.35) was notably higher than the daily integration item (M = 2.54), a gap of 0.81 mean points that maps onto the "know and understand" versus "use" dimensions of the Ng et al. (2021) framework. This suggests that while OTM graduates have acquired foundational knowledge of AI, structured practical exposure is needed to close the gap between awareness and habitual application.

The high level of administrative efficiency observed in Table 2 is consistent with Oladimeji et al. (2024), who demonstrated that digital literacy has a positive effect on productivity among Nigerian public sector employees. The relative strength in document organization (M = 3.36) and digital communication (M = 3.29) reflects the core competencies that OTM training has traditionally emphasised, confirming that graduates are well-prepared for established administrative routines. The lower score on adapting to new digital systems (M = 2.98), particularly its wider standard deviation (SD = 0.64), suggests that as office technology continues to evolve, some graduates may find sustained adaptation more demanding. This finding aligns with Agbarakwe and Chibueze (2024), who argued that AI-supported systems can reduce administrative burdens but require workers who possess the competence to engage with them effectively and verify their outputs.

The weakness in peer training of colleagues on AI tools (M = 2.49) is a substantively important finding. AI adoption within institutions is often sustained through informal knowledge-sharing among staff; when only a small number of employees possess AI competence, adoption tends to remain fragmented and individually dependent rather than embedded in institutional practice. Rabiu et al. (2025) emphasized the importance of professional development and collaborative capacity-building for AI adoption in TVET, and Adejor (2025) noted that successful AI integration in business education requires not only infrastructure but also faculty-level capacity to transfer AI knowledge. The low mean on peer training in the present study suggests that although graduates are individually motivated to develop their own AI skills (M = 3.12 for self-directed improvement), this motivation has not yet extended to the capacity or inclination to support colleagues, a gap that has direct implications for institution-wide AI integration strategies.

These findings suggest that OTM graduates in the selected polytechnics occupy a transitional position: competent in established administrative routines and broadly aware of AI, but not yet consistently proficient in the applied, collaborative and analytical dimensions of AI literacy that the Ng et al. (2021) framework identifies as essential. This transitional profile has direct implications for curriculum design, professional development planning and institutional support structures in polytechnic education.

The correlation result ($r = .68$, $p < 0.001$) aligns with Oladimeji et al. (2024) and Agbarakwe and Chibueze (2024), both of whom framed digital and AI-enabled competence as a driver of administrative performance rather than a parallel but unrelated skill set. A strong positive association suggests that the transitional AI literacy profile is not incidental to administrative efficiency but is bound up with it, reinforcing the case for applied AI training as a lever for administrative performance rather than a separate professional-development track.

Conclusion

This study examined AI literacy and administrative efficiency, and the relationship between them, among 222 OTM graduates working in the two polytechnics in Kogi State that offer the OTM programme. The findings established that the graduates had high AI literacy overall, with particular strength in awareness and knowledge of ethical AI use, and comparatively lower mean scores in daily AI integration, AI-generated data analysis, and peer support for AI tool use. The study also established that the graduates demonstrated high administrative efficiency, especially in document organization, digital communication, task accuracy and deadline management, with relatively lower but still high mean scores in adaptation to evolving digital systems. A correlation analysis ($r = .68$, $p < .001$, $N = 222$) indicated a strong positive relationship between the two variables.

The study concluded that OTM graduates in the selected polytechnics are administratively competent but occupy an early-to-intermediate position on the AI literacy continuum as conceptualized by Ng et al. (2021), and that this position appears meaningfully linked to their administrative efficiency rather than incidental to it. The gap between conceptual awareness and practical daily application, and between individual motivation and peer-training capacity, reflects a pattern visible in the broader Nigerian higher education context. As administrative work continues to evolve in response to AI-enabled tools, strengthening the applied, analytical and collaborative dimensions of AI literacy among OTM graduates will be critical to sustaining their professional effectiveness.

Limitations of the Study

Several limitations of this study warrant acknowledgement. First, the study was confined to the two polytechnics in Kogi State that offer the OTM programme; while this constituted a complete population study within that context, the findings may not be directly generalizable to OTM graduates in other states or institution types. Second, the study employed a self-report questionnaire, which is subject to social desirability bias: respondents may have rated their competence higher than their actual performance would reflect.

Recommendations

1. Polytechnic management and curriculum developers should include applied AI modules into OTM programmes, covering AI-assisted document preparation, workflow automation, data retrieval, scheduling, summarization and ethical AI use in office contexts.
2. Institutions should organize regular professional development workshops focused on practical demonstrations and guided use of AI tools, with specific attention to the areas where competence was relatively lower which were in daily AI integration, data analysis and peer support.
3. OTM departments should establish structured peer mentoring arrangements in which graduates with stronger AI competence support colleagues, operating within clear institutional guidelines on data privacy and responsible use.
4. Graduates should be encouraged to pursue self-directed AI learning through reputable online courses, short certification programmes and hands-on practice with office-relevant AI tools.
5. Polytechnic management should periodically review administrative processes to identify routine tasks that can be responsibly supported by AI, with each review addressing accuracy, privacy, accountability and the requirement for human verification of AI outputs.

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UTILIZATION OF ARTIFICIAL INTELLIGENCE (A.I) FOR PRACTICAL BUSINESS ENTREPRENEURIAL SKILLS DEVELOPMENT IN BUSINESS EDUCATION STUDENTS; THE BOTTLENECKS AND SOLUTIONS FOR ECONOMIC DEVELOPMENT

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Abstract
One of the desires of most developing countries such as Nigeria is to have and achieve a functional educational system that would train her products to be self-reliant through the acquisition of skills. The study took a cursory look at the utilization of artificial intelligence (A.I) for practical business entrepreneurial skills development in business education students; the bottlenecks and solutions for economic development. The qualitative research design was adopted to x-ray topical issues as contained thereof in the topic. To achieve these objectives, the theoretical framework of Shane and Venkataraman Entrepreneurship Nexus Theory 2000, was adopted. Conceptually, Artificial Intelligence (A.I) business education students, entrepreneurship and its objectives, as well as national economic development were highlighted therein. Furthermore, the stages that are needed for business education students' skills development of entrepreneurship for AI driven economy were noted in the study. Hitherto, practical business entrepreneurial skills such as financial literacy, sales persuasion, digital literacy, and project management were noted for business education students self-reliant and economic development. The bottlenecks in utilization of artificial intelligence (A.I) for entrepreneurial skills development in business education, and solutions for the utilization of artificial intelligence (A.I) for entrepreneurial skills development in business education were not also left out untouched in the paper. Based on the raised and discussed therein, it concluded that application of artificial intelligence in business education is not an exception, just like other sectors of the economy landscape, as Al presents unprecedented opportunities and challenges for preparing the business education students for the workforce of the future. It was finally suggested that; there should be individuals' re-orientation about initiative for teamwork to guide and motivate others to work collaboratively and effectively in the achievement of common desirable goals. and that there should be more practical and pragmatic teaching approach of A.I tools application in business education rather than theories.
Keywords; Artificial Intelligence (A.I), business education students, entrepreneurial education, and economic development.

Introduction
In today's fast growing and changes in the global economy, the business landscape and spectrum has become more competitive than it has ever been in the past. These changes have brought in competitiveness in the global economy. Thus, it has been noted that competitive intensity is sequel to globalization, technological disruption, shifting consumer preferences, and the integration of markets across borders (OECD, 2020 & UNCTAD, 2021). One of the desires of most developing countries such as Nigeria is to have and achieve a functional educational system that would train her products to be self-reliant through the acquisition of skills. Nigeria as a country has vast mineral, agricultural and human resources which have been untapped due to high number of unskilled manpower that produced by the educational system. As matter of fact, several policies and theories have been created all with a

view to sustaining the vocational and entrepreneurial skills of the students to enhance business operations and economic advancement.

Information Technology (ICT) has changed and continues to change the way we live, do business, and interact socially. ICT is undergoing rapid change. New and improved technological advances appear almost daily. Most jobs require personnel to have some level of interaction and expertise with ICT. Artificial intelligence as one of the technologies, has intricately woven into businesses, education, including healthcare, manufacturing industries, banking industries, restaurant and food industries' all these industries use computerized ordering, monitoring and tracking systems. Artificial intelligence (AI), is transforming how businesses operate and also requires skills that would change the workplace environment and produce quality and effectiveness in all sphere of life of which education is not left out. Entrepreneurship is fast becoming a phenomenon particularly in a developing economy like Nigeria. Thus, FRN (2013) an emphasis is laid on united, strong and self-reliant nation. In a bid to achieve this, entrepreneurship courses were introduced in the curriculum of every programme including business education. Entrepreneurship in the view of Kanu in Enyekit (2017), means the process of bringing together creative and innovative ideas and combining these skills with management and organizing the skills in order to combine people, money and resources to meet identified needs and thereby create wealth. It could be noted that the importance of entrepreneurship skills that are for effective teaching of entrepreneurship that the teachers require to be competent with instructional planning of what to be taught, be conversant with the use of technology for effective teaching of entrepreneurship effectively to the understanding of the learners (Ngugi et al, 2024).

Theoretical Framework

Shane and Venkataraman Entrepreneurship Nexus Theory 2000

Recent theories of entrepreneurship build on the works described above. Shane and Venkataraman (2000) state that "entrepreneurship involves the nexus of two phenomena: the presence of lucrative opportunities and the presence of enterprising individuals (Shane & Venkataraman, 2000). Their theory is inspired by the Kirznerian entrepreneurial discovery process but they emphasize that prior information is needed to complement the new information in the discovery of business opportunities. In this respect, they are similar to Schultz who argues that human capital is an important determinant of entrepreneurial ability. Casson (2003), tries to encompass both the Schumpeterian and the Knightian definitions by arguing that entrepreneurs are individuals who specialize in decision making. The Schumpeterian entrepreneur applies information about inventions to create new combinations and is ultimately the one who decides if the new combinations are profitable.

In stressing the relevance of this theory, Enyekit (2022), has also adopted this theory in a relate study. The innovative competencies delivery needs of business educators means being able to think ahead and bridge the gap above others in a competitive environment. Teaching entrepreneurship requires adequate advancement and innovative competencies that would expose the students to real life situation and work environment. This theory has also given a strong hold and relationship with this present study because it also touched innovative delivery competencies of entrepreneurship education. This aspect of the study laid emphasis on business educators' ability of inventing and creating quality teaching strategies, techniques and methods in carrying out his duties to the benefit of the learners.

Conceptual Framework

Artificial Intelligence (A.I)

Artificial Intelligence (A.I) as widely known and understood is one of the latest innovations of information and communication technology advancement that has come to stay in the 21st global century. This innovation has affected and reshaped the nature of every community, business environments, education as well as life generally. The concept has been given different meaning and explanations by different authors. According to according to Olanrewaju et al in Ahaikwo, (2026). noted that artificial intelligence as driven diagnostic tools that are being developed to consider local diseases and treatment methods, improving patient care and outcomes. Also, it could be deduced that artificial intelligence is the ability of machines or computer systems to perform tasks that typically required human intelligence which may include, thinking, perception, reasoning, teaching, learning, as well as decision-making in both businesses, education and other spheres of human endeavors.

In a related vein, Russell and Norvig in Gddyson et al (2025), noted that artificial intelligence refers to the capability of digital computers or robots to perform tasks commonly associated with intelligent beings, such as reasoning, learning, and problem-solving; it encompasses various subfields, including machine learning, natural language processing, computer vision, and robotics, each contributing to the

development of systems that can interpret complex data and tasks autonomously. From the views of the different school of thoughts, artificial intelligence could be explained to mean utilization of networks of computers in form of robots that carryout the tasks ordinarily that would have been done by human beings; this includes areas such as medicine, engineering, learning, reasoning, manufacturing, problem-soling, and decision-making, etc.

Business Education Students

Business education students refers to the individuals or students who are running programmes in the department of business education at tertiary education level who intend to acquire skills in the different options of marketing, accounting, office and information management, management or entrepreneurship. According to Ahiakwo (2026) noted that for business education students to be salable in the business world, they need the competencies in the different options of the programme. Also, Ayatunde et al (2022), and Osifor (2021) opined that the prescribed future office and business environment requires the students' roles in management, marketing, human resources development, entrepreneurship, training, and consultancy inherently demand the advanced abilities of reporting complex data, pitching ideas to source buying or funding, training depressed teams, and influencing stakeholders.

Concept of Entrepreneurship

The exert conceptualization of the word entrepreneurship has not been ascertained. Different definitions are been rooted according to the authors perception. This misconception is as a result of different perceptions and thoughts as may be perceived the individual. According to Bola (2009), the term entrepreneurship has its root in the word entrepreneur which originated from the French word, entrepreneur which means "to undertake". In business context, it means to start a business. Entrepreneurship according to Adewale (2004), is the act of floating, investing and managing a business for self-employment and with the aim of making profit. Enyekit, and Sam-Worlu (2026), opined that entrepreneurship is the willingness and ability of individual to seek out an investment opportunity, establish an enterprise based on this and run it successfully. Entrepreneurship is an employment strategy that can lead to economic self-reliance. As self-employment provides people with the potential to create and manage business in which they function as the employer or boss, rather than merely being an employee. According to Gana in Ubulom, and Enyekit, (2022), looked at entrepreneurship as the willingness and ability of an individual to seek out investment opportunities in an environment and be able to establish and run an enterprise successfully based on the identified opportunity.

While some call entrepreneurship as "risk-bearing", other views it is "innovating" and get others consider it "thrill-seeking". Entrepreneurship is a process which involves various activities to be undertaking to start an enterprise. It is thus, a process of giving birth to a new enterprise. Entrepreneurship involves innovation and risk-bearing. Entrepreneur is about cultivating the ability to see opportunities where other may not. For these reasons, many authors have also created possible impression and manner to solving the problems of unemployment through the use entrepreneurship education in all level of education.

According to Enyekit and Obara in Enyekit (2017) entrepreneurship education is seen as the type of education given to a set of people to be able to instill in them the principles, skills, and practices required to see and evaluate business opportunities, to gather the necessary resources and the desire to take advantage of them as well as initiating appropriate actions to ensure success in any choice of profession and occupation. Entrepreneurship is the foundation for developing the flexible skills needed to participate in knowledge intensive economic activity. From the assumptions derived from the above definitions, entrepreneurship is a lifelong learning process that has different stages of development. It could be categorized into the following stages that are needed for the students to include;

Stage 1; Basics Knowledge;

The focus here is on understanding the basics of our economy, career opportunities and the need to master basic skills to be successful in a free market economy.

Stage 2; Competency Skills Awareness;

In this stage, the students learn to speak language of business and see the problems from the small business owner's point of view. These views are notably in practical skills of the learners.

Stage 3; Creative and Practical Skills Application;

At this point, students can take time to explore business ideas and varieties of way to plan the business.

Stage 4; Start Up Business Idea;

This stage encourages students to start up a business and be their own boss enable them to have experiences on how to risk their own money, organize their own business in diversified economy.

Stage 5; Business Growth and Expansion;

At this point, some students when given money to start up a business cannot manage financial outcomes; therefore, there is the need for seminars and workshops to be organized for them as to

enable them gain potential business ideas to deal with such seeming difficulties in business. Entrepreneurship education therefore, seeks to provide undergraduate students with knowledge, skills and motivation to encourage entrepreneurial success in a variety of settings.

Objectives of Entrepreneurship Education

Entrepreneurship education has been applied in various setting to achieve various objectives. These objectives according to Nwangwu in Ubulom and Enyekit (2022) are listed therein.

1. Offer functional education for the youths so as to enable them to be self-employed and self-reliance.
2. Offer graduates with adequate training that will enable them to be creative and innovative in identifying novel business opportunities.
3. Provide Universities, Polytechnics and Colleges of Education graduates with adequate training in risk management, to make certainty bearing feasible.
4. Provide the young graduates with enough training and support that will enable them to establish a career in small and medium size business.
5. Offer graduates adequate training in the acquisition of skills that enable them meet the manpower needs of the society.
6. To stimulate both individual and economic growth of rural and less developed areas'
7. Provide both small and medium business enterprises with the opportunity of recruiting graduates who will be trained and tutored in the skills relevant to the management and operation of small business centres.
8. To inculcate the spirit of perseverance in the youths and which will enable them to persist in any business venture they embark on.

From the afore-mentioned structures, the entrepreneurship education objectives could be classified under the following categorized as;

People Empowerment: Teaching people innovative ways to make a living enables them to take control of their circumstances in Nigeria, for example, entrepreneurship education is being used as a tool to empower youth, undergraduate and women.

Creation of Employment: Unemployment is a rampant problem in many societies. Entrepreneurship education aims at empowering people to create employment opportunities. The aim of this training is to enable these people to start small and medium enterprises, important in any country's growth.

Individual Competence: Entrepreneurship education imparts qualities such as self-motivation and financial responsibilities. In addition, this education empowers people to have self-discipline since entrepreneurship involves taking will calculated risks. People who have gone through this kind of training are able to recognize opportunities that also encourage innovation in the running of organization.

National Economic Development

National economic development is a term that economists, politicians, and others have used frequently in the 20th century. The concept as a matter of fact does not have a concise meaning; however, the concept has been in existence in the West for centuries. The global modernization, Westernization, and especially industrialization are other terms associated to the discussion of economic development. Economic development is the process by which a nation improves the economic, political, and social well-being of its people. It also has a direct relationship with the environment. National economic development can also be considered as a static theory that documents the state of an economy at a certain time (Enyekit, & Silas-Dikibo, 2017). Although nobody is certain when the concept originated, some people agree that development is closely bound up with the evolution of capitalism and the demise of feudalism.

Practical Business Entrepreneurial Skills

Financial Literacy

Financial literature is one of the practical business entrepreneurial skills that exposes the students of the ability on how manage money wisely and effectively such budgeting, savings, debt management and investment. These skills help business education students to financial management is the process of planning, organizing, directing, and controlling the financial resources of an organization to achieve its objectives efficiently and effectively. Nevertheless, Alade and Abubakar (2023), noted that it involves making informed decisions about how to acquire, allocate, and utilize funds, ensuring that resources are used prudently to maximize value and sustainability Thus, financial literacy leads to accountability

in education is not just about financial efficiency but also about fairness, inclusiveness, and alignment with national development goals.

Sales Persuasion

The sales persuasion skills are skills that are inevitable for salespersons in discharging their duties. This are the abilities, techniques and methods that salespersons apply to influence and convince their potential customers and buyers to accept their offer of a product or services. It does not mean or imply manipulating the customers or buyers to buy a product or services. According to Dowell and Johnmark (2024) noted business education students with high level of sales persuasion skills have the tendencies of competing with their counterparts in the global business environment. In the view of the above, the salesperson persuasion skills may include the skills of effective communication, building good rapport with customers and consumers alike, active listening, good knowledge of the firm's products and services, high level of emotional intelligence, good questioning language, negotiation abilities, handling customers objections and closing of the deal, etc.

Digital Literacy

Digital literacy and e-commerce competence have also emerged as fundamental in the global competitive landscape. The rise of the digital economy has reshaped how businesses operate, market their products, and interact with customers (UNCTAD, 2021). In the digital age, decision-making increasingly relies on the ability to work with technology. Business education graduates must be technologically literate, particularly in the use of productivity software (e.g., Microsoft Office Suite), enterprise systems (e.g., SAP), data analysis tools (e.g., Excel, Power BI), and communication platforms (e.g., Zoom, Slack). In a global economy, where currency fluctuations, trade tariffs, and cross-border transactions are the norm, having solid financial literacy helps entrepreneurs avoid costly mistakes and maximize profitability (Okpara, 2020). Nevertheless, Ubulom, and Enyekit, (2022) asserted that graduates lacking digital competencies are less likely to make timely or data-driven decisions, which are essential in areas such as digital marketing, e-commerce, and financial analysis. Competence in using digital tools improves the speed, accuracy, and credibility of decisions made.

Business education students who master online marketing, data analytics, cloud-based collaboration, and virtual networking are better equipped to engage with global markets (Kapoor & Kapoor, 2021). Understanding e-commerce strategies allows them to bypass traditional geographic barriers and reach diverse customers worldwide (OECD, 2020). Equally important is financial management skills, which ensure that entrepreneurs can manage resources efficiently in volatile environments. This includes budgeting, investment analysis, cash flow monitoring, and understanding international financial regulations).

Project Management

The project management skills required by business education students are the abilities and competencies for planning, organizing, monitoring and execution specified tasks. These skills enable business education students to organize team work with members, coordinate other materials and human resources to attain the set-goals of the business. Specifically, these skills may include the followings, leadership skills, team management skills, time management skills, effective communication skills, negotiation skills, problem-solving skills, risk management skills, and monitoring and evaluation skills, etc. Enyekit and Sam-Worlu (2026) further noted that skills are thoughts of quality performance which do not depend solely upon a person's fundamental, innate capacities but must be developed through training, practice and experience. Nevertheless, it must be reiterated that even though basic human capacities are not sufficient to produce skills, they form the necessary basis of their development

Bottlenecks in Utilization of Artificial Intelligence (A.I) for Entrepreneurial Skills Development in Business Education

1. **Resistance to Change:** the advent of technology brings worries and fears of the unknown or discomfort with new ideas can hinder innovation.
2. **Lack of Resources:** Insufficient funding, talent, or infrastructure can limit innovation efforts.
3. **Poor Infrastructure:** Challenges such as unreliable electricity, weak internet connectivity, and poor transport systems can limit the effective adoption of digital platforms and delivery services.
4. **Organizational Culture:** A firm's culture may not support experimentation, risk-taking, or creativity can stifle innovation. This may in the future delay and bridge the benefits of innovation and technological development.

5. **Fear of Risk Taking and Failure:** Fear of failure or making mistakes can prevent individuals and organizations from taking risks and innovating.
6. **Bureaucratic Red Tape:** Excessive regulations, policies, or procedures can slow down or block innovation efforts.
7. **Data Quality and Integration;** The issue of data quality and integration is one of the bottle necks in artificial intelligence application that are faced by administrators. According to Ito and Emaziye (2025), data protection in Nigeria are still developing, the need for robust data privacy measure is particularly acute. Also reiterating, it could be noted that data regulation and management as well as enforcement remains one of the most difficult challenges in Nigeria.
8. **Inadequate Technical Skills:** Business owners and staff may lack the knowledge or expertise required to implement and manage new technologies or innovative strategies effectively.
9. **Algorithm Biasness;** The algorithm bias is also one of the challenges that creates bottle-neck in application of AI management skills. The AI algorithm work on data that reflects all aspect of the society which may be bias, and if it occurs, it therefore shows the discriminatory outcomes, and the effects cannot also be ignored or restricted to a particular aspect of the economy and society.

Solutions for the Utilization of Artificial Intelligence (A.I) for Entrepreneurial Skills Development in Business Education

1. **Re-orientation to Innovative Change:** the advent of technology should not bring worries and fears of the unknown or discomfort with new ideas can hinder innovation to both students and business educators alike.
2. **Regular Provision of Resources:** Sufficient funding, talent, or infrastructure should not limit innovative efforts.
3. **Proactive and Positive Organizational Culture:** Educational organizational culture should support experimentation, risk-taking, or creativity to unstifled innovation. This may in the future bridge the benefits of innovation and technological development.
4. **Regular Training and Re-training of Business Educators for Technical Skills:** Business educators and other auxiliary staff should be trained and re-trained for new knowledge or expertise required to implement and manage new technologies or innovative strategies effectively.

Conclusion

The application of artificial intelligence in business education is not an exception, just like other sectors of the economy landscape, as Al presents unprecedented opportunities and challenges for preparing the business education students for the workforce of the future. As the different industries evolve round the technological advancement, one need to increasingly embrace automation and Al-driven processes for national economic development. Nevertheless, it is our views to assert that artificial intelligence has become part of us, and we are part of artificial intelligence.

Suggestions

Based on the content and issues raised in this presentation, the following suggestion were made;

1. There should be individuals' re-orientation about initiative for teamwork to guide and motivate others to work collaboratively and effectively in the achievement of common desirable goals.
2. There should be more practical and pragmatic teaching approach of A.I tools application in business education rather than theories.
3. There should be the provision of electronic equipment and facilities that are A.I related appliances and studios for teaching and learning in business education.

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ARTIFICIAL INTELLIGENCE AND DIGITAL ENTREPRENEURSHIP COMPETENCIES REQUIRED BY ENTREPRENEURSHIP EDUCATION STUDENTS FOR PARTICIPATION IN THE CREATOR ECONOMY IN UNIVERSITIES IN DELTA STATE

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Abstract

This study examined Artificial Intelligence and Digital Entrepreneurship competencies required by Entrepreneurship Education students for participation in the Creator Economy in universities in Delta State. The study was guided by two research questions and two null hypotheses. The study adopted a descriptive survey research design. The population comprised 214 Entrepreneurship Education students in Delta State University, Abraka; Dennis Osadebay University, Asaba; and University of Delta, Agbor, from which a sample of 190 students was used. Data were collected using a 20-item Artificial Intelligence and Digital Entrepreneurship Competencies Questionnaire (AIDECQ), which was subjected to face and content validation by three experts and yielded a test-retest reliability coefficient of 0.82. Data were analysed using mean and standard deviation to answer the research questions, while independent-samples t-test and one-way analysis of variance (ANOVA) were used to test the two null hypotheses at the 0.05 level of significance. The findings showed that Artificial Intelligence competencies, including generative AI use, prompt formulation, AI-assisted content creation, evaluation of AI-generated information, ethical AI use and AI-supported automation, were required for participation in the Creator Economy. Digital Entrepreneurship competencies, including digital opportunity recognition, content creation, personal branding, digital marketing, audience development, monetisation and digital venture management, were also required. The study further found no significant difference in respondents' ratings of the required Artificial Intelligence competencies based on gender and no significant difference in their ratings of Digital Entrepreneurship competencies based on university location. The study concluded that effective participation in the Creator Economy required the integration of Artificial Intelligence and Digital Entrepreneurship competencies. It was recommended that universities integrate practical Artificial Intelligence and Digital Entrepreneurship training into Entrepreneurship Education programmes to prepare students for emerging creator-based entrepreneurial opportunities.

Keywords: Artificial Intelligence, Digital Entrepreneurship, Entrepreneurship Education, Creator Economy, Competencies, University Students**.**

Introduction

Entrepreneurship education has developed from a relatively narrow focus on preparing individuals for business ownership and self-employment into a broader field concerned with developing students' ability to identify opportunities, create value, innovate and respond to changing economic conditions. The field has experienced important developments in its practice, social relevance and scholarly foundation, leading to its wider adoption in higher education across different parts of the world (Gabrielsson, Landström, Politis, & Sørheim, 2023). In the contemporary environment, this

development has been influenced strongly by digital transformation, which has changed how businesses are created, operated and expanded. Entrepreneurship education is therefore increasingly expected to incorporate digital technologies and learning approaches that help students develop competencies suitable for technology-driven entrepreneurial activities (Zhang & Rathakrishnan, 2024). As digital technologies continue to reshape education, business and value creation, entrepreneurship education is moving beyond traditional business knowledge towards competencies that enable students to recognise and exploit opportunities in digital environments. This historical movement provides an important foundation for understanding the emergence of new forms of entrepreneurial activity, particularly the creator economy, where individuals increasingly use digital platforms, creativity and technology to create and capture economic value.

The growing use of digital technologies in entrepreneurship education has created new forms of economic participation, one of the most important being the creator economy. The creator economy refers to an expanding digital economic system in which individuals use online platforms and digital tools to create and monetize content, creative works, products or services for audiences (Peres et al., 2024). It includes activities such as blogging, video production, podcasting, online education, digital art, music, influencing, social media content creation and other forms of digital creative work. The development of social media platforms has strengthened this economy by providing creators with spaces to produce content, connect with audiences, build communities and generate income through different monetization channels (Bleier et al., 2024). Unlike traditional employment, the creator economy allows individuals to combine creativity, personal interests and entrepreneurial activities to develop independent sources of economic value. For Entrepreneurship Education students, this environment presents opportunities to apply their entrepreneurial knowledge in areas where creativity and digital content can be converted into income. However, successful participation requires more than creativity alone, because creators increasingly depend on technological capabilities and business-related competencies to develop, promote and monetize their work. This emerging need provides a basis for examining the Artificial Intelligence competencies and Digital Entrepreneurship competencies that Entrepreneurship Education students require for effective participation in the creator economy.

The need for relevant competencies for participation in the creator economy becomes more important as Artificial Intelligence (AI) increasingly changes the way creative and entrepreneurial activities are performed. AI refers to computer-based systems that can perform tasks associated with human intelligence, including learning, reasoning, problem-solving and content generation. Recent developments in generative AI have made these capabilities more accessible to students and entrepreneurs, allowing them to generate text, images, audio and other forms of digital content through simple instructions (Bell & Bell, 2023). In entrepreneurship education, AI is also becoming relevant because students can use AI tools to support opportunity identification, business idea development, market analysis and other entrepreneurial activities (Chen et al., 2024). Within the creator economy, the application of AI can help creators develop ideas, produce and edit content, improve productivity and respond more effectively to audience needs. Research on the relationship between AI and the creator economy further shows that AI is becoming an important part of the processes through which creators develop content and engage audiences (Rangaswamy & Sivakumar, 2026). However, access to AI tools alone does not guarantee effective participation; students need the appropriate competencies to use these technologies critically, creatively and responsibly. This therefore makes Artificial Intelligence competencies an important area to examine among Entrepreneurship Education students seeking to participate in the creator economy.

The growing use of Artificial Intelligence in the creator economy means that Entrepreneurship Education students need more than basic awareness of AI tools; they need practical competencies that enable them to use these technologies effectively and responsibly. AI literacy involves understanding what AI systems can and cannot do, while also knowing how to apply them appropriately in different tasks. Recent research identifies competencies such as understanding AI concepts, using generative AI tools, formulating effective prompts, evaluating AI outputs, and recognising ethical and legal issues as important elements of generative AI literacy (Annapureddy et al., 2025). Similarly, higher education increasingly requires students to develop AI literacy, prompt-engineering skills and critical-thinking abilities so that they can use AI without accepting its outputs uncritically (Walter, 2024). For Entrepreneurship Education students participating in the creator economy, these competencies can support activities such as generating content ideas, producing written and visual materials, improving digital content, analysing audience information and automating routine creative tasks. Students also need the ability to check the accuracy, originality and appropriateness of AI-generated content because effective creator-economy participation requires human judgement alongside technological capability. Thus, AI competencies should encompass not only the ability to operate AI tools but also the capacity

to prompt, evaluate, adapt, create and use AI ethically, making these competencies essential for students who intend to convert digital creativity into sustainable entrepreneurial opportunities.

While Artificial Intelligence competencies can help Entrepreneurship Education students create and improve digital content, effective participation in the creator economy also requires the ability to manage creative activities as entrepreneurial ventures. This brings Digital Entrepreneurship into focus as the second independent variable in the study. Digital entrepreneurship involves using digital technologies, platforms and resources to identify opportunities, develop innovative products or services, reach customers and create economic value. Among university students, digital entrepreneurial competence includes abilities related to opportunity identification, information search and analysis, creativity, innovation and prospecting for new opportunities (Simovic et al., 2023). These competencies are important because the digital environment requires entrepreneurs to combine entrepreneurial thinking with the effective use of digital technologies. Research has also shown that digital competencies can influence students' entrepreneurial intentions, indicating that technological capability has become an important part of entrepreneurial development (Bachmann et al., 2023). For Entrepreneurship Education students, digital entrepreneurship therefore extends beyond knowing how to use computers or social media; it involves the ability to recognise digital opportunities, develop and market ideas, build an online presence, manage digital relationships and convert digital activities into sustainable economic value. Having established the importance of these competencies, the next issue is how Digital Entrepreneurship competencies can specifically support students in converting their creative abilities into successful participation in the creator economy.

The importance of Digital Entrepreneurship competencies becomes clearer when considering how students can transform creative activities into sustainable economic opportunities within the creator economy. Digital entrepreneurial competence combines entrepreneurial abilities with digital capabilities, enabling individuals to identify opportunities, plan activities, create digital value, communicate with others, solve problems and manage digital ventures effectively (Ivanović et al., 2025). For Entrepreneurship Education students, these competencies can support the practical activities required in the creator economy, including identifying profitable content niches, developing digital products and services, building a personal brand, promoting content through online platforms, engaging audiences and managing digital business activities. Digital competence has also been found to contribute positively to students' digital entrepreneurial intentions, showing that the ability to use digital technologies effectively can strengthen their readiness to pursue entrepreneurial opportunities in digital environments (Lam et al., 2025). Therefore, participation in the creator economy requires students to combine creativity with competencies in digital marketing, online communication, digital content management, opportunity recognition, customer engagement, financial management and digital venture development. These competencies can help Entrepreneurship Education students move from simply creating online content to deliberately creating, marketing and monetizing digital value, thereby making Digital Entrepreneurship competencies an important requirement for meaningful and sustainable participation in the creator economy.

The discussion of Digital Entrepreneurship competencies shows that students need more than the ability to use digital platforms; they must also be able to combine technological knowledge with entrepreneurial thinking to create and sustain value. This becomes particularly important when Artificial Intelligence and Digital Entrepreneurship competencies are considered together, because AI can strengthen several activities involved in digital venture creation, including idea development, content production, market analysis, customer engagement and marketing. Recent evidence indicates that AI-supported entrepreneurship education can improve students' entrepreneurial self-efficacy and entrepreneurial intention, suggesting that appropriate exposure to AI can strengthen students' readiness to pursue entrepreneurial opportunities (Xie & Wang, 2025). In addition, AI-enabled capabilities such as automation, analytical ability and relational capabilities have been found to support digital entrepreneurial behaviour among aspiring digital entrepreneurs, particularly when supported by relevant digital training (Zulfiqar et al., 2026). This convergence is especially relevant to Entrepreneurship Education students because the creator economy requires individuals to combine creativity, technological competence and business skills rather than rely on one category of skill alone. Consequently, university entrepreneurship education needs to prepare students to integrate AI tools with digital opportunity recognition, content creation, marketing, audience development and online venture management. Such integration can help students move from merely consuming digital technologies to using them strategically to create, promote and monetize value in the creator economy.

The convergence of Artificial Intelligence and Digital Entrepreneurship competencies is particularly important for university students because participation in the digital economy increasingly requires students to combine technological abilities with entrepreneurial thinking. Studies on university

students have identified a gap between the digital entrepreneurial competencies required in the changing business environment and those acquired through university education, suggesting the need for higher education institutions to strengthen competency development (Bradić-Martinović et al., 2022). In the Nigerian context, entrepreneurship education has also been linked to the need for stronger digital capabilities, as technological developments associated with the Fourth Industrial Revolution are changing the skills required for entrepreneurial activities (Aina, 2022). Evidence from Nigerian university students further indicates that students may possess entrepreneurial digital knowledge while still having only moderate levels of practical digital skills, pointing to the need for universities to provide stronger opportunities for digital skill development and application (Osiesi et al., 2024). Although these studies provide useful evidence on digital entrepreneurship and technology-related competencies, they do not sufficiently establish the specific Artificial Intelligence and Digital Entrepreneurship competencies required by Entrepreneurship Education students for participation in the creator economy, particularly within universities in Delta State. This gap is important because the creator economy requires students to combine AI-enabled creativity with digital entrepreneurial abilities such as opportunity recognition, content development, audience engagement, digital marketing and monetisation. Therefore, determining the competencies required by Entrepreneurship Education students in universities in Delta State is necessary to provide evidence that can guide curriculum development, skills training and the preparation of students for meaningful participation in the emerging creator economy.

Statement of the Problem

The rapid growth of the creator economy has created opportunities for university students to turn creativity, digital content and personal brands into sources of income, but effective participation increasingly depends on competencies that may not be adequately developed through conventional Entrepreneurship Education. Creators now require Artificial Intelligence competencies to generate and refine content, formulate effective prompts, evaluate AI outputs and use AI responsibly, while inadequate preparation may limit students' ability to exploit AI for productive and innovative purposes (Fox et al., 2025). At the same time, Digital Entrepreneurship competencies such as opportunity recognition, digital marketing, innovation, customer engagement and online venture management are necessary for transforming creative activities into viable digital businesses (Simovic et al., 2023). The concern is that students may possess general entrepreneurial knowledge and access to digital technologies without having the combined AI and digital entrepreneurial capabilities needed to create, market and monetise value in the creator economy. Although AI-supported entrepreneurship education has been associated with improved entrepreneurial self-efficacy and intention (Xie & Wang, 2025), there is limited evidence establishing the specific competencies Entrepreneurship Education students require for creator-economy participation, particularly in universities in Delta State. This gap makes it necessary to determine the Artificial Intelligence and Digital Entrepreneurship competencies required by Entrepreneurship Education students for effective participation in the creator economy in universities in Delta State.

Purpose of the Study

The main purpose of this study is to examine the Artificial Intelligence and Digital Entrepreneurship competencies required by Entrepreneurship Education students for participation in the Creator Economy in universities in Delta State. Specifically, the study seeks to:

1. Determine the Artificial Intelligence competencies required by Entrepreneurship Education students for participation in the Creator Economy in universities in Delta State.
2. Determine the Digital Entrepreneurship competencies required by Entrepreneurship Education students for participation in the Creator Economy in universities in Delta State..

Research Questions

The following research questions will guide the study:

1. What Artificial Intelligence competencies are required by Entrepreneurship Education students for participation in the Creator Economy in universities in Delta State?
2. What Digital Entrepreneurship competencies are required by Entrepreneurship Education students for participation in the Creator Economy in universities in Delta State?

Hypotheses

The following null hypotheses will be tested at the 0.05 level of significance:

1. There is no significant difference in the mean ratings of respondents on the Artificial Intelligence competencies required by Entrepreneurship Education students for participation in the Creator Economy in universities in Delta State based on gender.

2. There is no significant difference in the mean ratings of respondents on the Digital Entrepreneurship competencies required by Entrepreneurship Education students for participation in the Creator Economy in universities in Delta State based on location.

Methodology

The study adopted a descriptive survey research design, which was considered appropriate because the study sought to obtain information from Entrepreneurship Education students on the Artificial Intelligence and Digital Entrepreneurship competencies required for participation in the creator economy without manipulating any of the variables. The study was conducted in the three universities in Delta State, namely Delta State University, Abraka; Dennis Osadebay University, Asaba; and University of Delta, Agbor. The population of the study comprised 214 Entrepreneurship Education students across the three universities, from which a sample size of 190 students was used for the study. A multistage sampling technique was employed, involving the selection of the participating universities, proportionate allocation of the sample to the institutions based on their student population and simple random sampling to select the respondents. Data were collected using a researcher-developed 20-item Artificial Intelligence and Digital Entrepreneurship Competencies Questionnaire (AIDECQ), which was structured in line with the two research questions and the study variables. The instrument was organised into two sections, with items measuring the Artificial Intelligence competencies and Digital Entrepreneurship competencies required by Entrepreneurship Education students for participation in the creator economy, and responses were rated on a four-point scale of Highly Required (4), Required (3), Slightly Required (2), and Not Required (1). The questionnaire was subjected to face and content validation by three experts, comprising two experts in Entrepreneurship Education and one expert in Measurement and Evaluation, who assessed the relevance, clarity, adequacy, coverage and appropriateness of the items to the objectives and research questions of the study. The reliability of the instrument was established through a test–retest method, whereby the questionnaire was administered twice to a group of students who were not part of the study population at a two-week interval, and the two sets of scores were correlated using the Pearson Product-Moment Correlation Coefficient, which yielded a reliability index of 0.82, indicating satisfactory stability and consistency. The researcher obtained permission from the relevant authorities in the participating universities before data collection, while respondents were informed of the purpose of the study and assured that participation was voluntary and that their responses would be treated confidentially. A total of 190 copies of the questionnaire were administered, and all 190 copies were retrieved and found sufficiently completed for analysis, representing a 100% retrieval and usable response rate. Data obtained from the respondents were analysed using mean and standard deviation to answer the research questions, with a criterion mean of 2.50 used as the decision point, such that items with a mean of 2.50 or above were regarded as required competencies, while items below 2.50 were regarded as not required. The two null hypotheses were tested at the 0.05 level of significance using independent-samples t-test for the first hypothesis based on gender and one-way Analysis of Variance (ANOVA) for the second hypothesis based on university location.

Research Question 1: What Artificial Intelligence competencies are required by Entrepreneurship Education students for participation in the Creator Economy in universities in Delta State?

Table 1: Respondents' Mean Score on the Artificial Intelligence competencies Required by Entrepreneurship Education Students for Participation in the Creator Economy in universities in Delta State. (N=190)

S/N	Artificial Intelligence Competencies	Mean	SD	Remark
1	Ability to use generative AI tools for developing original content ideas	3.61	0.56	Required
2	Ability to formulate effective prompts for generating relevant AI-assisted content	3.57	0.59	Required
3	Ability to use AI tools for creating and editing written digital content	3.54	0.61	Required
4	Ability to use AI tools for generating and editing images and visual content	3.49	0.64	Required
5	Ability to use AI tools for assisting video and audio content production	3.46	0.67	Required
6	Ability to evaluate the accuracy and relevance of AI-generated information	3.65	0.53	Required
7	Ability to identify ethical issues associated with the use of Artificial Intelligence in content creation	3.59	0.58	Required
8	Ability to use AI tools for analysing audience preferences and content trends	3.51	0.62	Required
9	Ability to apply AI tools to automate routine content-creation and digital business tasks	3.48	0.65	Required
10	Ability to use Artificial Intelligence creatively while maintaining human judgement and originality	3.68	0.50	Required

S/N	Artificial Intelligence Competencies	Mean	SD	Remark
	Grand Mean	**3.56**	**0.60**	**Required**

Researcher's Survey Data, 2026.

Table 1 shows that all the 10 Artificial Intelligence competencies were required by Entrepreneurship Education students for participation in the Creator Economy, as their mean scores ranged from 3.46 to 3.68, which were all above the criterion mean of 2.50. The highest-rated competency was the ability to use Artificial Intelligence creatively while maintaining human judgement and originality (M = 3.68, SD = 0.50), while the ability to use AI tools for assisting video and audio content production recorded the lowest mean (M = 3.46, SD = 0.67). Other highly rated competencies included evaluating the accuracy and relevance of AI-generated information (M = 3.65, SD = 0.53), using generative AI for developing original content ideas (M = 3.61, SD = 0.56), identifying ethical issues associated with AI use (M = 3.59, SD = 0.58) and formulating effective prompts (M = 3.57, SD = 0.59). The grand mean of 3.56 indicates that Artificial Intelligence competencies were generally considered required, while the standard deviations, ranging from 0.50 to 0.67, indicate relatively close agreement among respondents. The findings therefore suggest that effective participation in the Creator Economy requires Entrepreneurship Education students to possess practical AI capabilities covering content development, prompt formulation, content evaluation, ethical application, audience analysis, automation and the integration of AI with human creativity.

Research Question 2: What Digital Entrepreneurship competencies are required by Entrepreneurship Education students for participation in the Creator Economy in universities in Delta State?

Table 2: Respondents' Mean Score on the Digital Entrepreneurship competencies Required by Entrepreneurship Education Students for Participation in the Creator Economy in universities in Delta State. (N=190)

S/N	Digital Entrepreneurship Competencies	Mean	SD	Remark
1	Ability to identify viable entrepreneurial opportunities on digital platforms	3.64	0.55	Required
2	Ability to develop digital products and services based on identified market needs	3.58	0.60	Required
3	Ability to develop and manage a professional digital personal brand	3.62	0.57	Required
4	Ability to use social media platforms for digital marketing and audience development	3.67	0.51	Required
5	Ability to create engaging digital content for targeted audiences	3.71	0.47	Required
6	Ability to analyse digital market trends and audience behaviour	3.56	0.61	Required
7	Ability to monetise digital content, products and creative services	3.69	0.49	Required
8	Ability to manage online customer relationships and digital communities	3.53	0.63	Required
9	Ability to apply digital financial management practices to creative ventures	3.45	0.68	Required
10	Ability to develop sustainable digital business models for creator-based ventures	3.60	0.58	Required
	Grand Mean	**3.61**	**0.57**	**Required**

Researcher's Survey Data, 2026.

Table 2 indicates that all the 10 Digital Entrepreneurship competencies were required by Entrepreneurship Education students for participation in the Creator Economy, with mean scores ranging from 3.45 to 3.71, all exceeding the criterion mean of 2.50. The highest-rated competency was the ability to create engaging digital content for targeted audiences (M = 3.71, SD = 0.47), followed by the ability to monetise digital content, products and creative services (M = 3.69, SD = 0.49) and the ability to use social media platforms for digital marketing and audience development (M = 3.67, SD = 0.51). The lowest-rated competency was the ability to apply digital financial management practices to creative ventures (M = 3.45, SD = 0.68), although it was still clearly above the acceptance criterion. The grand mean of 3.61 demonstrates a strong overall perception that Digital Entrepreneurship competencies are required for Creator Economy participation, while the standard deviations ranging from 0.47 to 0.68 suggest relatively consistent responses. The results indicate that students need competencies that extend beyond content creation to include digital opportunity recognition, personal branding, market analysis, customer relationship management, digital marketing, monetisation and sustainable digital business model development.

Hypothesis 1: There is no significant difference in the mean ratings of respondents on the Artificial Intelligence competencies required by Entrepreneurship Education students for participation in the Creator Economy in universities in Delta State based on gender.

Table 3: Independent-Samples t-Test of Respondents' Mean Ratings on Artificial Intelligence Competencies Based on Gender

Gender	N	Mean	SD	df	t-value	Sig. (2-tailed)	Decision
Male	96	3.54	0.31	188	0.89	0.375	Not Significant
Female	94	3.58	0.30				
Overall	**190**	**3.56**	**0.31**				

Decision rule: Reject the null hypothesis where the significance value is less than 0.05; otherwise, retain the null hypothesis.

Analysis of Table 3: Table 3 shows that male respondents recorded a mean rating of 3.54 with a standard deviation of 0.31, while female respondents recorded a mean rating of 3.58 with a standard deviation of 0.30 on the Artificial Intelligence competencies required by Entrepreneurship Education students for participation in the Creator Economy. The independent-samples t-test produced a t-value of 0.89 at 188 degrees of freedom, with a significance value of 0.375. Since the significance value of 0.375 was greater than the stipulated 0.05 level of significance, the null hypothesis was not rejected. This indicates that there was no statistically significant difference between the mean ratings of male and female respondents regarding the Artificial Intelligence competencies required for participation in the Creator Economy. The very small difference between the group means also suggests that gender did not substantially alter respondents' perceptions of the importance of AI competencies. Therefore, competencies such as generative AI use, prompt formulation, AI-assisted content creation, evaluation of AI outputs, ethical AI use and AI-supported automation were generally regarded as necessary by respondents irrespective of gender.

Hypothesis Two: There is no significant difference in the mean ratings of respondents on the Digital Entrepreneurship competencies required by Entrepreneurship Education students for participation in the Creator Economy in universities in Delta State based on location.

Table 4: One-Way ANOVA of Respondents' Mean Ratings on Digital Entrepreneurship Competencies Based on University Location

Source of Variation	Sum of Squares	df	Mean Square	F-value	Sig.	Decision
Between Groups	0.248	2	0.124	1.34	0.265	Not Significant
Within Groups	17.305	187	0.093			
Total	**17.553**	**189**				

Decision rule: Reject the null hypothesis where the significance value is less than 0.05; otherwise, retain the null hypothesis.

Analysis of Table 4: Table 4 shows that the one-way ANOVA yielded an F-value of 1.34 with 2 and 187 degrees of freedom, and a significance value of 0.265. Since the significance value of 0.265 was greater than the 0.05 level of significance, the null hypothesis was not rejected. This indicates that there was no statistically significant difference in the mean ratings of respondents from the different university locations regarding the Digital Entrepreneurship competencies required by Entrepreneurship Education students for participation in the Creator Economy. The finding suggests that respondents across the university locations generally held similar views about the importance of competencies such as digital opportunity recognition, digital content creation, digital marketing, personal branding, audience development, monetisation, customer relationship management and digital business-model development. The absence of a significant location-based difference further indicates that the identified Digital Entrepreneurship competencies could be regarded as broadly relevant across the participating universities in Delta State rather than being competencies required only in a particular university location.

Discussion of Findings

The study found that Artificial Intelligence competencies were required by Entrepreneurship Education students for participation in the Creator Economy in universities in Delta State, particularly competencies relating to generative AI use, prompt formulation, AI-assisted content creation, evaluation of AI-generated information, ethical AI use, audience and trend analysis, task automation, and the integration of AI with human creativity. This finding indicates that effective participation in the Creator Economy requires students to move beyond basic awareness of AI tools towards practical, critical and responsible application of AI in creative and entrepreneurial activities. The finding agrees with Annapureddy et al. (2025), who identified understanding AI concepts, using generative AI tools, formulating effective prompts, evaluating AI outputs, and recognising ethical and legal issues as important components of generative AI literacy. The agreement suggests that the AI competencies identified by the present study reflect broader competency requirements associated with effective and responsible use of generative AI. The finding also supports Walter (2024), who emphasised the

increasing importance of AI literacy, prompt-engineering skills and critical-thinking abilities in higher education. The present finding extends this position into the specific context of the Creator Economy by showing that such competencies are not only relevant to general academic technology use but are required for content development, creative production, audience analysis and other creator-oriented entrepreneurial activities. The consistency of these findings is understandable because creators increasingly operate in environments where AI can accelerate ideation and production, while human judgement remains necessary for assessing accuracy, originality, relevance and ethical appropriateness. Therefore, the finding reinforces the need for Entrepreneurship Education programmes to develop students' capacity to use AI as a productive entrepreneurial resource rather than merely providing access to AI technologies.

The study also found that Digital Entrepreneurship competencies were required by Entrepreneurship Education students for participation in the Creator Economy in universities in Delta State, covering digital opportunity recognition, digital product and service development, personal branding, social media marketing, targeted content creation, market and audience analysis, monetisation, online customer relationship management, digital financial management and sustainable digital business-model development. This finding demonstrates that participation in the Creator Economy requires more than the technical ability to operate digital platforms; students need entrepreneurial competencies that enable them to identify opportunities, create value, develop audiences and convert creative activities into sustainable economic ventures. The finding agrees with Simovic et al. (2023), who identified opportunity identification, information search and analysis, creativity, innovation and prospecting as important dimensions of digital entrepreneurial competence among university students. The present finding extends these competencies by demonstrating their practical relevance to creator-oriented activities such as personal branding, digital marketing, content creation and monetisation. It also agrees with Bachmann et al. (2023), who established the importance of digital competencies in students' entrepreneurial development and intentions. The present study provides a more specific application of this position by showing that digital competencies are required not simply for developing entrepreneurial intentions but for managing the practical activities through which creators establish digital ventures, engage audiences and generate economic value. The similarity may be explained by the fact that both conventional digital entrepreneurship and the Creator Economy depend on the ability to recognise opportunities and exploit digital technologies for value creation. However, the present finding further demonstrates that Creator Economy participation requires an expanded competency profile in which entrepreneurial skills are applied directly to content, audiences, personal brands, digital communities and multiple monetisation pathways.

Conclusion

The study concluded that Artificial Intelligence and Digital Entrepreneurship competencies were essential for Entrepreneurship Education students to participate effectively in the Creator Economy in universities in Delta State. Students required competencies in generative AI use, prompt formulation, content creation, AI-output evaluation, ethical AI use, digital opportunity recognition, digital marketing, personal branding, audience development, monetisation and digital venture management. The findings further showed that these competencies were broadly required irrespective of gender and university location. The study therefore concluded that Entrepreneurship Education programmes should incorporate practical AI and Digital Entrepreneurship competencies to enable students to transform creativity and technology into sustainable digital entrepreneurial opportunities.

Recommendations

The following recommendations were made based on the findings of the study:

1. Entrepreneurship Education lecturers in universities in Delta State should integrate practical Artificial Intelligence training into entrepreneurship courses, with emphasis on generative AI, prompt formulation, AI-assisted content creation, evaluation of AI outputs, ethical AI use and the application of AI alongside human creativity, so that students can acquire the competencies required for effective participation in the Creator Economy.
2. University entrepreneurship education programmes should provide practical Digital Entrepreneurship training that enables students to identify digital opportunities, create targeted content, build personal brands, market through digital platforms, develop audiences, monetise creative outputs and manage sustainable digital ventures, thereby strengthening students' capacity to convert creative activities into viable entrepreneurial opportunities.

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INFLUENCE OF ARTIFICIAL INTELLIGENCE LITERACY ON EMPLOYABILITY SKILLS AMONG BUSINESS EDUCATION (ACCOUNTING) STUDENTS IN OGUN STATE

N. A. Ishola

Abstract

Artificial Intelligence (AI) literacy has emerged as a critical competency in the digital age due to the increasing integration of AI technologies into education and industry. This study examined the influence of artificial intelligence literacy on employability skills among business education (accounting) students in Ogun state. The study was guided by five research questions and three hypotheses. A descriptive research survey design was used for the study. The population of the study comprise all 300l and 400l business education (accounting) students from Olabisi Onabanjo University, Ago Iwoye and Tai Solarin University of Education, Ijagun, comprising 507 students. The sample size is 224 students using Taro Yamane's formula. Data were collected using a structured questionnaire developed by the researcher titled 'Artificial Intelligence Literacy and Employability Skills Questionnaire (AILESQ)' and analyzed using mean and standard deviation. The null hypotheses were tested using simple linear regression analysis. Findings revealed that Artificial Intelligence literacy has a high influence on employability skills; and that AI literacy is a vital competency that enhances workplace readiness among Business Education (Accounting) students and prepares them for employment in technology-driven business environments. Based on the findings, it was recommended that University management should provide adequate AI-related learning facilities and digital infrastructure, including computer laboratories, internet access, AI software applications, and digital accounting tools, to enhance students' exposure to emerging technologies. Universities should establish collaborations with industries, professional accounting bodies, and technology organizations to provide students with practical exposure to AI applications in real-world business and accounting settings.

Keywords: Artificial Intelligence, literacy, Employability skills, Business Education.

Introduction

The contemporary world is experiencing rapid technological transformation driven by the Fourth Industrial Revolution (4IR), which is characterized by the integration of emerging technologies such as Artificial Intelligence (AI), big data analytics, cloud computing, machine learning, robotics, and the Internet of Things (IoT). Among these technologies, Artificial Intelligence has gained significant attention due to its ability to simulate human intelligence and perform tasks such as learning, reasoning, problem-solving, decision-making, and data analysis with minimal human intervention. According to Dwivedi et al. (2023), AI has become a disruptive technology that is transforming educational systems, business operations, and labor markets globally. Consequently, there is an increasing need for individuals, especially students in higher education institutions, to develop competencies that will enable them to function effectively in AI-driven environments.

For Business Education (Accounting) students, AI literacy has become increasingly important because future accounting workplaces will require employees who can interact effectively with intelligent systems. Students who possess AI literacy are likely to understand how AI technologies can be applied to accounting tasks, evaluate AI-generated outputs, and utilize AI tools for problem-solving and decision-making. Such competencies are becoming essential for workplace success in the accounting profession (AICPA & CIMA, 2024). Lack of AI competency not only limits students' ability to meet employers' expectations but also affects their confidence and career opportunities.

The acquisition of AI literacy is closely linked to employability skills. Employability skills refer to the transferable knowledge, competencies, attitudes, and personal attributes that enhance an individual's ability to obtain, retain, and progress in employment. According to Succi and Canovi (2024), employability skills encompass critical thinking, communication, problem-solving, teamwork, adaptability, creativity, digital competence, and lifelong learning abilities. These skills are increasingly important because employers seek graduates who can adapt to technological changes and contribute effectively to organizational goals.

In recent years, concerns have been raised regarding the employability of graduates in Nigeria. Employers frequently report that many graduates possess academic qualifications but lack the practical and technological competencies required in modern workplaces. This challenge is particularly evident in professions that have experienced rapid technological advancement, such as accounting and finance. The mismatch between graduates' skills and labor market expectations has heightened the need for educational institutions to strengthen technology-oriented competencies among students (Aina & Adedoyin, 2024).

In Ogun State, Business Education programmes are offered in several tertiary institutions, including universities and colleges of education. These institutions are expected to prepare students for careers in business and accounting by equipping them with relevant knowledge and practical skills. Ogun State is recognized as one of Nigeria's educational and industrial hubs, hosting numerous business organizations, financial institutions, and manufacturing firms that increasingly utilize digital technologies in their operations. Consequently, graduates from Business Education (Accounting) programmes in the state are expected to possess competencies that align with the technological demands of contemporary workplaces (Ojo & Akinyemi, 2024).

Despite the growing relevance of AI in business and accounting practices, there is limited empirical evidence regarding the extent to which Business Education (Accounting) students in Ogun State possess AI literacy and how such literacy influences their employability skills. This gap in knowledge necessitate this study to investigate the influence of Artificial Intelligence literacy on employability skills among Business Education (Accounting) students in Ogun State.

Statement of the Problem

The rapid adoption of Artificial Intelligence technologies in accounting and business operations has altered the skill requirements of employers. Many organizations now seek graduates who possess both accounting expertise and digital competencies. However, some Business Education (Accounting) students may have limited exposure to AI technologies, which could affect the development of employability skills such as problem-solving, critical thinking, communication, collaboration, adaptability, and digital competence.

This development would likely leave most business education (accounting) students unemployed. Unfortunately, Businesses education Curriculum lacks the integration of AI competency and its application in the content and delivery. However, if this continues, many business education (accounting) students may be unprepared for the demands of the modern workplace where AI competency are increasingly essential. Without proper AI competency, graduates may find it difficult to compete for jobs that require AI literacy, data analytics literacy, ethical reasoning, workflow automation and decision intelligence which may lead to high unemployment among Business Education (accounting) students. Lack of AI competency not only limits students' ability to meet employers' expectations but also affects their confidence and career opportunities.

Despite the growing importance of AI literacy, there is limited empirical evidence on its influence on the employability skills of Business Education (Accounting) students in Ogun State. This study therefore seeks to investigate the extent to which AI literacy influences employability skills among Business Education (Accounting) students in Ogun State.

Research Questions

The following research questions guided the study

1. What is the influence of AI literacy on problem-solving skills among Business Education (Accounting) students?
2. What is the influence of AI literacy on communication skills among Business Education (Accounting) students?
3. What is the influence of AI literacy on critical thinking skills among Business Education (Accounting) students?
4. What is the influence of AI literacy on digital competence among Business Education (Accounting) students?
5. What is the influence of AI literacy on adaptability and lifelong learning skills among Business Education (Accounting) students?

Research Hypotheses

The following hypotheses were formulated for the study:

H_{01}: Artificial Intelligence literacy has no significant influence on problem-solving and communication skills among Business Education (Accounting) students in Ogun State.

H_{02}: Artificial Intelligence literacy has no significant influence on critical thinking skills and digital competence among Business Education (Accounting) students in Ogun State.

H_{03}: Artificial Intelligence literacy has no significant influence on adaptability and lifelong learning skills among Business Education (Accounting) students in Ogun State.

Literature Review

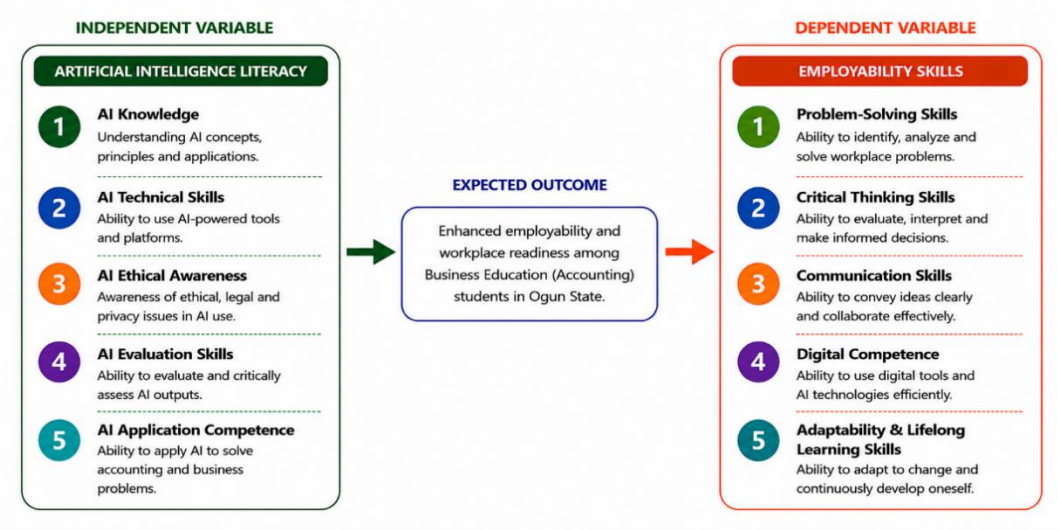
Theoretical Framework

The following theories guided the study:

Human Capital Theory: The theory was developed by Schultz (1961) and further expanded by Becker (1964). Human Capital Theory posits that education, training, and skills acquisition are investments that enhance individuals' productivity and employability. AI literacy represents a valuable form of human capital that equips Business Education (Accounting) students with competencies needed in modern workplaces. Students who acquire AI literacy are likely to possess stronger employability skills and better employment opportunities.

Social Cognitive Theory: Bandura (1986) propounded the social cognitive theory. The main assumption is that learning occurs through observation, interaction, and experience. Business Education students can develop AI literacy through exposure to AI tools, practical experiences, and classroom interactions. These experiences contribute to the development of employability skills.

Conceptual Framework



Source: Researcher, 2026.

Figure 1: Influence of Artificial Intelligence Literacy on Employability Skills among Business Education (Accounting) Students in Ogun State.

The framework assumes that increased AI literacy among Business Education (Accounting) students enhances their employability skills. As students gain knowledge and competence in AI technologies, they become more capable of solving problems, thinking critically, communicating effectively, utilizing digital tools, and adapting to changing workplace demands.

Artificial Intelligence Literacy

AI literacy refers to the knowledge, skills, competencies, and attitudes required to understand, evaluate, utilize, and interact effectively with AI systems and technologies. According to Long and Magerko (2020), AI literacy consists of competencies that enable individuals to critically assess AI technologies, communicate effectively with AI systems, and make informed decisions regarding their use. Artificial Intelligence literacy extends beyond mere technical knowledge to include an understanding of AI applications, ethical implications, limitations, and societal impacts. Ng et al. (2021) described AI literacy as the ability to understand AI concepts, evaluate AI outputs, recognize AI limitations, and apply AI tools responsibly in solving real-life problems.

In educational settings, AI literacy equips students with the skills required to navigate an increasingly technology-driven workplace. UNESCO (2021) emphasized that AI literacy has become essential for preparing learners to participate meaningfully in the digital economy. Students with adequate For Business Education (Accounting) students, AI literacy is particularly important because the accounting profession is undergoing rapid technological transformation. Traditional accounting functions such as bookkeeping, auditing, payroll processing, taxation, budgeting, and financial reporting are increasingly supported by AI-powered software and automation systems. Consequently, accounting graduates who possess AI literacy are more likely to remain relevant and competitive in the labor market.

Digital accounting skills encompass a wide range of competencies. These include proficiency in computerized accounting packages such as Sage, QuickBooks, etc.; familiarity with enterprise resource planning (ERP) systems; spreadsheet modelling for decision-making; data visualization for client reporting; Power BI for data modelling and connectivity, financial data analysis for budgeting and forecating, and cybersecurity awareness to ensure the integrity of financial data (Ishola, 2025).

AI knowledge involves an individual awareness of machine learning, natural language processing, intelligent systems, predictive analytics, and automation technologies. Long and Magerko (2020) argued that AI knowledge enables individuals to understand how AI systems function and make informed decisions regarding their use. AI technical skills involve the practical ability to use AI-powered tools and applications. Such skills include operating AI software, using intelligent accounting systems, employing chatbots, generating AI-assisted reports, and utilizing machine learning applications.

Ethical awareness involves understanding the ethical, legal, and social implications of AI technologies. AI systems often raise concerns relating to privacy, bias, accountability, transparency, and data security. UNESCO (2021) stressed the importance of ethical awareness in promoting responsible AI use among learners and professionals. AI evaluation skills refer to the ability to critically assess AI-generated information and determine its accuracy, reliability, and appropriateness. Since AI systems may produce inaccurate or biased outputs, users must be capable of evaluating AI-generated content before relying on it for decision-making (Long & Magerko, 2020). Application competence refers to the ability to apply AI technologies in solving practical and professional problems. For accounting students, this includes using AI tools for financial analysis, forecasting, auditing, and decision-making processes.

Employability Skills

Employability skills are the transferable skills, knowledge, competencies, and personal attributes that enable graduates to obtain employment, maintain employment, and succeed in their chosen careers. The concept of employability has evolved significantly due to technological advancements and changing labor market requirements. Employers no longer focus solely on academic qualifications but also seek graduates who possess critical thinking, communication, digital literacy, adaptability, teamwork, and problem-solving skills (World Economic Forum, 2023). In the context of Business Education (Accounting), employability skills are crucial because accounting professionals operate in dynamic environments characterized by continuous technological innovation and changing business practices.

Problem-solving skills refer to the ability to identify challenges, analyze situations, generate alternatives, and implement effective solutions. OECD (2021) noted that AI technologies enhance analytical capabilities and facilitate evidence-based problem-solving. Critical thinking involves objective analysis, logical reasoning, evaluation of evidence, and informed decision-making. It enables individuals to assess information critically rather than accepting it at face value. AI literacy promotes critical thinking because users must evaluate AI-generated outputs, identify biases, verify information sources, and interpret results appropriately. Long and Magerko (2020) emphasized that critical evaluation is an essential component of AI literacy.

Communication skills encompass the ability to express ideas clearly and effectively through oral, written, and digital channels. Effective communication remains a highly valued employability skill across industries. AI-powered communication tools, collaborative platforms, and intelligent writing assistants support the development of communication skills by enhancing information sharing, report preparation, and professional correspondence. Digital competence refers to the confident, critical, and responsible use of digital technologies for learning, work, and participation in society (European Commission, 2022). AI literacy forms an important aspect of digital competence because AI technologies are increasingly embedded within modern digital systems. Students who possess AI literacy are more likely to demonstrate advanced digital capabilities required in contemporary workplaces.

Adaptability refers to the ability to adjust to new situations, technologies, and workplace demands. Lifelong learning involves continuous acquisition of knowledge and skills throughout one's career. The rapidly evolving nature of AI technologies necessitates continuous learning and adaptation. UNESCO (2021) argued that AI literacy encourages individuals to engage in lifelong learning to remain relevant in changing work environments.

Artificial Intelligence Literacy and Employability Skills among Accounting Students

The relationship between AI literacy and employability skills has attracted increasing scholarly attention. Researchers argue that AI literacy serves as a catalyst for developing workplace competencies required in the Fourth Industrial Revolution.

Many studies have been conducted on AI literacy and employability skills. For instance, Aina and Adedoyin (2024) investigated graduate employability and digital skills development among Nigerian university students. Using a descriptive survey design, the researchers found that students with higher levels of digital competence demonstrated better employability prospects than those with lower levels of digital competence. The study further revealed that technological skills significantly influence workplace readiness among graduates. However, the researchers focused on digital literacy generally and did not specifically examine AI literacy.

Similarly, Ojo and Akinyemi (2024) investigated digital literacy and employability skills among undergraduate students in Nigerian tertiary institutions. The findings revealed that digital literacy significantly predicted employability skills such as communication, critical thinking, and adaptability. The study concluded that digital competence remains an important factor in graduate employability. However, the study focused on digital literacy rather than AI literacy.

In another study, Eze, Okeke, and Nwafor (2024) examined technology adoption and workforce readiness among university students in Nigeria. The study found that exposure to emerging technologies improved students' confidence, adaptability, and readiness for employment. The researchers emphasized the need for educational institutions to expose students to AI and other digital technologies. Nevertheless, the study did not specifically investigate Business Education (Accounting) students.

Chiu, Meng, and Chai (2024) conducted a systematic review of studies on AI literacy in higher education. Their findings revealed that AI literacy positively influences students' readiness for technology-driven workplaces by improving their analytical thinking, decision-making, and digital competencies. The study further established that students who possess AI literacy are more confident in utilizing emerging technologies to solve academic and professional problems. However, the review focused on general higher education students and did not specifically examine accounting students in Nigeria.

In the area of employability skills, Succi and Canovi (2024) examined the skills employers consider essential for graduate employability. Their findings indicated that critical thinking, communication, adaptability, digital competence, and problem-solving skills were among the most valued competencies in contemporary workplaces. The study emphasized the need for higher education institutions to integrate emerging technologies into teaching and learning to enhance students' employability. However, the study did not investigate the role of AI literacy in developing these skills.

Adeyemi and Ogunleye (2023) examined the relationship between technology competence and employability among business education students in South-West Nigeria. The study found that students who possessed higher levels of technology competence demonstrated stronger communication skills, problem-solving abilities, and workplace readiness. The researchers recommended increased integration of emerging technologies into Business Education programmes. Although the study provided useful insights, it did not specifically address Artificial Intelligence literacy.

Dwivedi et al. (2023) explored the opportunities and challenges associated with the use of generative AI technologies in education and professional practice. The study revealed that AI technologies enhance productivity, creativity, and problem-solving skills among users. The researchers argued that AI literacy has become increasingly important for graduates seeking employment in technology-driven workplaces. However, the study focused on the general implications of AI and did not specifically address Business Education or accounting students. Although previous studies have established the importance of AI literacy and employability skills, there is limited empirical evidence on the influence of AI literacy on the employability skills of Business Education (Accounting) students in Ogun State, Nigeria**.** Specifically, little is known about how AI knowledge, technical skills, ethical awareness, evaluation skills, and application competence influence problem-solving, critical thinking, communication, digital competence, and adaptability skills among these students. Therefore, this study sought to fill this identified gap in the literature.

Methodology

A descriptive survey research design was used in the study. The design is suitable for determining the extent to which AI literacy influences employability skills among the respondents without manipulating any variable. The population of the study comprised all 300L and 400L business education (accounting) students from the two Universities, 444 students from Tai Solarin University of Education, Ijagun and 63 students from Olabisi Onabanjo University, Ago-Iwoye, making a total population of 507 students. Taro Yamane (1967) formula was used to arrive at the sample size that participated in the study. A representative sample was selected using a multi-stage sampling technique, involving purposive selection of universities and proportionate stratified random sampling of students from each

institution. The Sample size was 224 students. Purposive sampling technique was used to select OOU and TASUED from the three Universities offering business education in Ogun State. An instrument titled 'Artificial Intelligence Literacy and Employability Skills Questionnaire (AILESQ)' developed by the researcher was used for data collection in this study. AILESQ is a questionnaire structured in closed ended format and divided into three sections: Section A, B and C. Section A consists of Demographic data while section B and C consist of fifteen items each, AI literacy and Employability skills respectively. The thirty-item questionnaire was placed on four points rating scale with weights of Strongly Agreed (4) Agreed (3) Disagreed (2) and Strongly Disagreed (1). The respondents comprised 28 students from Olabisi Onabanjo University (OOU), Ago-Iwoye, and 196 students from Tai Solarin University of Education (TASUED), Ijagun. The distribution was based on proportionate stratified random sampling. Data were analyzed using Mean and Standard Deviation to answer the research questions, while Simple Linear Regression Analysis was used to test the hypotheses at 0.05 level of significance.

Results

Table 1: Summary of Research Questions on the Influence of Artificial Intelligence Literacy on Employability Skills among Business Education (Accounting) Students in OOU and TASUED (N = 224)

S/N	Research Question	Grand Mean	SD	Decision	Remark
1	Influence of AI Literacy on Problem-Solving Skills	3.46	0.64	Accepted	High Influence
2	Influence of AI Literacy on Communication Skills	3.37	0.67	Accepted	High Influence
3	Influence of AI Literacy on Critical Thinking Skills	3.48	0.62	Accepted	High Influence
4	Influence of AI Literacy on Digital Competence	3.52	0.60	Accepted	Very High Influence
5	Influence of AI Literacy on Adaptability and Lifelong Learning Skills	3.49	0.60	Accepted	High Influence
	Overall Grand Mean	**3.46**	**0.63**	**Accepted**	**High Influence**

Decision Rule: Mean score of 2.50 and above = Accepted; Mean score below 2.50 = Rejected.

Table 1 presents a summary of the findings on the influence of Artificial Intelligence (AI) literacy on various dimensions of employability skills among the 224 Business Education (Accounting) students drawn from Olabisi Onabanjo University (OOU), Ago-Iwoye, and Tai Solarin University of Education (TASUED), Ijagun.

The overall grand mean of 3.46 with a standard deviation of 0.63 indicates that respondents generally agreed that Artificial Intelligence literacy has a high influence on employability skills. The relatively low standard deviation further suggests that the responses of students from both OOU and TASUED were closely clustered around the mean, indicating consistency in their perceptions.

H_{01}: Artificial Intelligence literacy has no significant influence on problem-solving and communication skills among Business Education (Accounting) students.

Table 2: Regression Analysis

Variable	B	Beta	t	p-value
AI Literacy	0.672	0.641	12.584	0.000
R	**R^2**	**Adjusted R^2**	**F**	**Sig.**
0.641	0.411	0.408	158.36	0.000

Since $p < 0.05$, reject H_{01}.

AI literacy significantly influences problem-solving and communication skills among Business Education (Accounting) students. AI literacy accounted for 41.1% of the variation in these employability skills.

H_{02}: Artificial Intelligence literacy has no significant influence on critical thinking skills and digital competence.

Table 3: Regression Analysis

Variable	B	Beta	T	p-value
AI Literacy	0.714	0.687	14.972	0.000
R	**R^2**	**Adjusted R^2**	**F**	**Sig.**
0.687	0.472	0.469	224.16	0.000

Since $p < 0.05$, reject H_{02}.
AI literacy significantly predicts critical thinking skills and digital competence. Approximately 47.2% of the variance in these skills is explained by AI literacy.

H_{03}: Artificial Intelligence literacy has no significant influence on adaptability and lifelong learning skills.

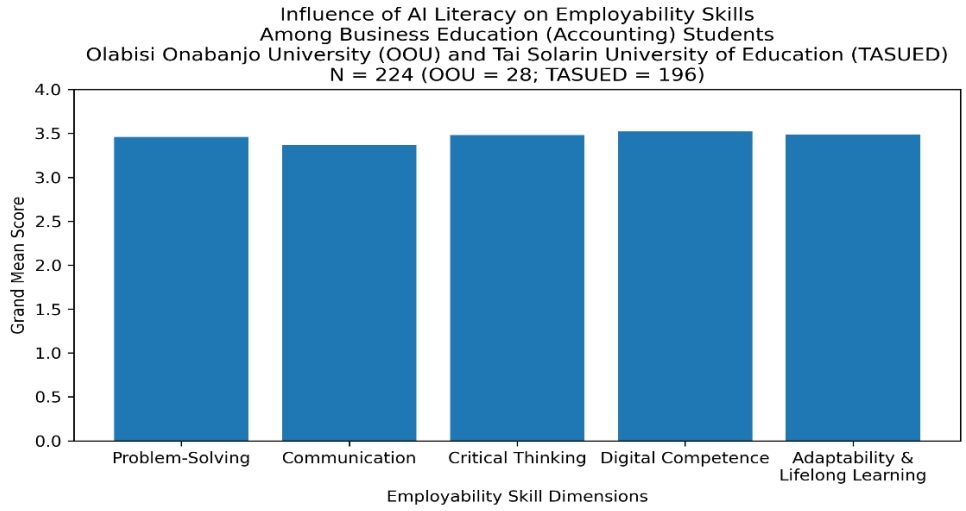
Table 4: Regression Analysis

Variable	B	Beta	T	p-value
AI Literacy	0.694	0.658	13.442	0.000
R	R^2	Adjusted R^2	F	Sig.
0.658	0.433	0.431	180.69	0.000

Since $p < 0.05$, reject H_{03}.

AI literacy significantly influences adaptability and lifelong learning skills among Business Education (Accounting) students.

Figure 2: Influence of AI Literacy on Employability Skills of Business Education Students



Interpretation of Results

The findings from table 1, demonstrate that Artificial Intelligence literacy positively influences all the employability skill dimensions examined in the study. However, its greatest influence was observed in digital competence (Mean = 3.52), followed by adaptability and lifelong learning skills (Mean = 3.49), critical thinking skills (Mean = 3.48), problem-solving skills (Mean = 3.46), and communication skills (Mean = 3.37). This suggests that AI literacy is a vital competency that enhances workplace readiness among Business Education (Accounting) students in Olabisi Onabanjo University (OOU) and Tai Solarin University of Education (TASUED) and prepares them for employment in technology-driven business environments.

The regression analysis produced a correlation coefficient (R = 0.641) indicating a moderate positive relationship between Artificial Intelligence literacy and problem-solving and communication skills among Business Education (Accounting) students of Olabisi Onabanjo University (OOU) and Tai Solarin University of Education (TASUED). The coefficient of determination (R^2 = 0.411) revealed that Artificial Intelligence literacy accounted for approximately 41.1% of the variation in students' problem-solving and communication skills. The calculated F-value of 158.36 with a significance value of 0.000, which is less than the 0.05 level of significance, indicates that the regression model was statistically significant. Therefore, the null hypothesis 1 was rejected. This implies that Artificial Intelligence literacy significantly influences the development of problem-solving and communication skills among Business Education (Accounting) students in OOU and TASUED. Students who possess higher levels of AI literacy tend to demonstrate better problem-solving abilities and communication competencies.

The regression results also showed a correlation coefficient (R = 0.687), indicating a strong positive relationship between Artificial Intelligence literacy and critical thinking skills as well as digital competence among Business Education (Accounting) students in OOU and TASUED. The coefficient of determination (R^2 = 0.472) showed that Artificial Intelligence literacy explained 47.2% of the variation in students' critical thinking skills and digital competence. The calculated F-value of 224.16 and significance level of 0.000 were statistically significant at the 0.05 level. Consequently, the null hypothesis 2 was rejected. This result implies that Artificial Intelligence literacy significantly predicts students' ability to think critically and utilize digital technologies effectively. Students who possess higher AI literacy levels are more likely to evaluate information critically, operate digital tools efficiently, and demonstrate technological competence required in modern workplaces.

Lastly, the regression analysis yielded a correlation coefficient (R = 0.658), indicating a strong positive relationship between Artificial Intelligence literacy and adaptability and lifelong learning skills among students of OOU and TASUED. The coefficient of determination (R^2 = 0.433) indicated that Artificial Intelligence literacy accounted for approximately 43.3% of the variation in adaptability and lifelong learning skills among the respondents. The calculated F-value of 180.69 and significance level of 0.000 demonstrated that the relationship was statistically significant at the 0.05 level. As a result, the null hypothesis 3 was rejected. This finding implies that Artificial Intelligence literacy significantly enhances students' ability to adapt to technological changes and engage in continuous learning. Students who possess higher AI literacy levels are more likely to embrace innovation, acquire new skills, and remain relevant in an evolving workplace environment.

Finally, the study established that Artificial Intelligence literacy significantly influences employability skills among Business Education (Accounting) students of Olabisi Onabanjo University (OOU), Ago-Iwoye, and Tai Solarin University of Education (TASUED), Ijagun. The regression results further confirmed that Artificial Intelligence literacy is a significant predictor of employability skills among Business Education (Accounting) students in both universities, indicating that increased AI literacy is associated with improved workplace readiness and employability outcomes.

Discussion

The study investigated the influence of Artificial Intelligence (AI) literacy on employability skills among Business Education (Accounting) students of Olabisi Onabanjo University (OOU), Ago-Iwoye, and Tai Solarin University of Education (TASUED), Ijagun, Ogun State. The study found that Artificial Intelligence literacy has a high influence on problem-solving skills among Business Education (Accounting) students in OOU and TASUED. The respondents agreed that AI literacy helps them solve academic and workplace-related problems, analyze accounting issues, and improve decision-making abilities. This suggests that students who possess AI knowledge and competencies are better equipped to identify, analyze, and solve complex problems in academic and professional settings. This finding is in agreement with the study of Aina and Adedoyin (2024), who reported that technological competence significantly enhances workplace readiness and problem-solving abilities among Nigerian university students. The finding also supports the work of Eze, Okeke, and Nwafor (2024), who found that exposure to emerging technologies improves students' confidence and capacity to solve workplace-related challenges. The agreement between the present study and previous studies suggests that AI literacy serves as a valuable tool for developing analytical and problem-solving competencies required in contemporary workplaces.

More so, the study revealed that Artificial Intelligence literacy positively influences communication skills among Business Education (Accounting) students in OOU and TASUED. The respondents indicated that AI literacy enhances written communication, improves presentation abilities, and facilitates effective use of digital communication platforms. This finding corroborates the study of Ojo and Akinyemi (2024), who found that digital literacy significantly predicts communication skills among undergraduate students in Nigerian tertiary institutions. The finding is also consistent with

Adeyemi and Ogunleye (2023), who reported that technology competence contributes significantly to the development of communication skills among Business Education students in South-West Nigeria. The similarity in findings may be attributed to the fact that AI-powered tools such as intelligent writing assistants, collaborative platforms, and presentation software enable students to communicate more effectively and professionally.

However, the findings also showed that Artificial Intelligence literacy has a high influence on critical thinking skills among Business Education (Accounting) students in OOU and TASUED. The students agreed that AI literacy improves their ability to evaluate information critically, verify AI-generated outputs, and engage in analytical reasoning before making decisions. This finding agrees with the study of Chiu, Meng, and Chai (2024), who found that AI literacy enhances analytical thinking, decision-making, and critical evaluation skills among higher education students. The result is also consistent with Ojo and Akinyemi (2024), who reported that digital literacy significantly contributes to the development of critical thinking skills among university students. The agreement may be explained by the fact that AI systems often require users to evaluate information, identify inaccuracies, and make informed judgments, thereby strengthening critical thinking abilities.

The study found that Artificial Intelligence literacy has a very high influence on digital competence among Business Education (Accounting) students in OOU and TASUED. The respondents indicated that AI literacy improves their confidence in using digital technologies, operating accounting software, and learning new technological tools. This finding is in line with the study of Aina and Adedoyin (2024), who found that students with higher levels of digital competence exhibit better employability prospects and workplace readiness. Furthermore, the result supports the findings of Kong, Cheung, and Zhang (2024), who established a significant relationship between AI literacy and digital competence among university students. The agreement suggests that AI literacy is an important component of digital competence and contributes significantly to students' preparedness for technology-driven workplaces.

The study further revealed that Artificial Intelligence literacy has a high influence on adaptability and lifelong learning skills among Business Education (Accounting) students in OOU and TASUED. The students agreed that AI literacy motivates them to adapt to new technologies and continuously seek opportunities to acquire new digital skills. This finding supports the study of Eze, Okeke, and Nwafor (2024), who found that exposure to emerging technologies enhances students' adaptability and readiness for future employment. Similarly, Ojo and Akinyemi (2024) found that digital literacy significantly predicts adaptability among university students. The agreement may be attributed to the rapidly changing nature of AI technologies, which encourages students to continuously update their knowledge and skills to remain relevant in the labour market.

The regression analysis revealed that Artificial Intelligence literacy significantly influences employability skills among Business Education (Accounting) students in OOU and TASUED. Specifically, AI literacy significantly influenced problem-solving and communication skills, critical thinking skills and digital competence, as well as adaptability and lifelong learning skills. Consequently, all three null hypotheses were rejected. The findings are consistent with Adeyemi and Ogunleye (2023), who found that technology competence significantly predicts employability outcomes among Business Education students in South-West Nigeria. The findings also agree with Aina and Adedoyin (2024), who established that technological competencies contribute significantly to workplace readiness and graduate employability.

Overall, the findings demonstrate that Artificial Intelligence literacy is a critical determinant of employability skills among Business Education (Accounting) students in Olabisi Onabanjo University (OOU) and Tai Solarin University of Education (TASUED). The results reinforce the Human Capital Theory, which posits that investment in knowledge and skills acquisition enhances individuals' productivity and employability.

Conclusion

Based on the findings of this study, it was concluded that Artificial Intelligence (AI) literacy significantly influences employability skills among Business Education (Accounting) students in Olabisi Onabanjo University (OOU), Ago-Iwoye, and Tai Solarin University of Education (TASUED), Ijagun, Ogun State. The study established that students who possess higher levels of AI literacy demonstrate stronger employability skills required in contemporary workplaces.

The study therefore concludes that AI literacy has become an indispensable competency for students preparing for careers in accounting and business-related professions. As organizations increasingly adopt AI-driven technologies in their operations, graduates who possess AI knowledge, technical skills, ethical awareness, evaluation skills, and application competence are more likely to be employable, productive, and competitive in the labour market. Consequently, the integration of AI

literacy into Business Education programmes is essential for preparing students to meet the technological demands of the twenty-first-century workplace.

Recommendations

1. Business Education departments in Olabisi Onabanjo University (OOU) and Tai Solarin University of Education (TASUED) should integrate Artificial Intelligence literacy into their curriculum. This will enable students to acquire relevant AI knowledge and competencies required for modern accounting and business practices.
2. University management should provide adequate AI-related learning facilities and digital infrastructure, including computer laboratories, internet access, AI software applications, and digital accounting tools, to enhance students' exposure to emerging technologies.
3. Regular workshops, seminars, and training programmes on Artificial Intelligence should be organized for students and lecturers to increase awareness and practical understanding of AI technologies and their applications in accounting and business environments.
4. Universities should establish collaborations with industries, professional accounting bodies, and technology organizations to provide students with practical exposure to AI applications in real-world business and accounting settings.
5. Government and educational regulatory agencies such as the National Universities Commission (NUC) should review and update Business Education curricula to include AI literacy, digital accounting technologies, data analytics, and other emerging technological competencies required in the labour market.

Limitation and Suggestions for Further Studies

1. The study focused only on two universities in Ogun State, findings may not generalize other tertiary institutions in Nigeria.
2. Future studies should be conducted in other universities, colleges of education, and polytechnics across different states in Nigeria to determine whether the findings can be generalized beyond Olabisi Onabanjo University (OOU) and Tai Solarin University of Education (TASUED).
3. Researchers should investigate the influence of Artificial Intelligence literacy on employability skills among students in other disciplines, such as Accounting, Business Administration, Economics, Computer Science, Engineering, and the Social Sciences.
4. A comparative study should be conducted between public and private universities to determine possible differences in the level of AI literacy and employability skills among undergraduate students.

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ARTIFICIAL INTELLIGENCE ADOPTION AND ACCOUNTING COMPETENCY DEVELOPMENT AMONG BUSINESS EDUCATION STUDENTS IN RIVERS STATE UNIVERSITIES

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Abstract
This correlational research study examined the relationship between artificial intelligence (AI) adoption and accounting competency development among Business Education students in Rivers State universities. The population comprised all 209 300 and 400-levels Business Education students (Accounting Option) from Rivers State University (98) and Ignatius Ajuru University of Education (111) who had been exposed to AI-supported learning technologies; therefore, no sampling technique was employed. Data were collected using a researcher-developed instrument titled Artificial Intelligence Adoption and Accounting Competency Questionnaire (AIAACQ), which was validated by experts and found to be reliable. Pearson Product Moment Correlation (PPMC) was used to answer the research questions and test the hypotheses at the 0.05 level of significance. The findings revealed strong positive and statistically significant relationships between AI learning platforms and financial reporting competency, and among other findings. Conclusion was drawn and it was recommended among others that universities integrate AI learning platforms and intelligent tutoring systems into Business Education curricula.
Keywords: Artificial Intelligence Adoption, AI Learning Platforms, Intelligent Tutoring Systems, Financial Reporting Competency, Data Analysis Competency, Business Education Students, Accounting Competency Development

Introduction
Accounting competency has been defined by scholars in various ways. According to Chaffer, and Webb (2017), describe it as the integrated combination of knowledge, skills, and professional judgement that enables an individual to record, classify, summarize, analyse, and communicate financial information accurately for decision-making purposes. In a related view, Albu, Albu, Faff and Hodgson (2011) conceptualize accounting competency as a measurable capability encompassing technical proficiency (such as bookkeeping, financial reporting, and data interpretation) and behavioural attributes (such as ethical judgement, attention to detail, and analytical reasoning) that together determine an individual's readiness for accounting-related tasks in real-world settings. Similarly, Nzewi, Onwuka and Bupo (2018) views accounting competency development as a progressive, skill-building process through which learners move from basic understanding of accounting principles to the ability to apply advanced financial analysis and reporting techniques in dynamic organisational contexts.

From the researcher's perspective, these definitions converge on one central idea: accounting competency is not a static possession but a developmental process; one that is built over time through exposure, practice, and increasingly sophisticated tools of learning. It is both a product (the demonstrated ability to perform accounting tasks) and a process (the ongoing growth in that ability). For business education students in particular, accounting competency development represents the extent to which classroom instruction increasingly mediated by technology and translates into practical, employable financial skills. This positions accounting competency not merely as an academic outcome but as a functional bridge between theoretical instruction and workplace readiness, which is precisely why the tools used to develop it (including AI-based learning tools) matter a great deal.

Accounting competency development among business education students has continued to attract scholarly attention because of the widening gap between what is taught in classrooms and what is demanded in modern accounting practice. Traditionally, competency development in accounting education has relied on manual bookkeeping exercises, case-study analysis, and instructor-led

demonstrations of financial procedures. However, the rapid computerization of accounting functions in organisations has shifted the competency benchmark: students are now expected not only to understand accounting principles but also to demonstrate proficiency in digital tools used for financial reporting, auditing, and data analytics. Thomas (2026) reports that a significant proportion of accounting and business education graduates struggle to transition smoothly into practice because their training emphasized manual procedures rather than the technology-driven processes now standard in the profession. In the same vein, Abbasi (2013) notes that institutions that have integrated technology-assisted instruction into their accounting curricula report improved learner performance in financial analysis and reporting tasks compared to those relying solely on conventional methods. Owenvbiugie and Ojeaga (2022) further observes that competency gaps in business education are increasingly linked not to a lack of content knowledge but to insufficient exposure to the digital and intelligent systems that now dominate accounting practice. These reports collectively suggest that the pathway to closing the competency gap lies substantially in how learning is delivered; a consideration that brings artificial intelligence adoption into sharp focus.

Artificial Intelligence (AI) adoption refers to the process by which individuals, organizations, or institutions accept, integrate, and utilize AI technologies to improve the efficiency, effectiveness, and quality of their activities. It encompasses the willingness to embrace AI-powered tools, the implementation of AI systems into existing processes, and the continuous use of these technologies to achieve organizational or educational objectives. AI adoption goes beyond merely acquiring AI technologies; it involves developing the necessary skills, infrastructure, policies, and organizational culture that support their successful utilization (Venkatesh et al., 2003).

In the educational sector, AI adoption involves the integration of intelligent systems such as AI learning platforms, intelligent tutoring systems, etc., into teaching, learning, assessment, and administrative processes. The goal is to enhance instructional delivery, personalize learning experiences, improve decision-making, automate repetitive tasks, and foster students' acquisition of relevant digital competencies required for the 21st-century workforce.

AI Learning Platforms refer to digital environments powered by artificial intelligence that deliver, adapt, and personalize instructional content to learners based on their pace, performance, and learning style. AI learning platforms are expected to enhance accounting competency development by exposing students to adaptive practice exercises, automated feedback, and real-time performance tracking in areas such as financial reporting and data analysis. Where conventional classroom instruction offers a uniform pace for all learners, AI learning platforms can identify individual weaknesses for instance, a student's recurring errors in preparing financial statements — and respond with targeted remedial content, thereby accelerating the development of practical accounting skills.

On the other hand, Intelligent Tutoring Systems (ITS) are AI-driven instructional systems that simulate one-on-one tutoring by diagnosing a learner's specific misunderstanding and providing step-by-step guided instruction, much like a human tutor would. In relation to accounting competency development, intelligent tutoring systems are particularly relevant to skill areas that require procedural mastery and analytical reasoning, such as interpreting financial data, reconciling accounts, or constructing reports. Because ITS can model a student's problem-solving process and intervene at the precise point of difficulty, its adoption is theorized to have a direct and measurable effect on how quickly and how deeply business education students develop competence in financial reporting and data analysis tasks. However, these dimensions of AI adoption point to the same underlying logic: technology that personalizes and diagnoses learning has the potential to reshape how accounting competencies are built among business education students, moving instruction away from a one-size-fits-all model toward one that is responsive to individual learner needs.

Empirical evidence lends support to the expectation that AI adoption influences or relates with accounting competency outcomes. Abhishek, Nayak, Divyashree, Dinesh and Maradi (2026), in a study on technology-enhanced learning in accounting education, found that students who used adaptive learning platforms demonstrated significantly higher proficiency in financial statement preparation than those taught through conventional lecture methods alone. Similarly, Merdekawati, Nasrun and Ferawati (2024) investigated the effect of intelligent tutoring systems on learners' analytical skills and reported a

measurable improvement in students' ability to interpret and analyse financial data after sustained use of the system. In a related study, Onyemaobi and Nwatarali (2025) examined AI-based instructional tools among tertiary-level business students and found a positive relationship between the frequency of AI tool usage and learners' self-reported and demonstrated accounting competencies.

Despite these findings, most of the available empirical work has been conducted outside Nigeria, and within Nigeria, studies specifically linking AI learning platforms and intelligent tutoring systems to accounting competency development among business education students remain scarce. This gap, particularly as it concerns universities in Rivers State, provides the empirical basis and justification for the present study.

Review of Empirical Studies

Sanusi, Lateef, Idowu, Meduoye, Olanipekun, and Adebanjo (2025) investigated the influence of AI-based learning platforms on the academic performance of Business Education students in Financial Accounting. The study focused on determining how AI-supported instructional platforms enhance students' learning outcomes in accounting-related courses. The findings indicated that AI learning platforms positively influenced students' academic performance in Financial Accounting by improving engagement, understanding of accounting concepts, and practical application of financial reporting skills. However, the study was not conducted in Rivers State universities and concentrated on academic performance rather than financial reporting competency, thereby creating a contextual and conceptual gap that the present study seeks to address.

Similarly, Merdekawati, Nasrun, and Ferawati (2024) examined the impact of technology on accounting education and practice. Their study revealed that AI-driven educational technologies have transformed accounting education by promoting interactive learning, improving students' practical accounting skills, and facilitating the acquisition of professional competencies. The study concluded that integrating emerging technologies into accounting education enhances students' readiness for professional practice. Nevertheless, the study focused broadly on technology integration without specifically examining AI learning platforms and financial reporting competency among Business Education students in Nigerian universities.

Guillén-Pujadas, Alaminos, Carrasco-Aguilar, and Souto-Romero (2025) examined the application of Education 4.0 technologies in teaching corporate financial statement analysis. Their findings demonstrated that technology-enhanced instructional approaches significantly improved students' ability to analyze and interpret financial statements. The study supports the notion that AI-enabled learning environments can strengthen financial reporting competency. However, it focused on Education 4.0 tools generally rather than AI learning platforms as conceptualized in the present study.

Qasim and Kharbat (2020) proposed an integrated accounting curriculum that incorporates blockchain technology, business data analytics, and artificial intelligence into accounting education. Using a curriculum-design approach, the authors argued that accounting programmes should be redesigned to equip students with AI and data analytics competencies demanded by the accounting profession. Although the study did not empirically test students' competencies, it established data analysis competency as an essential outcome of AI-integrated accounting education.

Abhishek, Nayak, Divyashree, Dinesh, and Maradi (2026) employed a mixed-methods design to investigate the integration of metaverse-enabled artificial intelligence and large language models into accounting education. Their findings showed that AI-enhanced instructional environments improved students' analytical reasoning, collaborative learning, and digital accounting skills. The study concluded that generative AI significantly enhances higher-order thinking and analytical competence among accounting students.

Likewise, Avelar, Durso, Boina, and Soares (2025) examined the use of an AI-based educational game to promote transformative learning among accounting students. The study found that gamified AI learning environments enhanced students' analytical thinking, engagement, and reflective learning processes. The authors concluded that AI-supported educational games are effective tools for developing analytical competencies relevant to accounting practice.

Johnson, Phillips, and Chase (2009) developed and evaluated an Intelligent Tutoring System (ITS) for teaching the accounting cycle. Using a quasi-experimental design, the researchers compared students who used the AI tutor with those who relied solely on conventional textbook instruction. The results showed that students who used the intelligent tutoring system achieved approximately a 27% improvement in post-test performance compared to an 8% improvement among students who used only textbooks. The authors concluded that intelligent tutoring

systems significantly enhance students' understanding of accounting procedures through personalized feedback and adaptive instruction.

Similarly, Zulhaimi and Ritchi (2025) examined global trends in AI integration into accounting curricula with emphasis on competency frameworks, educational readiness, and assessment practices. Their study highlighted intelligent instructional technologies as important mechanisms for developing financial reporting competencies required in modern accounting education.

Abdo-Salloum and Al-Mousawi (2025) investigated accounting students' technology readiness, digital competence, and AI adoption in accounting curricula across Lebanese universities. The findings revealed that students' technology readiness, perceived usefulness, and practical AI experiences significantly enhanced AI adoption and improved competency development. The study recommended greater integration of AI-supported practical learning activities into accounting education.

Ng, Leung, Su, Ng, and Chu (2023) developed a competency framework for teachers' AI digital competencies and twenty-first-century skills. The study emphasized that AI-enabled instructional tools, including adaptive tutoring systems, promote students' critical thinking, data interpretation, and analytical reasoning skills. Although the research focused primarily on teachers, it provided strong conceptual support for the role of intelligent tutoring systems in enhancing students' data analysis competency.

Onyemaobi and Nwatarali (2025) examined Business Educators' perceptions of artificial intelligence as a teaching and learning tool in tertiary institutions in Anambra State. The study found that educators perceived AI technologies as effective in improving instructional delivery, students' engagement, and competency development. However, the research focused on educators' perceptions rather than students' competency outcomes.

Sanusi, Lateef, Ojo, Fadipe, Popoola, Oladipupo, and Bakre (2025) investigated the influence of artificial intelligence on the employability skills of accounting graduates from Business Education programmes. The study reported that AI positively enhanced graduates' analytical, digital, and problem-solving competencies, all of which are fundamental components of data analysis competency in accounting practice. Nevertheless, the study examined employability skills rather than the direct influence of intelligent tutoring systems on students' data analysis competency.

The reviewed studies consistently demonstrate that artificial intelligence technologies—including AI learning platforms, intelligent tutoring systems, AI-supported games, and adaptive instructional environments enhance accounting education by improving financial reporting, analytical reasoning, digital competence, and employability skills. However, three major gaps emerge. First, most empirical studies were conducted outside Nigeria, while the few Nigerian studies focused on other states such as Anambra rather than Rivers State. Second, several studies adopted conceptual or curriculum-development approaches instead of empirically examining students' competencies. Third, no previous study simultaneously investigated AI learning platforms and intelligent tutoring systems as separate dimensions of AI adoption in relation to both financial reporting competency and data analysis competency among Business Education students in Rivers State universities. These contextual, methodological, and conceptual gaps justify the present study.

Statement of the Problem

Business education students are trained to acquire practical accounting skills that will prepare them for employment or self-reliance in a rapidly digitalizing economy. However, observations and reports suggest that many graduates of business education programmes in Rivers State universities continue to exhibit weak competencies in critical accounting tasks such as financial reporting and data analysis, despite completing accounting-related courses. This gap raises concern because employers increasingly expect entry-level accounting personnel to be proficient not only in manual bookkeeping but also in interpreting financial data and generating reports using modern, technology-driven methods. Artificial intelligence tools such as AI learning platforms and intelligent tutoring systems have been introduced into some educational contexts with the promise of personalizing instruction and closing such competency gaps. Yet, it remains unclear to what extent business education students in Rivers State universities are adopting these AI-driven tools, and more importantly, whether their adoption translates into measurable improvement in financial reporting and data analysis competencies. Existing studies on AI in education, as reviewed above, have largely focused on general learning outcomes or have been conducted in contexts outside Rivers State, leaving a contextual and empirical vacuum regarding how AI adoption specifically shapes accounting competency development among business education students in this locality. It is against this backdrop that this study seeks to answer the question: what is the relationship between artificial intelligence adoption and accounting competency development among business education students in Rivers State universities?

Purpose of the Study

The purpose of this study is to examine the relationship between artificial intelligence adoption and accounting competency development among business education students in Rivers State universities. Specifically, the study sought to:

1. Determine the extent to which AI learning platforms relate to financial reporting competency among business education students in Rivers State universities.
2. Determine the extent to which AI learning platforms relate to data analysis competency among business education students in Rivers State universities.
3. Examine the extent to which intelligent tutoring systems relate to financial reporting competency among business education students in Rivers State universities.
4. Examine the extent to which intelligent tutoring systems relate to data analysis competency among business education students in Rivers State universities.

Research Questions

The following research questions guide the study

1. To what extent do AI learning platforms relate to financial reporting competency among Business Education students in Rivers State universities?
2. To what extent do AI learning platforms relate to data analysis competency among Business Education students in Rivers State universities?
3. To what extent do intelligent tutoring systems relate to financial reporting competency among Business Education students in Rivers State universities?
4. To what extent do intelligent tutoring systems relate to data analysis competency among Business Education students in Rivers State universities?

Hypotheses

The following hypotheses is formulated and tested at 0.005 level of significance

H_{01}: There is no significant relationship between AI learning platforms and financial reporting competency among Business Education students in Rivers State universities.

H_{02}: There is no significant relationship between AI learning platforms and data analysis competency among Business Education students in Rivers State universities.

H_{03}: There is no significant relationship between intelligent tutoring systems and financial reporting competency among Business Education students in Rivers State universities.

H_{04}: There is no significant relationship between intelligent tutoring systems and data analysis competency among Business Education students in Rivers State universities.

METHODOLOGY

This study adopted a correlational research design. The correlational design was considered appropriate because the study sought to determine the relationship between Artificial Intelligence (AI) adoption, measured by AI learning platforms and intelligent tutoring systems, and accounting competency, measured by financial reporting competency and data analysis competency, among Business Education students in Rivers State universities without manipulating any of the study variables (Nwankwo, as cited in Akpomi & Kayii, 2021). The population of the study comprised all 300 and 400 Level Business Education students (Accounting Option) in Ignatius Ajuru University of Education (IAUE) and Rivers State University (RSU) who had completed accounting-related courses and had been exposed to AI-supported learning technologies in the course of their programme. The total population consisted of 209 students, comprising 111 students from Ignatius Ajuru University of Education and 98 students from Rivers State University. Since the population was manageable, no sampling technique was employed. Instead, the entire population was studied using the census approach. Data were collected using a structured questionnaire titled "Artificial Intelligence Adoption and Accounting Competency Questionnaire (AIAACQ)." The instrument was designed on a four-point modified Likert scale of Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). The questionnaire consisted of two sections. Section “A” elicited respondents' demographic information, while Section B contained items measuring the dimensions of Artificial Intelligence adoption (AI learning platforms and intelligent tutoring systems) and accounting competency (financial reporting competency and data analysis competency). The instrument was subjected to face and content validation by experts in Business Education (Accounting Option) and Measurement and Evaluation to ensure that the questionnaire adequately measured the variables of the study. The reliability of the instrument was established using Cronbach's Alpha, and a reliability coefficient of 0.70 or above was considered acceptable for internal consistency. The research questions were answered using Pearson Product Moment Correlation Coefficient (PPMC) to determine the extent of the relationship between the independent and dependent variables. The hypotheses were tested using the Pearson Product Moment Correlation Coefficient (PPMC) at the 0.05 level of

significance. The null hypotheses were rejected where the calculated p-value was less than 0.05 and retained where the p-value was greater than 0.05. All data analyses were carried out using the Statistical Package for the Social Sciences (SPSS), Version 27.0.

Results

Research Question 1: To what extent do AI learning platforms relate to financial reporting competency among Business Education students in Rivers State universities?

Table 1: Correlations between AI learning platforms and financial reporting competency

		AI learning platforms	financial reporting competency
AI learning platforms	Pearson Correlation	1	.775**
	Sig. (2-tailed)		.000
	N	209	209
financial reporting competency	Pearson Correlation	.775**	1
	Sig. (2-tailed)	.000	
	N	209	209

**. Correlation is significant at the 0.01 level (2-tailed).

The result in Table 1 revealed a Pearson correlation coefficient (r) of 0.775 between AI learning platforms and financial reporting competency among Business Education students in Rivers State universities, with a p-value of 0.000**,** which is less than the 0.05 level of significance. The correlation coefficient of 0.775 indicates a strong positive relationship between AI learning platforms and financial reporting competency. This implies that increased utilization of AI learning platforms is associated with higher financial reporting competency among Business Education students. Therefore, AI learning platforms contribute substantially to improving students' financial reporting competency.

Research Question 2: To what extent do AI learning platforms relate to data analysis competency among Business Education students in Rivers State universities?

Table 2: Correlations between AI learning platforms and data analysis competency

		AI learning platforms	data analysis Competency
AI learning platforms	Pearson Correlation	1	.751**
	Sig. (2-tailed)		.000
	N	209	209
data analysis Competency	Pearson Correlation	.751**	1
	Sig. (2-tailed)	.000	
	N	209	209

**. Correlation is significant at the 0.01 level (2-tailed).

The findings in Table 2 showed a Pearson correlation coefficient (r) **of** 0.751 between AI learning platforms and data analysis competency, with a p-value of 0.000**.** The correlation coefficient of **0.751** indicates a strong positive relationship between AI learning platforms and data analysis competency. This suggests that greater use of AI learning platforms enhances students' ability to perform data analysis tasks. Consequently, AI learning platforms play a significant role in developing data analysis competency among Business Education students in Rivers State universities.

Research Question 3: To what extent do intelligent tutoring systems relate to financial reporting competency among Business Education students in Rivers State universities?

Table 3: Correlations between intelligent tutoring systems and financial reporting competency

		intelligent tutoring system	financial reporting competency
intelligent tutoring system	Pearson Correlation	1	.771**
	Sig. (2-tailed)		.000
	N	209	209
financial reporting competency	Pearson Correlation	.771**	1
	Sig. (2-tailed)	.000	
	N	209	209

**. Correlation is significant at the 0.01 level (2-tailed).

The result in Table 3 indicated a Pearson correlation coefficient (r) of 0.771 between intelligent tutoring systems and financial reporting competency, with a p-value of 0.000. The correlation coefficient signifies a strong positive

relationship between intelligent tutoring systems and financial reporting competency. This implies that students who make greater use of intelligent tutoring systems are likely to demonstrate better financial reporting competency. Thus, intelligent tutoring systems positively influence the acquisition of financial reporting competency.

Research Question 4: To what extent do intelligent tutoring systems relate to data analysis competency among Business Education students in Rivers State universities?

Table 4: Correlation intelligent tutoring systems and data analysis competency

		intelligent tutoring system	data analysis competency
intelligent tutoring system	Pearson Correlation	1	.755**
	Sig. (2-tailed)		.000
	N	209	209
data analysis competency	Pearson Correlation	.755**	1
	Sig. (2-tailed)	.000	
	N	209	209

**. Correlation is significant at the 0.01 level (2-tailed).

The findings revealed a Pearson correlation coefficient (r) of **0.755** between intelligent tutoring systems and data analysis competency, with **a** p-value of 0.000**.** This coefficient indicates a strong positive relationship between intelligent tutoring systems and data analysis competency. The result suggests that increased exposure to intelligent tutoring systems enhances students' competency in data analysis. Therefore, intelligent tutoring systems are strongly associated with improved data analysis competency among Business Education students in Rivers State universities.

Table 5: Summary of Hypotheses Testing

Hypothesis	r-value	p-value	Decision	Interpretation
H_{01}	0.775	0.000	Reject H_{o1}	Strong, significant positive relationship
H_{02}	0.751	0.000	Reject H_{o2}	Strong, significant positive relationship
H_{03}	0.771	0.000	Reject H_{o3}	Strong, significant positive relationship
H_{04}	0.755	0.000	Reject H_{o4}	Strong, significant positive relationship

H_{01}: There is no significant relationship between AI learning platforms and financial reporting competency among Business Education students in Rivers State universities.

Table 5 for hypothesis 1 analysis yielded a Pearson correlation coefficient of r = 0.775 with a **p-value = 0.000**, which is less than the 0.05 level of significance ($p < 0.05$). Therefore, the null hypothesis is **rejected**. This indicates that there is a significant positive relationship between AI learning platforms and financial reporting competency among Business Education students in Rivers State universities.

H_{o2}: There is no significant relationship between AI learning platforms and data analysis competency among Business Education students in Rivers State universities.

Table 5 for hypothesis 2 analysis produced a Pearson correlation coefficient of r = 0.751 with a **p-value = 0.000**, which is less than 0.05. Consequently, the null hypothesis is rejected. The result indicates that there is a significant positive relationship between AI learning platforms and data analysis competency among Business Education students in Rivers State universities.

H_{o3}: There is no significant relationship between intelligent tutoring systems and financial reporting competency among Business Education students in Rivers State universities.

Table 5 for hypothesis 3 result showed a Pearson correlation coefficient of r = 0.771 with a **p-value = 0.000**, which is below the 0.05 level of significance. Therefore, the null hypothesis is **rejected**. This means that there is a significant positive relationship between intelligent tutoring systems and financial reporting competency among Business Education students in Rivers State universities.

H_{o4}: There is no significant relationship between intelligent tutoring systems and data analysis competency among Business Education students in Rivers State universities.

Table 5 for hypothesis 4 analysis yielded a Pearson correlation coefficient of r = 0.755 with a p-value = 0.000**,** which is less than 0.05. Hence, the null hypothesis **is** rejected. The finding indicates that there is a significant positive relationship between intelligent tutoring systems and data analysis competency among Business Education students in Rivers State universities.

Discussion of Findings

The findings of research question 1 and hypothesis 1 revealed a strong positive and significant relationship between AI learning platforms and financial reporting competency among Business Education students in Rivers State universities. This implies that increased utilization of AI learning platforms enhances students' competency in financial reporting through improved understanding of accounting principles, financial statement preparation, and practical application of accounting concepts. The significant result further indicates that AI learning platforms provide personalized learning experiences, immediate feedback, interactive exercises, and practical simulations that strengthen students' financial reporting competency. The finding is consistent with Sanusi, Lateef, Idowu, Meduoye, Olanipekun, and Adebanjo (2025), who reported that AI-based learning platforms significantly improved Business Education students' academic performance in Financial Accounting by enhancing engagement, understanding of accounting concepts, and practical application of financial reporting skills. Although their study measured academic performance rather than financial reporting competency, both studies demonstrate that AI-supported learning environments positively influence students' accounting-related outcomes. The present finding also corroborates that of Merdekawati, Nasrun, and Ferawati (2024), who found that AI-driven educational technologies transformed accounting education by promoting interactive learning, improving practical accounting skills, and enhancing professional competencies. Likewise, the result agrees with Guillén-Pujadas, Alaminos, Carrasco-Aguilar, and Souto-Romero (2025), who established that Education 4.0 technologies significantly improved students' ability to analyze and interpret financial statements. Although their study focused on broader digital technologies, the present finding specifically demonstrates that AI learning platforms contribute significantly to financial reporting competency among Business Education students in Rivers State universities.

The findings of research question 2 and hypothesis 2 revealed further showed a strong positive and significant relationship between AI learning platforms and data analysis competency among Business Education students in Rivers State. This suggests that the use of AI learning platforms equips students with the ability to organize, interpret, analyse, and present accounting data effectively. AI-supported learning environments expose students to practical analytical tools and interactive problem-solving activities, thereby enhancing their data analysis competency. The finding supports the work **of** Qasim and Kharbat (2020)**,** who argued that integrating artificial intelligence, blockchain technology, and business data analytics into accounting curricula is essential for developing the analytical competencies required in modern accounting practice. Although their work was conceptual rather than empirical, the present study provides empirical evidence supporting their proposition that AI integration enhances data analysis competency. Similarly, the result agrees with Abhishek, Nayak, Divyashree, Dinesh, and Maradi (2026)**,** whose mixed-methods study found that AI-enhanced instructional environments improved students' analytical reasoning, collaborative learning, and digital accounting skills. The finding is also consistent with Avelar, Durso, Boina, and Soares (2025), who reported that AI-based educational games enhanced accounting students' analytical thinking, engagement, and reflective learning, leading to improved analytical competencies. Collectively, these studies reinforce the present finding that AI learning platforms significantly contribute to the development of data analysis competency among Business Education students.

The findings of research question 3 and hypothesis 3 established **a** strong positive and significant relationship between intelligent tutoring systems and financial reporting competency among Business Education students in Rivers State universities. This indicates that intelligent tutoring systems significantly improve students' financial reporting competency through adaptive instruction, personalized learning pathways, continuous assessment, and immediate corrective feedback. Such AI-driven instructional support enables students to master accounting procedures and financial reporting concepts more effectively. The finding is in agreement with Johnson, Phillips, and Chase (2009)**,** who found that students who learned through an Intelligent Tutoring System recorded substantially higher post-test performance than those taught using conventional textbooks. Their study concluded that intelligent tutoring systems enhance students' understanding of accounting procedures through personalized instruction and adaptive feedback. The similarity between both studies demonstrates the effectiveness of intelligent tutoring systems in improving accounting-related competencies. The finding also corroborates the study of Zulhaimi and Ritchi (2025), which identified intelligent instructional technologies as effective mechanisms for developing financial reporting competencies within modern accounting curricula. Likewise, the result agrees with Abdo-Salloum and Al-Mousawi (2025), who reported that students' technology readiness and practical AI experiences significantly enhanced competency development and AI adoption in accounting education. These studies collectively support the present finding that intelligent tutoring systems significantly improve financial reporting competency among Business Education students.

Lastly, The findings of research question 4 and hypothesis 4 revealed a strong positive and significant relationship between intelligent tutoring systems and data analysis competency among Business Education students in Rivers State universities. This suggests that intelligent tutoring systems enhance students' analytical reasoning, problem-solving abilities, interpretation of financial information, and data-driven decision-making skills through individualized learning experiences and adaptive instructional support. The finding aligns with Ng, Leung, Su, Ng, and Chu (2023)**,** who developed an AI competency framework and concluded that AI-enabled instructional technologies promote critical thinking, data interpretation, and analytical reasoning skills. Although their study focused on teachers' AI competencies, its conceptual framework supports the present finding that intelligent tutoring systems enhance students' data analysis competency. The finding also agrees with Onyemaobi and Nwatarali (2025)**,** who reported that Business Educators perceived artificial intelligence as an effective instructional tool for improving students' engagement and competency development in tertiary institutions. Although their study focused on educators' perceptions, the present study provides empirical evidence that intelligent tutoring systems significantly improve students' data analysis competency. Furthermore, the finding corroborates Sanusi, Lateef, Ojo, Fadipe, Popoola, Oladipupo, and Bakre (2025)**,** who found that artificial intelligence positively enhanced accounting graduates' analytical, digital, and problem-solving competencies that are fundamental to effective data analysis.

Conclusion

Based on the findings of this study, it was concluded that artificial intelligence (AI)-driven instructional technologies significantly enhance the competency development of Business Education students in Rivers State universities. Specifically, the study established that AI learning platforms have strong positive and significant relationships with both financial reporting competency and data analysis competency. Similarly, intelligent tutoring systems were found to be strongly and significantly related to students' financial reporting competency and data analysis competency. These findings indicate that the adoption of AI-enabled instructional tools provides personalized learning experiences, adaptive feedback, practical simulations, and interactive learning opportunities that improve students' accounting knowledge and analytical skills.

Recommendations

Based on the findings and conclusion of the study, the following recommendations are made:

1. University management should integrate AI learning platforms into the Business Education curriculum to improve students' financial reporting competency through interactive and technology-enhanced learning experiences.
2. Business Education lecturers should regularly utilize AI learning platforms such as intelligent accounting software, virtual learning environments, and AI-assisted instructional applications to strengthen students' data analysis competency and practical accounting skills.
3. Universities and curriculum planners should incorporate intelligent tutoring systems into accounting and Business Education courses to provide personalized instruction, immediate feedback, and adaptive learning that enhance students' financial reporting competency.
4. University administrators should provide adequate ICT infrastructure, reliable internet connectivity, and AI-enabled learning facilities to facilitate the effective implementation and utilization of AI learning platforms and intelligent tutoring systems.

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THE ROLE OF ARTIFICIAL INTELLIGENCE TOOLS IN RESHAPING THE OCCUPATIONAL WORK PROCESSES AMONG SECRETARIES IN ABIA STATE CIVIL SERVICE

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Abstract
This study examined the role of Artificial Intelligence (AI) tools in reshaping the occupational work processes among secretaries in the Abia State Civil Service. Precisely, the study determined the role of AI tools in reshaping the customer management process, office machinery management process, and information management process among secretaries. A descriptive survey research design was adopted. The population comprises 240 administrative secretaries across several ministries, departments, and agencies (MDAs) within the Abia State Civil Service Secretariat, Umuahia. Due to the manageable size, the entire population was studied hence census sampling. A structured 4-point rating scale questionnaire titled 'Artificial Intelligence and Secretarial Work Processes Questionnaire (AISWPQ)' was validated by three experts and yielded a Cronbach's alpha reliability coefficient of 0.87. Data collected were analyzed using Mean to answer three research questions. Standard deviation was used to determine the homogeneity of the response, whereas the independent samples t-test was used to test three null hypotheses at a 0.05 level of significance. The findings revealed that AI tools play a highly transformative role in reshaping customer management by automating schedules and responses, office machinery management via predictive maintenance and IoT synchronization, and information management through intelligent sorting, retrieval, and secure digital archiving. Furthermore, the t-test analysis showed that there was no significant difference between the mean ratings of male and female secretaries regarding the role of AI tools in customer management, office machinery management, and information management processes. Based on these findings, it was concluded that AI tools are vital catalysts for administrative optimization in the public service. It was recommended, among others, that the Abia State Civil Service Commission should invest in comprehensive AI-literacy capacity-building workshops and upgrade institutional office infrastructure to alleviate technological disruption anxieties and bridge identified structural gaps.
Keywords: Artificial Intelligence Tools, Occupational Work Processes, Customer Management, Office Machinery Management, Information Management.

Introduction
The universal administrative environment is presently undergoing an exceptional organizational change triggered by the Fourth Industrial Revolution (4IR). At the heart of this technological paradigm shift is Artificial Intelligence (AI), a multi-disciplinary domain of computer science dedicated to engineering systems gifted of performing complex cognitive tasks traditionally reserved for human intellect. In public sector institutions across developing economies, particularly within the Nigerian civil service context, administrative workflows have historically relied on unbending, manual, and paper-intensive protocols. However, present day fiscal pressures, governance requirements, and international benchmarks for public sector efficiency have necessitated a comprehensive re-evaluation of institutional work processes. Secretaries and administrative office professionals serve as the operational nerve center of these institutions, managing the vital lifelines of data communication, stakeholder relations, and material

infrastructure. Consequently, understanding how emerging AI modalities penetrate and alter the professional responsibilities of these administrative actors has become a focal theme in organizational scholarship and Office Technology and management students (Nwosu & Oguejiofor, 2024; Eze-Desy et al, 2025). To understand the physical changes demanded of the modern administrative workforce, it is critical to separate the core construct of Artificial Intelligence. Broadly conceptualized, AI encapsulates an array of computational systems that simulate human intelligence through specialized algorithm architectures. These include machine learning (ML), natural language processing (NLP), robotic process automation (RPA), predictive data analytics, and computerized expert systems (Eze & Chinedu, 2024). In the present day corporate and public administrative ground, AI is no longer an advanced idea; it has established as practical tools rooted in daily tasks. These devices range from generative AI large language models (such as Open AI's GPT models and Google's Gemini) to advanced data management dashboards, virtual administrative assistants, and internet of things (IoT) coordinated apparatus. The primary value proposition of these technologies lies in their capacity to handle high volume, repetitive, and rule-based tasks with optimal velocity, low error margins, and minimal human intervention, thereby shifting organizational resources toward strategic, high-value cognitive operations (Agbamu, 2024).

For secretaries executing duties within complex administrative structures like the Abia State Civil Service, the detailed AI tools that can be deployed in the modern office are vast and varied. Automated scheduling applications (such as Calendly or Microsoft Viva Insights) separately coordinate official appointments, modifying the communication of traditional multi coated mails. AI-powered customer relationship management (CRM) systems and automated conversational chatbots filter and respond to public inquiries, safeguarding unceasing official line. Furthermore, smart voice to text transcription platforms (such as Otter.ai or integrated Microsoft Dictate) utilize NLP to translate minutes of executive meetings into organized text promptly, fundamentally altering the stenographic profile of secretarial roles. Document management systems integrated with optical character recognition (OCR) automatically index, categorize, and cross-reference public files, facilitating seamless digital retrieval. Additionally, intelligent office machinery management utilities track the duty cycles of digital copiers, servers, and printing hubs, deploying predictive algorithms to alert operators regarding maintenance thresholds or inventory shortages before operational bottlenecks manifest (Okoye & Ani, 2024).

The introduction of these technological modalities directly impacts the occupational work processes of secretarial staff. An occupational work process is defined as the systematic configuration of specialized procedures, relational dynamics, mechanical engagements, and analytical tasks executed by an operational professional to achieve explicit institutional milestones (Urinrin & Babalola, 2024). Additionally, occupational work processes is basically the collection of step by step tasks and activities individuals do as part of a specific job or occupation. It is the planning, execution, monitoring and quality control of the entire for administrative secretaries, this overarching operational structure is traditionally segmented into three major domains: customer management processes, office machinery management processes, and information management processes.

The customer management process entails the administrative protocols designed to govern interactions between the organization and its external/internal publics. In other words management of customer is the process of building, maintaining and improving relationships between an organization and its customers to keep them satisfied and loyal. In a civil service framework, this revolves around managing citizen complaints, routing inter-ministerial visitors, coordinating diplomatic protocols, and sustaining public relations goodwill. The integration of AI into this domain introduces conversational agents and auto-responders that handle routine administrative triage, enabling the secretary to function as a strategic relationship manager rather than a passive gatekeeper (Asuquo, 2024). Similarly, Customer Management process are the entire steps a business takes to attract, serve, keep and grow customers. In other word, it’s how a business owner treat people from the first time to years later. It is important to note that customer’s acquisition, onboarding, service and support, retention, growth and development is solely dependent on customer management. To actualize the customer management aims of professional secretaries the required machinery must be utilized and also managed.

The office machinery management process holistically includes the procurement, setting, distribution, operational tracking, and regular maintenance scheduling of the material technical infrastructure within the office. Office machinery comprises the mechanical, and electronics tools used in administrative settings to process information, produce documents, handle records and support daily workflow

(Emeasoba, 2018). Over the years office machinery has evolved from standalone mechanical devices (like manual typewriters and spirit duplicator) into smart networked digital hubs powered by cloud integration and AI. The common types of office machinery used in modern administrative workplaces includes: Document Creation and Reproduction Machines: These includes Multifunction Printers (MFPs) that combines printing, scanning, copying and faxing into a single networked unit. The High speed Digital Duplicators and Heavy duty scanners processes high volume paperwork and converts physical archives into searchable PDFs, the binding and finishing equipment that comb binders, thermal binders, and paper cutters used to produce formal reports and publications. Generally, secretaries monitored typewriter or separate desktop setups manually, a sensitive method that often resulted in stoppage. Today, AI-instilled smart office systems permit secretaries to supervise interconnected office gadgets through combined digital platforms, turning technical upkeep into a preemptive data-driven monitoring routine (Okon & Udoh, 2025). The emergence and use these modern machines ultimately enhances the efficiency of information management processes in the office.

Information management process represents the ultimate core of secretarial practice which covers the collection, verification, storage, replication, rapid retrieval, and secure disposition of administrative data, classified memos, and statutory records. Information management involves the systematic gathering, processing, storing, and recovery of data to support organizational decision making**,** with AI tools these procedures are now faster, more precise and less disposed to human errors and administrative disaster. AI fundamentally transforms administrative process by substituting manual indexing and physical filling with intelligent digital archiving, auto tagging, and automated data compliance audits, drastically decreasing latency in administrative decision-making (Ibe & Nwachukwu, 2024).
To analyze these operational shifts objectively, it is crucial to clarify who a secretary is and the nature of their professional work within the public service hierarchy. A secretary is a trained administrative professional who possesses specialized technical, communicative, and behavioral competencies required to manage office operations, secure institutional memory, and provide high-level executive support (Federal Republic of Nigeria, 2024). In the civil service structure, the duties of a secretary go far beyond mere clerical typing or answering telephone inquiries; they act as the essential bridge between senior executive directors and tactical operational teams. Their work requires strict adherence to administrative codes, precision in document generation, high emotional intelligence in public relations, and absolute discretion in processing confidential government papers. Consequently, any disruption to the secretarial work process reverberates across the entire governance apparatus of the state. Secretaries in Abia State civil service are made of males and females. Gender is the determination weather a person is either a male or female, it is the social and cultural meaning given to being male or female, or other identity and it shapes how people are treated, what roles they play and how organization functions. In an office gender doesn't change what a secretary does but influence how the role is perceived, performed and supported by the system. Gender is a concept shaped by cultural, social and linguistic environments. This means that people may recognize and express gender roles and identities differently.

Despite the indisputable advantages of administrative automation, the deployment of AI tools within the Abia State Civil Service presents reflective physical and psychological challenges. The rapid introduction of intelligent systems has generated intense technological anxiety among public servants, who fear that advanced automation might make their skills obsolete and lead to career displacement (Amadi & George, 2025). While several recent studies have explored the general impact of automation in corporate offices (e.g., Nwosu & Oguejiofor, 2024, very little empirical research explicitly focuses on the sub-national public sector in South East Nigeria, particularly within the Abia State Civil Service. Existing literature frequently addresses AI from a purely theoretical standpoint, overlooking how these tools reshape specific, day to day work scopes such as customer management, machinery oversight, and information processing among public sector secretaries. Additionally, there is an outstanding inconsistency regarding the influence of demographic variables, such as gender, on technology adoption and perception within the civil service. Some studies suggest gender based variations due to historical differences in digital training, while others show uniform views as a result of standardized institutional exposure. This study directly addresses this gap by providing an empirical analysis of the role of AI tools in reshaping secretarial work processes in the Abia State Civil Service, examining specific operational dimensions and analyzing the influence of demographic factors to build a balanced, data-driven framework.

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Statement of the Problem

Notwithstanding global progressions in public sector automation, the secretarial cadre in the Abia State Civil Service faces distinct organizational bottlenecks. Administrative processes are regularly bogged down by bureaucratic delays, manual filing errors, and inefficient physical visitor management systems. Secretaries are frequently overwhelmed by repetitive clerical tasks, leading to slow response times in handling public inquiries (customer management) and poor maintenance tracking of essential office infrastructure (machinery).

Furthermore, the transitioning process from manual typewriter legacy systems to basic digital tools was slow; now, the abrupt pressure to utilize AI-driven tools introduces a technological disparity. Without a clear framework, the introduction of automated systems risks creating resistance, data mishandling, and operational inefficiencies. There is a lack of localized empirical documentation regarding how these emerging AI tools specifically alter the day-to-day secretarial work processes in Umuahia. Therefore, this study addresses the problem of how AI technologies can be effectively integrated to reshape and optimize secretarial functions without disrupting organizational workflows.

Purpose of the Study

The primary purpose of this study was to determine the role of Artificial Intelligence (AI) tools in reshaping the occupational work processes among secretaries in the Abia State Civil Service. Specifically, the study sought to determine:

1. The role of AI tools in reshaping the customer management process among secretaries in the Abia State Civil Service.
2. The role of AI tools in reshaping the office machinery management process among secretaries in the Abia State Civil Service.
3. The role of AI tools in reshaping the information management process among secretaries in the Abia State Civil Service.

Research Questions

The following research questions guided the study:

1. What is the role of AI tools in reshaping the customer management process among secretaries in the Abia State Civil Service?
2. What is the role of AI tools in reshaping the office machinery management process among secretaries in the Abia State Civil Service?
3. What is the role of AI tools in reshaping the information management process among secretaries in the Abia State Civil Service?

Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

Ho1: There is no significant difference between the mean ratings of male and female secretaries on the role of AI tools in reshaping the customer management process among secretaries in the Abia State Civil Service.

Ho2: There is no significant difference between the mean ratings of male and female secretaries on the role of AI tools in reshaping the office machinery management process among secretaries in the Abia State Civil Service.

Ho3: There is no significant difference between the mean ratings of male and female secretaries on the role of AI tools in reshaping the information management process among secretaries in the Abia State Civil Service.

Methodology

This study adopted a descriptive survey research design. Descriptive survey allow researchers to collect quantifiable data from a designated population to analyze patterns, attitudes, and current conditions without manipulating variables (Nworgu, 2023). The study was conducted among secretaries in Abia State public service in Umuahia. The population comprises 240 registered administrative secretaries (89 males and 156 females) actively in service. Given that the entire population size was manageable. The primary instrument for data collection was a structured, researcher-designed instrument designated as the 'Artificial Intelligence and Secretarial Work Processes Questionnaire (AISWPQ)'. The instrument consisted of two primary sections: Section A captured the demographic profile of the respondents (specifically gender), while Section B contained 15 distinct items structured across three clusters aligned with the specific purposes of the study (5 items each for Customer Management, Office

Machinery Management, and Information Management). The responses were aligned to a 4-point rating scale with values assigned as follows: Strongly Agree (SA) = 4 points, Agree (A) = 3 points, Disagree (D) = 2 points, and Strongly Disagree (SD) = 1 point. To guarantee face and content validity, the initial draft of the AISWPQ was submitted to three independent experts: two senior academics from Business Education programme, and one expert measurement and evaluation, Michael Opkara University of Agriculture, Umudike. Their critiques were integrated into the final revision. The internal consistency and reliability of the instrument were empirically verified by administering the questionnaire to a pilot cohort of 20 secretaries in the neighboring Rivers State Civil Service, who were not part of the final study. The data obtained from the pilot test were subjected to Cronbach's alpha analysis, which yielded an overall internal reliability coefficient of 0.87, confirming the high reliability of the instrument for scientific fieldwork.

The questionnaires were administered directly by the researcher alongside two briefed research assistants who visited the various MDAs over a three-week period. Out of the 240 questionnaires distributed, 228 (89 males and 150 females) were successfully retrieved completely filled, representing an optimal response rate of 95.0%. Data gathered were analyzed using descriptive and inferential statistical techniques. Research questions were answered using Mean (X). For decision-making, a standard criterion mean benchmark of 2.50 was adopted; item or cluster mean scores equal to or greater than 2.50 were accepted as indicating an affirmative role, while mean scores below 2.50 were rejected. The standard deviations were analyzed to determine the homogeneity or dispersion of the responses around the mean. The three null hypotheses were tested using Independent Samples t-test statistics at a 0.05 level of significance. A null hypothesis was rejected if the calculated t-value was greater than or equal to the critical t-value, or if the calculated p-value was less than 0.05; otherwise, the null hypothesis was sustained.

Results

Research Question 1: What is the role of AI tools in reshaping the customer management process among secretaries in the Abia State Civil Service?

Table 1: Mean and Standard Deviation Ratings on the Role of AI in Customer Management (N=228)

S/N	Item Statement: AI in Customer Management	Mean	SD	Decision
1	Automated scheduling makes it easy to plan ministerial visits without manual work.	3.12	0.74	Agree
2	AI-powered CRM platforms advance replies to citizen queries and official complaints.	2.98	0.81	Agree
3	AI email cataloguing filters sort public inquiries automatically based on related urgency.	3.04	0.78	Agree
4	Smart data tracking builds complete communicative and preference logs of shareholders.	2.86	0.85	Agree
5	Conversational virtual agents manage high-volume routine inquiries, saving secretary's time.	3.24	0.69	Agree
	Cluster Mean and Standard Deviation	3.05	0.77	Agree

Data presented in Table 1 demonstrate that all items scored substantially above the 2.50 criterion mean benchmark. Item 5, evaluating conversational virtual agents, recorded the highest mean score (X=3.24, SD=0.69), demonstrating that automation of routine communications is perceived as highly beneficial. The cluster mean of 3.05 indicates an overall strong agreement that AI tools radically reshape the customer management processes of public sector secretaries by optimizing communication response rates and reducing processing friction.

Research Question 2: What is the role of AI tools in reshaping the office machinery management process among secretaries in the Abia State Civil Service?

Table 2: Mean and Standard Deviation Ratings on the Role of AI in Office Machinery Management (N=228)

S/N	Item Statement: AI in Office Machinery Management Processes	Mean	SD	Decision
1	Analytic diagnostics alert secretaries concerning critical technical machine failures before they occur.	2.94	0.83	Agree
2	AI inventory tracking monitors office supply consumption levels and prompts auto-replenishment.	2.81	0.88	Agree
3	IoT-synchronized office devices allow cross-platform hardware monitoring from a centralized dashboard.	2.76	0.91	Agree
4	Automated power management schedules optimize device lifespan based on operational workflows.	3.02	0.76	Agree
5	AI-driven usage reporting monitors hardware bottlenecks and transfers printing linkages.	2.89	0.82	Agree
	Cluster Mean and Standard Deviation	2.88	0.84	Agree

The data in Table 2 outline that the administrative secretaries agreed that AI tools actively reshape office machinery management. The highest individual mean within this cluster was attained by Item 9 (X=3.02, SD=0.76), indicating that automated power and lifecycle optimization has immediate operational merit. The cluster mean of 2.88 signifies that while machinery management is slightly constrained by the state's baseline infrastructure, the operational shift toward automated diagnostics is strongly evident.

Research Question 3: What is the role of AI tools in reshaping the information management process among secretaries in the Abia State Civil Service?

Table 3: Mean and Standard Deviation Ratings on the Role of AI in Information Management (N=228)

S/N	Item Statement: AI in Information Management Processes	Mean	SD	Decision
1	AI-powered optical character recognition (OCR) automates metadata tagging and digital text indexing.	3.35	0.62	Agree
2	Normal language processing platforms excerpt summary points from lengthy ministerial briefs.	3.18	0.71	Agree
3	Algorithmic document sorting enables instant retrieval of classified files and public circulars.	3.42	0.58	Agree
4	Automated compliance monitors audit storage frameworks to enforce secure data preservation rules.	2.91	0.85	Agree
5	Smart backup networks execute seamless real-time syncing of structural institutional data.	3.26	0.66	Agree
	Cluster Mean and Standard Deviation	3.22	0.68	Agree

Table 3 shows the highest cluster mean across the entire investigation (X=3.22, SD=0.68). Item 13 recorded an outstanding individual mean of 3.42 (SD=0.58), demonstrating that the capability of AI tools to sort and provide instantaneous retrieval of institutional documents completely transforms the traditional administrative workflow. This proves that information management is the domain experiencing the most profound technological transformation.

Hypothesis Testing

Hypothesis 1 (Ho1): There is no significant difference between the mean ratings of male and female secretaries on the role of AI tools in reshaping the customer management process.

Table 4: Independent Samples t-Test of the mean ratings of Male and Female Secretaries on AI in Customer Management

Gender	N	Mean	SD	Df	t-cal	p-value	Decision
Male	78	3.02	0.79				
				226	0.54	0.59	NS
Female	150	3.07	0.76				

The t-test data in Table 4 reveals that the calculated t-value is 0.54 with a corresponding p-value of 0.59. Since the p-value is strictly greater than the designated alpha level of 0.05, the null hypothesis (Ho1) is sustained. This implies that male and female secretaries share a unified perspective regarding the transformative role of AI tools in customer management processes.

Hypothesis 2 (Ho2): There is no significant difference between the mean ratings of male and female secretaries on the role of AI tools in reshaping the office machinery management process.

Table 5: Independent Samples t-Test of the Mean Ratings of Male and Female Secretaries on AI in Office Machinery Management

Gender	N	Mean	SD	Df	t-cal	p-value	Remark
Male	78	2.85	0.86				
				226	0.41	0.68	NS
Female	150	2.90	0.83				

As shown in Table 5, the calculated t-value is 0.41 and the p-value is 0.68. Because the p-value exceeds the significance threshold of 0.05, the second null hypothesis (Ho2) is accepted. Gender does not exert a statistically significant influence on how secretaries evaluate the operational impact of AI tools on office equipment workflows.

Hypothesis 3 (Ho3): There is no significant difference between the mean ratings of male and female secretaries on the role of AI tools in reshaping the information management process.

Table 6: Independent Samples t-Test of the Mean Ratings of Male and Female Secretaries on AI in Information Management

Gender	N	Mean	SD	df	t-cal	p-value	Remark
Male	78	3.25	0.65				
				226	0.61	0.54	NS
Female	150	3.20	0.69				

The analytical results in Table 6 show a calculated t-value of 0.61 and a p-value of 0.54. Since the p-value is greater than 0.05, the third null hypothesis (Ho3) is also accepted. Both male and female administrative secretaries agree that information management processes are profoundly optimized through algorithmic tools.

Discussion of Findings

The empirical findings of this study conclusively demonstrate that Artificial Intelligence tools play an exceptionally transformative role in reshaping the core occupational work processes of secretaries within the public sector. Regarding customer management, the results reveal that tools like automated calendars and AI conversational dashboards significantly reduce administrative latency and eliminate operational friction. This aligns directly with recent conclusions by Nwosu and Oguejiofor (2024), who emphasized that automating customer interactions shifts secretarial positions away from passive document typing and toward high-level customer relationship stewardship. By managing repetitive front-office inquiries through virtual agents, public institutions can ensure uninterrupted stakeholder relations while maximizing executive efficiency. Customer Management prove that the incorporation of Artificial Intelligence tools has the potential to meaningfully improve the efficiency and effectiveness of secretaries in the public sector. AI-powered tools can reduce the weight of repetitive administrative tasks and enable secretaries to dedicate more attention to interpersonal communication, customer satisfaction and relationship management. Therefore, the effective combination of AI technology and human communication is likely to produce better customer management outcomes in the civil service.

With respect to office machinery management, the study showed that predictive diagnostics and smart infrastructure monitoring fundamentally change how hardware resources are managed. This pattern confirms the insights of Okon and Udoh (2025), who found that converting mechanical systems into IoT-linked networks prevents catastrophic equipment failures and optimizes public funds. However, the slightly lower mean score in this cluster highlights infrastructure gaps, such as irregular power supply and lack of modern hardware, which present real challenges for the civil service. AI and smart technologies can importantly increase the management and maintenance of office machinery in the civil

service. Predictive diagnostics and intelligent monitoring systems can help secretaries and other office workers detect possible equipment errors before they progress into major failures, thereby reducing downtime and maintenance costs.
Therefore, while AI offers considerable opportunities for improving office machinery management, government and institutional support are necessary to overcome existing infrastructural limitations.

The analysis of information management processes revealed the highest level of positive response, highlighting that digital indexing, automated file categorization, and real-time data synchronization are crucial for modern civil service operations. Intelligent text retrieval engines address prolonged administrative interruption by permitting prompt file indexing. Crucially, the non-significant outcomes across all three null hypotheses confirm that technical adaptation is uniform across genders, proving that institutional support and standardized AI training are the key factors for administrative success, rather than demographic differences. Information management clearly demonstrate the importance of AI and digital technologies in improving the speed, accuracy and accessibility of information in the civil service.

Conclusion

Based on the findings of this study, it is concluded that application of Artificial Intelligence tools play a highly transformative role in reshaping customer management by automating schedules and responses, office machinery management via predictive maintenance and IoT synchronization, and information management through intelligent sorting, retrieval, and secure digital archiving. The uniformity of responses across genders demonstrates that technological disruption affects the administrative profession as a whole. Consequently, addressing infrastructure deficits and updating the skill set of the entire workforce through targeted training are essential requirements to successfully harness the benefits of the Fourth Industrial Revolution within the civil service.

Recommendations

Based on the findings and conclusions of this study, the following recommendations are made:

The Abia State Government should invest in upgrading the primary technological framework of the state secretariat by providing constant power backup solutions and high speed cloud communication networks for managing customers and information.

The Civil Service Commission should design mandatory, continuous AI-literacy and digital data management training and retraining programs for all administrative secretaries, helping to office machinery management, improve technology unease and bridge the technical skills gap.

Policymakers should establish a comprehensive regulatory framework for public technology deployment and information management and security.

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AI DRIVEN INNOVATIVE CURRICULUM FOR THE ACQUISITION OF ENTREPRENEURIAL SKILLS BY BUSINESS EDUCATION STUDENTS IN TERTIARY INSTITUTIONS IN ANAMBRA STATE.

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Abstract
The study assessed the extent to which an AI-driven innovative curriculum facilitated the acquisition of entrepreneurial skills by Business Education students in tertiary institutions in Anambra State. Two research questions and two null hypotheses guided the study. A descriptive survey research design was adopted. The population comprised 73 Business Educators, consisting of 41 from universities and 32 from colleges of education in Anambra State. A census sampling technique was adopted because the population was manageable. The instrument for data collection was a structured questionnaire titled AI-Driven Innovative Curriculum for Entrepreneurial Skills Acquisition Questionnaire (AIDICESAQ). The instrument was face validated by three experts, comprising two experts in Business Education and one expert in Measurement and Evaluation**,** all from Nnamdi Azikiwe University, Awka. Its reliability was established using the Cronbach Alpha reliability method, which yielded an overall reliability coefficient of 0.86. Data were collected through the direct delivery and retrieval method with the assistance of one research assistant, and all 73 copies of the questionnaire were successfully retrieved. Mean and standard deviation were used to answer the research questions, while the independent samples *t*-test was used to test the null hypotheses at the 0.05 level of significance. The findings revealed that an AI-driven innovative curriculum facilitated the acquisition of creativity skills and digital literacy skills by Business Education students to a high extent. The study concluded that integrating an AI-driven innovative curriculum into Business Education will enhance students' entrepreneurial competencies required for success in the digital economy. It was recommended that Business Educators should integrate AI-driven innovative curriculum into Business Education instruction, while tertiary institution management should provide adequate AI facilities and continuous training to facilitate the acquisition of creativity and digital literacy skills.
Keywords: Artificial Intelligence, AI-driven innovative curriculum, Business Education, Entrepreneurial skills, Creativity skills, Digital literacy skills, Tertiary institutions.

Introduction
The emergence of Artificial Intelligence (AI) has transformed the global landscape of education, business, healthcare, finance, agriculture, manufacturing, and virtually every sector of the economy. According to Schwab (2016), Artificial Intelligence is one of the defining technologies of the Fourth Industrial Revolution because it enables machines to perform cognitive functions traditionally associated with human intelligence, including learning, reasoning, problem-solving, and decision-making. As AI technologies continue to evolve, they are reshaping educational systems by transforming curriculum design, instructional delivery, assessment, learner support, and educational management, thereby creating opportunities for more personalized, interactive, and competency-based learning experiences. Educational institutions across the world are increasingly integrating AI technologies into their curricula to equip learners with digital competencies, innovation skills, entrepreneurial capabilities, and lifelong learning attributes required in the contemporary knowledge economy. UNESCO (2024) emphasized that the responsible integration of Artificial Intelligence into education enhances teaching effectiveness, improves learners' engagement, promotes personalized learning, and prepares graduates for future workplaces shaped by intelligent technologies. The increasing adoption of AI in education has therefore created the need to understand the concept of Artificial Intelligence and how its application can transform teaching, learning, and curriculum implementation in higher education.

AI technologies currently used in education include intelligent tutoring systems, adaptive learning platforms, generative AI applications, virtual assistants, automated assessment systems, machine learning tools, and learning analytics, all of which support personalized instruction, assessment, and learner engagement (Zawacki-Richter et al., 2019). These technologies enable educators to design

learner-centred instructional experiences that improve students' creativity, innovation, collaboration, and problem-solving skills. Emeasoba and Akiebie (2025) reported that the application of Artificial Intelligence in teaching and learning significantly enhances instructional effectiveness, promotes active learning, and equips students with digital competencies needed for academic success and workplace performance. Similarly, Ayeni, Ogbusuo and Abudu (2025) maintained that integrating AI into Business Education provides opportunities for innovative pedagogy while also presenting implementation challenges that institutions must address through policy formulation, digital infrastructure, and staff development. The increasing utilization of these AI technologies has consequently transformed conventional instructional practices and underscored the need for educational curricula that deliberately integrate Artificial Intelligence into teaching, learning, and assessment.

Educational institutions are gradually shifting from conventional curricula towards AI-driven innovative curricula capable of preparing learners for technology-enabled workplaces. Curriculum is a planned programme of learning experiences comprising educational objectives, content, instructional strategies, learning activities, and assessment procedures designed to facilitate learners' holistic development (Federal Republic of Nigeria [FRN], 2021). In higher education, curriculum serves as the framework through which institutions develop the knowledge, practical skills, values, attitudes, and competencies expected of graduates (National Universities Commission [NUC], 2023). The implementation of the Core Curriculum and Minimum Academic Standards (CCMAS) in Nigerian universities further underscores the need for curriculum innovation that responds to technological advancement and labour market demands (NUC, 2023). Recent research conducted in South-East Nigeria showed that integration of machine learning has a high positive relationship with the implementation of the Core Curriculum and Minimum Academic Standards (CCMAS) in Business Education programmes in South-East Nigeria, particularly in developing practical competencies and entrepreneurship content (Onwubuya, Amobi, & Atah, 2025). An AI-driven innovative curriculum therefore refers to a curriculum that deliberately integrates Artificial Intelligence technologies into curriculum planning, instructional delivery, learning activities, assessment, feedback mechanisms, and learner support systems to improve educational outcomes. Such a curriculum promotes adaptive learning, virtual simulations, intelligent assessment, collaborative learning, personalized instruction, and experiential problem-solving. Rather than emphasizing rote memorization, AI-driven curricula encourage learners to think critically, innovate, analyse data, and develop entrepreneurial solutions to real-life business challenges. Since Business Education is one of the most skill-oriented programmes in tertiary institutions, the successful implementation of an AI-driven innovative curriculum is expected to improve the entrepreneurial competencies required by graduates in today's technology-driven economy.

Business Education is a vocational and professional education programme designed to prepare individuals with knowledge, practical skills, attitudes, and competencies required for employment, entrepreneurship, and lifelong learning. The programme equips learners with competencies in accounting, office technology and management, marketing, business communication, entrepreneurship, management, information technology, and digital business practices. According to Akpomi and Ikpesu (2021), Business Education has evolved beyond preparing office workers to producing innovative entrepreneurs, managers, educators, and business professionals capable of contributing to national economic development. In the same vein, Emeasoba (2018) emphasized that Business Education serves as a tool for capacity building and national development by equipping individuals with the appropriate knowledge, skills, values, attitudes, and competencies required for gainful employment, sustainable livelihood, and self-reliance. This implies that Business Education must continually respond to technological innovations and changing workplace demands through curriculum improvement capable of developing relevant entrepreneurial competencies among learners. The dynamic nature of business operations in the digital era requires Business Education curricula to embrace Artificial Intelligence as an instructional innovation capable of preparing graduates for emerging business opportunities and contemporary labour market expectations.

The successful implementation of the Business Education curriculum largely depends on the competence and professional effectiveness of Business Educators, who serve as the facilitators of teaching and learning in the programme. Business Educators are professionally trained teachers and lecturers who possess specialized knowledge and pedagogical competencies required for teaching Business Education courses in universities and colleges of education. They are responsible for planning instruction, implementing the curriculum, assessing learners, and equipping students with the knowledge, practical skills, attitudes, and entrepreneurial competencies required for employment and self-reliance. According to Owenvbiugie and Ojeaga (2022) Business Educators are professionally trained personnel who require sound pedagogical, technological, and professional competencies to effectively implement the Business Education curriculum and facilitate students' acquisition of

employability and entrepreneurial skills. Ementa and Nwankwo (2023) maintained that Business Educators require continuous improvement in pedagogical, digital, communication, and professional competencies to effectively implement the Business Education curriculum and respond to emerging instructional demands in contemporary educational environments. With the emergence of Artificial Intelligence, Business Educators are increasingly expected to integrate AI-driven instructional approaches into curriculum implementation in order to enhance students' learning experiences and facilitate the acquisition of entrepreneurial skills required in the digital economy.

One of the major objectives of Business Education is the development of entrepreneurial skills that enable graduates to secure employment, become self-employed, and contribute to national economic development. Entrepreneurial skills are the practical, cognitive, managerial, technological, and interpersonal competencies that enable individuals to identify opportunities, create innovative business ideas, mobilize resources, manage enterprises, and respond effectively to changing economic conditions. Shaibu and Ebenezer-Nwokeji (2024) described entrepreneurial skills as the practical abilities and competencies required to establish, manage, and sustain business ventures successfully. They emphasized that entrepreneurial skill acquisition equips individuals with the capacity to create value, generate employment, and contribute to sustainable national development. These competencies include creativity, innovation, opportunity recognition, critical thinking, digital marketing, financial literacy, leadership, communication, decision-making, negotiation, business planning, collaboration, and risk management. Ariwodo and Emeasoba (2023) reported that practical entrepreneurial skill acquisition is fundamental to preparing Business Education students for decent work in the digital era. They emphasized that practical, competency-based training enhances students' employability and equips them with the entrepreneurial competencies required for self-employment and sustainable career development. Likewise, Enang (2023) explained that entrepreneurial skills required of Business Education students in the digital era include communication, creativity, innovation, problem-solving, decision-making, digital literacy, teamwork, and technological skills necessary for successful business operations. The growing digitalization of business activities has further expanded the entrepreneurial competencies expected of graduates, making Artificial Intelligence an important instructional resource for developing these competencies among Business Education students. Among these competencies, creativity skills and digital literacy skills have become increasingly important in the era of Artificial Intelligence because they enable graduates to function effectively in technology-driven business environments. Business Education programmes are expected to adopt instructional approaches that deliberately promote the acquisition of these competencies through innovative curriculum implementation.

Creativity skills refer to the ability to generate original ideas, identify business opportunities, think innovatively, and develop practical solutions to business challenges. These skills enable individuals to transform ideas into products, services, or business ventures capable of creating economic value. According to Dada, Adegbuyi, and Ogbari (2023)**,** creativity is one of the entrepreneurial attributes that significantly contributes to opportunity identification, business planning, venture creation, and entrepreneurial success among students. They recommended that tertiary institutions should deliberately develop creativity through entrepreneurship education to enhance graduates' employability and business start-up potential. Since Artificial Intelligence provides access to intelligent learning platforms, simulations, and generative technologies that stimulate idea generation and collaborative problem-solving, an AI-driven innovative curriculum is expected to facilitate the acquisition of creativity skills among Business Education students.

In addition to creativity, digital literacy skills have become indispensable entrepreneurial competencies for graduates in the digital economy. Digital literacy refers to the ability to access, evaluate, create, communicate, and utilize information effectively through digital technologies for learning, business operations, and decision-making. Awoniyi and Owolabi (2025) asserted that digital literacy has become an essential employability and entrepreneurial competency because it equips graduates with the knowledge and skills required to utilize digital technologies, online business platforms, and emerging technologies for entrepreneurial development and sustainable career success. The integration of Artificial Intelligence into Business Education curriculum implementation is expected to strengthen students' digital literacy skills by providing opportunities for technology-supported learning, intelligent assessment, virtual business simulations, and authentic digital learning experiences.

Business Education students require entrepreneurial competencies to function effectively in an increasingly digital business environment characterized by automation, intelligent decision-making systems, e-commerce, data analytics, and virtual business operations. AI technologies expose students to authentic business simulations, intelligent business planning tools, automated financial analysis, digital marketing applications, and virtual entrepreneurial environments that enhance experiential

learning. Onuotu, Nwaokokorom, Benstowe and Akiebie (2025) identified AI competencies as essential skills required of Business Education students for effective job performance and sustainable career development in the new era. This finding indicates that the acquisition of entrepreneurial competencies through AI-supported learning largely depends on the quality of curriculum implementation within tertiary institutions where Business Education programmes are offered.

Tertiary institutions are institutions of higher learning established to provide advanced education, research, innovation, and community service for national development. In Nigeria, tertiary institutions include universities, colleges of education, polytechnics, and other specialized institutions approved by the relevant regulatory agencies. The National Universities Commission (2023) stated that universities are established to provide undergraduate and postgraduate education, conduct research, promote innovation, and contribute to national development through teaching, research, and community service. Similarly, colleges of education are responsible for preparing professionally competent teachers equipped with pedagogical, vocational, technological, and entrepreneurial competencies for national educational development. In Anambra State, Business Education programmes are offered in both universities and colleges of education, making these institutions appropriate settings for examining the implementation of AI-driven innovative curricula. These institutions are therefore expected to provide enabling learning environments through curriculum innovation and technology integration that will facilitate entrepreneurial skills acquisition among Business Education students.

Despite these expectations, evidence indicates that the integration of Artificial Intelligence into Business Education curriculum implementation remains inadequate in many Nigerian tertiary institutions because of poor technological infrastructure, inadequate lecturer training, high cost of AI facilities, resistance to technological change, and insufficient institutional support. Studies by Ikpeama, Ekoh-Nweke, Paul-Mgbeafulike and Nwaokokorom (2025) revealed that although Business Education lecturers are aware of Artificial Intelligence, its integration into curriculum implementation is still low due to inadequate technological infrastructure, insufficient training, high cost of AI facilities, and limited institutional support. Consequently, many Business Education graduates continue to exhibit deficiencies in digital entrepreneurship, innovation, business problem-solving, and technology application, thereby reducing their employability and capacity for self-employment. Although previous studies have examined Artificial Intelligence integration in Business Education and entrepreneurial skills acquisition separately, empirical evidence on the extent to which an AI-driven innovative curriculum facilitates entrepreneurial skills acquisition among Business Education students in tertiary institutions in Anambra State remains limited. It is this identified gap that necessitated the present study, which sought to determine the extent to which an AI-driven innovative curriculum facilitates the acquisition of entrepreneurial skills by Business Education students in tertiary institutions in Anambra State.

Statement of the problem

Artificial Intelligence (AI) has become an important educational innovation that is transforming curriculum implementation, teaching, learning, and assessment across higher education institutions. As a vocational and skill-oriented programme, Business Education is expected to integrate AI-driven innovative curricula to equip students with entrepreneurial competencies such as creativity, innovation, critical thinking, problem-solving, digital literacy, and business management skills required for employment, self-employment, and sustainable national development. Despite the growing importance of AI in education, its integration into the Business Education curriculum in many tertiary institutions remains inadequate. Inadequate technological infrastructure, insufficient lecturer competence, limited institutional support, and the high cost of AI facilities have constrained the effective implementation of AI-driven instructional practices. As a result, many Business Education students and graduates are without adequate entrepreneurial skills needed to adapt to the demands of the modern business environment and the digital economy.

Although several studies have examined Artificial Intelligence in education and entrepreneurial skills acquisition, there is limited empirical evidence on the extent to which an AI-driven innovative curriculum facilitates the acquisition of entrepreneurial skills among Business Education students in tertiary institutions in Anambra State. This gap in knowledge necessitated the present study, which sought to determine the extent to which an AI-driven innovative curriculum facilitates the acquisition of entrepreneurial skills by Business Education students in tertiary institutions in Anambra State.

Research Questions

The following research questions guided the study:

i. To what extent does an AI-driven innovative curriculum facilitate the acquisition of creativity skills by Business Education students in tertiary institutions in Anambra State?
ii. To what extent does an AI-driven innovative curriculum facilitate the acquisition of digital literacy skills by Business Education students in tertiary institutions in Anambra State?

Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

$H0_1$: There is no significant difference between the mean ratings of Business Educators in universities and those in colleges of education on the extent to which an AI-driven innovative curriculum facilitates the acquisition of creativity skills by Business Education students in tertiary institutions in Anambra State.

$H0_2$: There is no significant difference between the mean ratings of Business Educators in universities and those in colleges of education on the extent to which an AI-driven innovative curriculum facilitates the acquisition of digital literacy skills by Business Education students in tertiary institutions in Anambra State.

Methodology

A descriptive survey research design was adopted for this study. The design was considered appropriate because it enabled the researcher to collect data from Business Educators on the extent to which an AI-driven innovative curriculum facilitates the acquisition of entrepreneurial skills by Business Education students in tertiary institutions in Anambra State. The study was conducted in universities and colleges of education in Anambra State offering Business Education programmes. The institutions comprised Nnamdi Azikiwe University, Awka; Chukwuemeka Odumegwu Ojukwu University, Igbariam; Federal College of Education (Technical), Umunze; and Nwafor Orizu College of Education, Nsugbe. The population of the study comprised 73 Business Educators, consisting of 41 Business Educators from universities and 32 Business Educators from colleges of education. A census approach was adopted because the population was relatively small and manageable; therefore, the entire population was used for the study and no sampling was carried out. The instrument for data collection was a structured questionnaire titled AI-Driven Innovative Curriculum for Entrepreneurial Skills Acquisition Questionnaire (AIDICESAQ)**.** The instrument consisted of two sections. Section A elicited information on the respondents' demographic characteristics, while Section B contained 14 questionnaire items developed in line with the two research questions, with seven items measuring creativity skills and seven items measuring digital literacy skills**.** The 14 items were considered adequate because they were developed to capture the major dimensions of the two constructs as identified from the literature and the objectives of the study. The questionnaire was structured on a four-point rating scale of Very High Extent (VHE) = 4, High Extent (HE) = 3, Low Extent (LE) = 2, and Very Low Extent (VLE) = 1**.**

The instrument was face validated by three experts, comprising two experts in Business Education from the Department of Agricultural and Vocational Education and one expert in Measurement and Evaluation**,** all from Nnamdi Azikiwe University, Awka**.** Their observations and recommendations were incorporated into the final version of the instrument to ensure that the questionnaire adequately measured the constructs of the study. The reliability of the instrument was established using the Cronbach Alpha reliability method, which yielded an overall reliability coefficient of 0.86, indicating that the instrument possessed satisfactory internal consistency for data collection. The researcher, with the assistance of one trained research assistant, administered the questionnaire using the direct delivery and retrieval method. All the 73 copies of the questionnaire administered were successfully retrieved, representing a 100% response rate. The complete retrieval of the questionnaires eliminated non-response bias and ensured that every member of the study population was represented in the analysis. The data collected were analyzed using mean and standard deviation to answer the research questions, while the independent samples t-test was used to test the null hypotheses at the 0.05 level of significance. The criterion mean of 2.50 was used for decision-making. Mean ratings of 2.50 and above were regarded as accepted, while mean ratings below 2.50 were regarded as rejected. The null hypotheses were rejected where the calculated t-value exceeded the critical t-value at the 0.05 level of significance; otherwise, the null hypotheses were not rejected.

Results

Research Question One: To what extent does an AI-driven innovative curriculum facilitate the acquisition of creativity skills by Business Education students in tertiary institutions in Anambra State?

Table 1: Mean and Standard Deviation of the Responses of Business Educators on the Extent to which an AI-Driven Innovative Curriculum Facilitates the Acquisition of Creativity Skills by Business Education Students in Tertiary Institutions in Anambra State.

S/N	Item Statement	Mean	SD	Remark
1	AI-driven innovative curriculum enhances students' ability to generate original business ideas.	3.35	0.62	High Extent
2	AI-driven learning encourages students to develop creative solutions to business problems.	3.28	0.58	High Extent
3	The use of AI applications improves students' innovative thinking during entrepreneurial activities.	3.31	0.64	High Extent
4	AI-supported instruction promotes originality in completing business-related tasks.	3.22	0.60	High Extent
5	AI-driven curriculum helps students identify new business opportunities creatively.	3.38	0.57	High Extent
6	AI technologies stimulate students' imagination and innovation in business planning.	3.30	0.61	High Extent
7	AI-driven learning enhances students' ability to develop creative entrepreneurial products and services.	3.26	0.63	High Extent
	Cluster Mean	**3.30**	**0.61**	**High Extent**

Table 1 shows the mean ratings and standard deviations of Business Educators on the extent to which an AI-driven innovative curriculum facilitates the acquisition of creativity skills by Business Education students in tertiary institutions in Anambra State. The mean ratings for all the seven items ranged from 3.22 to 3.38, which are above the criterion mean of 2.50. This indicates that the respondents agreed to a high extent that an AI-driven innovative curriculum facilitates the acquisition of creativity skills. The cluster mean of 3.30 further confirms a High Extent, while the cluster standard deviation of 0.61 indicates that the respondents' opinions were relatively homogeneous.

$H0_1$: There is no significant difference between the mean ratings of Business Educators in universities and those in colleges of education on the extent to which an AI-driven innovative curriculum facilitates the acquisition of creativity skills by Business Education students in tertiary institutions in Anambra State.

Table 2: Independent Samples *t*-Test Analysis of the Mean Ratings of Business Educators in Universities and Colleges of Education on Creativity Skills

Respondents	N	X̄	SD	DF	t-cal.	t-crit.	Decision
Universities	41	3.34	0.59				
				71	0.56	1.99	Not Significant
Colleges of Education	32	3.26	0.63				

The result in Table 2 shows that the calculated *t*-value of 0.56 is less than the critical *t*-value of 1.99 at 0.05 level of significance. Therefore, the null hypothesis was not rejected. This implies that there is no significant difference between the mean ratings of Business Educators in universities and those in colleges of education on the extent to which an AI-driven innovative curriculum facilitates the acquisition of creativity skills by Business Education students in tertiary institutions in Anambra State.

Research Question Two: To what extent does an AI-driven innovative curriculum facilitate the acquisition of digital literacy skills by Business Education students in tertiary institutions in Anambra State?

Table 3: Mean and Standard Deviation of the Responses of Business Educators on the Extent to which an AI-Driven Innovative Curriculum Facilitates the Acquisition of Digital Literacy Skills by Business Education Students in Tertiary Institutions in Anambra State

S/N	Item Statement	Mean	SD	Remark

1	AI-driven innovative curriculum enhances students' ability to use digital technologies for business operations.	3.39	0.60	High Extent
2	AI-supported learning improves students' ability to use online collaboration tools effectively.	3.28	0.58	High Extent
3	AI applications enhance students' competence in digital communication for business purposes.	3.34	0.63	High Extent
4	AI-driven instruction improves students' ability to search, retrieve, and manage digital business information.	3.20	0.65	High Extent
5	AI technologies enhance students' competence in using digital tools for entrepreneurial decision-making.	3.31	0.59	High Extent
6	AI-supported curriculum develops students' ability to utilize digital platforms for marketing business products and services.	3.36	0.61	High Extent
7	AI-driven learning improves students' ability to apply digital technologies in solving business-related problems.	3.27	0.64	High Extent
	Cluster Mean	**3.31**	**0.61**	**High Extent**

Table 3 shows the mean ratings and standard deviations of Business Educators on the extent to which an AI-driven innovative curriculum facilitates the acquisition of digital literacy skills by Business Education students in tertiary institutions in Anambra State. The mean ratings for the seven items ranged from 3.20 to 3.39, which are above the criterion mean of 2.50. This indicates that the respondents agreed to a high extent that an AI-driven innovative curriculum facilitates the acquisition of digital literacy skills among Business Education students. The cluster mean of 3.31 further indicates a High Extent; while the cluster standard deviation of 0.61 shows that the respondents' opinions were relatively homogeneous.

$H0_2$: There is no significant difference between the mean ratings of Business Educators in universities and those in colleges of education on the extent to which an AI-driven innovative curriculum facilitates the acquisition of digital literacy skills by Business Education students in tertiary institutions in Anambra State.

Table 4: Independent Samples *t*-Test Analysis of the Mean Ratings of Business Educators in Universities and Colleges of Education on Digital Literacy Skills

Respondents	N	$\bar{X}$	SD	DF	t-cal.	t-crit.	Decision
Universities	41	3.35	0.58	71	0.59	1.99	Not Significant
Colleges of Education	32	3.27	0.61				

The result in Table 4 indicates that the calculated *t*-value of 0.59 is less than the critical *t*-value of 1.99 at the 0.05 level of significance. Therefore, the null hypothesis was not rejected. This implies that there is no significant difference between the mean ratings of Business Educators in universities and those in colleges of education on the extent to which an AI-driven innovative curriculum facilitates the acquisition of digital literacy skills by Business Education students in tertiary institutions in Anambra State.

Discussion of findings

AI-Driven Innovative Curriculum and the Acquisition of Creativity Skills by Business Education Students

The findings of the study revealed that an AI-driven innovative curriculum facilitates the acquisition of creativity skills by Business Education students in tertiary institutions in Anambra State to a high extent, with a corresponding null hypothesis which revealed that there was no significant difference between the mean ratings of Business Educators in universities and those in colleges of education regarding the extent to which an AI-driven innovative curriculum facilitates the acquisition of creativity skills by Business Education students. This implies that integrating Artificial Intelligence into curriculum implementation enhances students' ability to generate original business ideas, develop innovative solutions to business problems, identify entrepreneurial opportunities, and apply creative thinking in business-related tasks. The finding is in agreement with UNESCO (2024), which maintained that Artificial Intelligence promotes creativity through personalized, interactive, and inquiry-based learning

experiences that encourage learners to think critically and innovate. The finding also corroborates the study of Ariwodo and Emeasoba (2023), who found that competency-based Business Education enhances entrepreneurial skills acquisition and prepares students for decent work and self-employment in a technology-driven economy. The effective integration of Artificial Intelligence into Business Education curriculum implementation promotes innovative teaching and enhances students' entrepreneurial competencies despite existing implementation challenges.

AI-Driven Innovative Curriculum and the Acquisition of Digital Literacy Skills by Business Education Students

The findings of the study also revealed that an AI-driven innovative curriculum facilitates the acquisition of digital literacy skills by Business Education students in tertiary institutions in Anambra State to a high extent, with a corresponding hypothesis which showed that there was no significant difference between the mean ratings of Business Educators in universities and those in colleges of education on the extent to which an AI-driven innovative curriculum facilitates the acquisition of digital literacy skills by Business Education students. This indicates that the integration of Artificial Intelligence into curriculum implementation enhances students' ability to utilize digital technologies, communicate through digital platforms, retrieve and manage information, collaborate online, and apply digital tools in entrepreneurial activities. The finding demonstrates that AI-supported instructional strategies expose students to technology-rich learning environments that strengthen the digital competencies required for employment and entrepreneurship in the twenty-first-century workplace. The finding agrees with Awoniyi and Owolabi (2025), who maintained that digital literacy is an essential employability and entrepreneurial competency because it enables graduates to utilize digital technologies, Artificial Intelligence applications, and electronic business platforms effectively. In the same vein, the finding corroborates Emeasoba and Akiebie (2025), who reported that the application of Artificial Intelligence in Business Education enhances students' digital competencies and prepares them for effective workplace performance. Competencies in digital technologies, search engines, and email marketing are critical entrepreneurial skills required for self-employment among Business Education students.

Conclusion

Based on the findings of the study, it was concluded that an AI-driven innovative curriculum facilitates the acquisition of entrepreneurial skills by Business Education students in tertiary institutions in Anambra State to a high extent. Specifically, the study established that the integration of Artificial Intelligence into curriculum implementation significantly enhances the acquisition of creativity skills and digital literacy skills, which are indispensable entrepreneurial competencies required for innovation, employability, self-employment, and effective participation in the contemporary digital economy. The study further concluded that Business Educators in universities and those in colleges of education held similar views regarding the effectiveness of an AI-driven innovative curriculum in facilitating the acquisition of these skills, as there was no significant difference in their mean ratings. The study therefore concludes that the effective integration of Artificial Intelligence into the Business Education curriculum will better prepare students with the entrepreneurial competencies required to adapt to technological changes, create innovative business opportunities, and contribute meaningfully to national economic development.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Business Educators should integrate AI-driven innovative curriculum into the teaching of Business Education courses to enhance the acquisition of creativity skills among students.
2. Management of tertiary institutions should provide adequate Artificial Intelligence facilities and continuous training for Business Educators to facilitate the acquisition of digital literacy skills by Business Education students.

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REIMAGINING BUSINESS EDUCATION FOR THE ARTIFICIAL INTELLIGENCE ERA: IMPLICATIONS FOR ENTREPRENEURIAL TRANSFORMATION IN AFRICA

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Abstract
The rapid advancement of artificial intelligence (AI) is transforming the nature of work, business operations, entrepreneurship and the competencies required for effective participation in the digital economy. This transformation presents both opportunities and challenges for Business Education in Africa, where the programme is expected to prepare learners for employment, entrepreneurship and productive participation in a technology-driven society. This opinion paper examines the need to reimagine Business Education for the AI era and discusses its implications for entrepreneurial transformation in Africa. The paper argues that conventional approaches to Business Education may no longer be sufficient for preparing learners for emerging AI-mediated workplaces and entrepreneurial environments. It discusses the changing landscape of Business Education, emerging AI competencies, AI-enabled entrepreneurial opportunities, curriculum transformation, changing roles of Business educators, and ethical and infrastructural challenges associated with AI adoption. Drawing on contemporary literature and developments in Business Education, the paper advocates purposeful integration of AI literacy, generative AI, data-informed decision-making, digital office applications, entrepreneurial problem-solving and responsible AI use into Business Education curricula. It concludes that AI should be viewed not merely as a technological innovation but as an important component of contemporary entrepreneurial competence. The researchers recommend continuous curriculum renewal, capacity development for Business educators, improved digital infrastructure and stronger industry-institution collaboration to position Business Education as a catalyst for AI-driven entrepreneurial transformation in Africa.
Keywords: artificial intelligence, Business Education, entrepreneurial transformation, digital competence, entrepreneurship, Africa

Introduction
Business Education occupies an important position in preparing individuals for employment, entrepreneurship and effective participation in the economic activities of society. Its relevance is increasingly determined by its capacity to respond to technological changes affecting business organisations, workplaces and entrepreneurial activities. Contemporary business environments are characterised by digital communication, electronic transactions, data analytics, automation and, increasingly, artificial intelligence. Consequently, Business Education cannot remain substantially unchanged while the environment for which it prepares graduates is being transformed.

The changing technological environment has created a need for Business Education graduates to possess competencies extending beyond traditional occupational skills. Nwaokokorom and Ikpeama (2023) established that accounting and problem-solving skills are highly required of Business Education students for effective job performance in organisations in the digital era. This reinforces the position that contemporary Business Education should develop competencies that enable graduates to analyse problems, make informed decisions and operate effectively in technology-mediated workplaces.

Artificial intelligence has intensified this demand. AI systems can support activities involving data processing, content generation, communication, forecasting, customer interaction, financial analysis and administrative decision-making. Wang et al. (2024) showed that AI applications in education span adaptive learning and personalised tutoring, intelligent assessment and management, profiling and prediction, and emerging AI products. For Business Education, therefore, AI has implications for both the content students need to learn and the ways teaching and learning may be organised.

Evidence within Nigerian Business Education already demonstrates this emerging concern. Onuotu et al. (2025) identified AI-related accounting and electronic-office skills as relevant to Business Education students' job performance in the new era. Similarly, Ikpeama et al. (2025) found that AI integration in

Business Education curriculum implementation is affected by issues including availability, utilisation, technical know-how and training. These findings suggest that meaningful AI integration requires more than awareness; it requires curriculum responsiveness, educator competence and practical learning opportunities.

The issue is particularly important within the broader objective of entrepreneurial transformation in Africa. Entrepreneurship increasingly operates within digital ecosystems in which entrepreneurs use technology to identify opportunities, reach customers, manage financial information, communicate with stakeholders and develop innovative products and services. Bell and Bell (2023) argued that generative AI has important implications for entrepreneurship education, including idea development, business-model analysis, marketing and entrepreneurial decision-making. Business Education graduates therefore need to move beyond being consumers of digital technologies towards becoming critical and responsible users of AI for entrepreneurial problem-solving, innovation and value creation.

Against this background, this paper argues for the reimagination of Business Education for the artificial intelligence era. The central position is that AI should neither be treated as a replacement for Business educators nor merely as an additional technological tool. Instead, it should be understood as part of the changing business and entrepreneurial environment for which Business Education prepares learners. The paper examines Business Education in the AI era, emerging AI competencies, implications for entrepreneurial transformation, curriculum and instructional requirements, the changing role of Business educators, associated challenges and strategic directions for repositioning the programme.

Business Education in the Artificial Intelligence Era

Business Education may be understood as education for and about business, designed to develop occupational, entrepreneurial and transferable competencies necessary for productive participation in business organisations and enterprise creation. Historically, its curriculum has responded to transformations in business practices, progressing from manual office procedures and bookkeeping towards computerised accounting, electronic communication, digital office technologies and other technology-enabled operations.

The AI era represents another important stage in this evolution. Unlike earlier digital technologies that primarily facilitated predefined tasks, contemporary AI systems increasingly assist users in generating content, analysing information, recognising patterns, automating routine activities and supporting decisions. Chen et al. (2020) observed that AI applications in education include intelligent tutoring, personalised learning and other forms of technology-supported instruction. Consequently, AI competence within Business Education should encompass not only the ability to operate particular applications but also the capacity to determine when and how AI should be used, evaluate AI-generated information and apply it responsibly to business and entrepreneurial problems.

Business Education in the AI era should therefore integrate business knowledge, entrepreneurial competence, digital competence and responsible AI capability. This conception moves the discussion beyond whether students should be exposed to AI towards the more important question of how AI can be integrated into learning experiences that develop entrepreneurial judgement, creativity, problem-solving and sustainable value creation.

Emerging AI Competencies Required in Business Education

Reimagining Business Education for the AI era requires a clear understanding of the competencies students and educators need in increasingly intelligent business environments. AI competence extends beyond the ability to operate a particular application. It involves understanding AI capabilities and limitations, selecting appropriate tools, interacting effectively with AI systems, evaluating generated outputs, applying AI to practical problems and using the technology ethically and responsibly.

UNESCO (2024) organises teacher AI competence around a human-centred mindset, ethics of AI, AI foundations and applications, AI pedagogy and AI for professional learning. Chiu et al. (2025) similarly conceptualise teacher AI competence as multidimensional, including AI knowledge, pedagogy, assessment, ethics, human-centred education and professional engagement. These perspectives are useful to Business Education because they show that meaningful AI competence combines technological understanding with pedagogy, ethics and professional judgement.

Within Business Education, students require basic AI literacy that enables them to understand how AI systems support contemporary business operations. They also require AI-supported accounting and financial competence, digital communication and electronic-office competence, data literacy, AI-supported decision-making and entrepreneurial problem-solving. Onuotu et al. (2025) provide Nigerian evidence that AI-related skills are relevant to the job performance expected of Business Education students.

Data literacy is particularly important because entrepreneurship requires individuals to interpret market information, understand customer behaviour, assess alternatives and make decisions under

uncertainty. AI can assist with analysing information and identifying patterns, but students require sufficient business knowledge to question outputs and determine whether recommendations are reasonable. Thus, Business Education should integrate AI competence with analytical and critical thinking rather than present AI as a substitute for thinking.

Ethical AI competence is equally indispensable. Students need to understand issues involving privacy, intellectual property, misinformation, bias, transparency, academic integrity and accountability. Sperling et al. (2024) found that AI literacy in teacher education encompasses theoretical, practical and ethical knowledge, while UNESCO (2024) places ethics and human agency at the centre of responsible AI competence. Business Education should therefore prepare learners to use AI in ways that protect professional judgement and responsibility.

Artificial Intelligence and Entrepreneurial Transformation in Africa

Entrepreneurial transformation involves more than increasing the number of individuals establishing businesses. It encompasses changes in how opportunities are identified, enterprises are created, resources are managed, customers are reached and value is generated. AI presents opportunities to reshape these processes by making analytical, communication and creative capabilities increasingly accessible to entrepreneurs and small enterprises.

Generative AI is especially relevant to entrepreneurship education because it can support idea development, communication, business-model analysis and market exploration. Bell and Bell (2023) explained that generative AI can be integrated into entrepreneurship curricula through activities such as reviewing business models and plans, analysing marketing campaigns and interpreting market data. Short and Short (2023) likewise demonstrated how generative AI can support entrepreneurial rhetoric and content creation, while also drawing attention to limitations that require critical human oversight.

AI can support entrepreneurial opportunity recognition by helping learners organise market information, explore customer needs, examine competing products and identify possible gaps in existing markets. It can also support business planning and decision-making by assisting students to organise information, consider alternative scenarios and examine marketing or financial options. However, AI-generated suggestions should be treated as inputs into entrepreneurial decision-making rather than substitutes for market investigation, experience and human judgement.

AI also provides opportunities for innovation and product development. Entrepreneurship involves transforming ideas into value, and generative AI can support brainstorming, preliminary product conceptualisation and the development of alternative responses to customer problems. The educational objective should nevertheless remain the development of the learner's entrepreneurial capability. Students should therefore be required to justify, modify and critically evaluate AI-supported ideas instead of accepting machine-generated solutions without intellectual engagement.

These possibilities are particularly relevant to African economies where entrepreneurship and small businesses contribute substantially to livelihood creation. Business Education should consequently prepare graduates capable of combining entrepreneurial knowledge with emerging technological capabilities. AI competence can serve both employability and entrepreneurial objectives when integrated appropriately into Business Education.

Reimagining the Business Education Curriculum for the AI Era

The emergence of AI raises important questions about the continuing relevance of existing Business Education curricula. Curriculum renewal should not merely involve adding a stand-alone course titled Artificial Intelligence. A more sustainable approach would integrate relevant AI competencies across accounting, office technology, marketing, entrepreneurship, management and other Business Education components.

Ikpeama et al. (2025) provide Nigerian evidence concerning AI integration in Business Education curriculum implementation and highlight the importance of availability, utilisation, technical competence and training. Adewole (2025) also reported challenges surrounding the application of AI in teaching Business Education courses, while Atah et al. (2025) examined AI applications in delivering Business Education curriculum content. These studies suggest that curriculum reform must address both what students should learn and the institutional capacity required to implement such learning.

AI competencies could consequently be embedded across existing Business Education courses. Accounting Education could incorporate AI-supported financial analysis and intelligent accounting applications. Office Technology and Management could incorporate AI-assisted administrative processes, digital communication and information management. Entrepreneurship Education could integrate AI-supported opportunity recognition, market research, business planning and customer engagement. Marketing-related courses could expose students to AI-supported consumer analysis and digital-content development.

Curriculum transformation should also give greater attention to practical application. Students should encounter realistic business problems requiring them to determine whether AI is appropriate, select suitable technologies, analyse outputs and justify their decisions. Ayeni et al. (2025) emphasised both opportunities and challenges associated with integrating AI into Business Education. Thus, curriculum reimagination should be guided by relevance, integration and responsibility: relevance to changing workplaces, integration across appropriate courses, and responsibility in the ethical use of AI.

Changing Role of Business Educators in the AI Era

The growing availability of generative AI does not diminish the relevance of Business educators; rather, it changes aspects of their professional responsibility. When students can obtain explanations, business ideas and generated content rapidly, lecturers need increasingly to emphasise evaluation, application, reflection and professional judgement.

Business educators therefore require competence not only in operating AI applications but also in determining their pedagogical appropriateness. Chiu et al. (2025) emphasise teacher AI competence as important to effective and responsible engagement with AI. Similarly, UNESCO (2024) identifies AI foundations and applications, AI pedagogy, ethics, human-centred thinking and professional learning as important dimensions of teacher competence.

For Business Education specifically, lecturer competence should extend to AI application within occupational and entrepreneurial contexts. An Accounting Education lecturer, for example, should be able to design activities requiring students to critically examine AI-supported financial analysis. Entrepreneurship lecturers could engage students in evaluating AI-generated business ideas or market proposals, while Office Technology and Management lecturers could demonstrate responsible AI-assisted communication and information management.

The Business educator must equally serve as an ethical facilitator. Students need guidance concerning confidentiality, privacy, intellectual property, academic integrity, misinformation and accountability for AI-generated outputs. Continuous professional development is therefore essential. Institutions cannot expect meaningful AI integration merely by providing access to technological tools; educators need structured opportunities to acquire, practise and continually update relevant competencies.

Challenges to Reimagining Business Education for the AI Era

Despite its potential, integrating AI into Business Education in Africa presents substantial challenges. Digital infrastructure remains fundamental. AI-supported learning depends upon access to suitable devices, electricity, internet connectivity and relevant digital platforms. Institutions experiencing deficiencies in basic ICT infrastructure may find advanced AI integration particularly difficult.

A second challenge is educator competence. AI technologies evolve rapidly, meaning that knowledge acquired at one point may become insufficient as technologies and their applications change. Sperling et al. (2024) show that AI literacy in teacher education remains an emerging area requiring greater attention to practical and ethical knowledge. Continuous professional learning is therefore necessary.

Ethical and privacy concerns also require attention. Students and lecturers may upload confidential, personal or institutional information to AI platforms without understanding how such information is processed. AI-generated content may contain errors, fabricated information or biased representations. Samson and Baraya (2025) emphasised ethical considerations including bias, fairness, privacy and responsible student-data use in Business Education curriculum development.

Another concern is overdependence on AI. Business Education is intended to develop reasoning, communication, creativity and problem-solving abilities. If students routinely delegate intellectual tasks to AI without critically engaging with underlying problems, technology could undermine rather than enhance competency development. Assessment practices therefore need to emphasise application, justification, reflection and demonstration of competence rather than reproduction of information.

Finally, inequality of access could widen existing educational disparities. Students and institutions with reliable connectivity, suitable devices and access to advanced AI systems may gain advantages over those without these resources. AI integration policies should therefore incorporate inclusion and accessibility rather than assume equal technological conditions across African educational institutions.

Strategic Directions for AI-Driven Business Education

Reimagining Business Education requires coordinated action rather than isolated adoption of AI applications. First, Business Education curricula should undergo periodic review to identify competencies becoming necessary in AI-mediated workplaces and entrepreneurial environments. Curriculum review should involve Business educators, professional bodies, employers, entrepreneurs and technology practitioners.

Second, institutions should establish sustained AI professional-development programmes for Business educators. Such programmes should move beyond awareness seminars towards hands-on application of AI to accounting, entrepreneurship, office administration, research and instructional activities. This is

consistent with the competence-development orientation advanced by UNESCO (2024) and Chiu et al. (2025).

Third, greater emphasis should be placed on experiential AI learning. Students should work on realistic entrepreneurial problems, business simulations and projects requiring responsible application of AI. Bell and Bell (2023) demonstrate the potential of generative AI to support entrepreneurship-learning activities, provided students are required to review and critically analyse outputs.

Fourth, tertiary institutions should strengthen industry-institution partnerships. Businesses and technology organisations can provide current knowledge, practical cases, mentorship and exposure to emerging applications. Such partnerships can help reduce the gap between curriculum content and rapidly changing business practices.

Fifth, institutions should establish clear ethical guidelines for AI use. These should address academic integrity, privacy, intellectual property, verification of AI-generated information and appropriate disclosure of AI assistance. Responsible use should become part of professional preparation rather than merely an institutional disciplinary issue.

Finally, AI integration should remain human-centred. Wang et al. (2024) show that AI in education offers substantial opportunities while also raising adoption, impact and implementation challenges. The objective should therefore not be to automate Business Education indiscriminately but to enable learners to combine technological capability with creativity, ethical judgement, critical thinking and contextual understanding.

Conclusion

Artificial intelligence is reshaping business activities, workplaces, entrepreneurship and educational practices, thereby creating an important responsibility for Business Education in Africa. Preparing graduates for an AI-mediated economy requires more than introducing students to emerging technological tools. It demands a reimagination of curriculum content, instructional practices, educator competence and entrepreneurial learning. Business Education should develop graduates capable of understanding AI, applying it to authentic business problems, critically evaluating its outputs and using it ethically for entrepreneurial value creation. When appropriately integrated, AI can strengthen rather than diminish the occupational and entrepreneurial mandate of Business Education. The future relevance of the programme will therefore depend considerably on its capacity to combine enduring business and entrepreneurial competencies with emerging technological capabilities.

Recommendations

1. Business Education curricula should be periodically reviewed to integrate AI literacy, AI-supported accounting, data-informed decision-making, digital communication and AI-enabled entrepreneurial problem-solving.
2. Tertiary institutions should organise continuous practical professional development for Business educators to strengthen their technological, pedagogical and ethical competence in applying artificial intelligence.
3. Government and institutional authorities should improve the technological infrastructure supporting Business Education, particularly reliable internet connectivity, appropriate digital devices and access to relevant AI-enabled learning facilities.
4. Business Education departments should strengthen partnerships with industries, entrepreneurs and technology organisations to expose lecturers and students to contemporary AI applications and authentic technology-supported entrepreneurial practices.
5. Business Education programmes should establish clear institutional guidelines for responsible AI use, particularly regarding privacy, intellectual property, academic integrity, verification of generated information and accountability.
6. Business educators should employ experiential AI-supported learning activities involving business simulations, market investigation, business planning, financial analysis and entrepreneurial problem-solving so that students develop practical rather than merely theoretical AI competence.

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ARTIFICIAL INTELLIGENCE LITERACY AND FUTURE WORLD-OF-WORK COMPETENCIES AMONG UNDERGRADUATE BUSINESS EDUCATION STUDENTS IN NIGERIA.

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Abstract

The study examined artificial intelligence literacy and future world-of-work competencies among undergraduate Business Education students at the University of Nigeria, Nsukka. The study is necessitated by the increasing integration of artificial intelligence and digital technologies into contemporary workplaces and the need for graduates to possess relevant technological, cognitive, interpersonal and adaptive competencies. A descriptive survey research design was used for the study. The population comprised 110 undergraduate Business Education students, consisting of 64 students at the 300 level and 46 students at the 400 level. Total population was used, while data was collected using a structured questionnaire titled Artificial Intelligence Literacy and Future World-of-Work Competencies Questionnaire (AIL-FWWCQ). The data was analysed using mean and standard deviation to determine the level of students' artificial intelligence literacy and future world-of-work competencies. The study found out that the students recognize the importance of ongoing skill development, that students possess a generally high level of AI literacy, particularly in their awareness of AI limitations, human judgment and responsible use. However, the results also suggest the need to strengthen practical AI-use skills, particularly effective prompting and critical evaluation of AI-generated information. It was recommended that Business Education programs should provide more practical AI-based learning activities, Lecturers should incorporate critical evaluation of AI-generated information into classroom activities. Students should be taught to verify AI-generated content, identify possible errors and distinguish reliable information from misleading outputs.

Keywords: Artificial intelligence literacy, future of work, world-of-work competencies, Business Education, undergraduate students

Introduction

The contemporary world is experiencing rapid technological transformation driven by digitalization, automation, artificial intelligence (AI) and other emerging technologies. Artificial intelligence has moved beyond specialized technological environments into education, business, finance, communication, administration and everyday decision-making. Its growing presence is changing how information is produced, tasks are performed, decisions are supported and services are delivered. Consequently, higher education institutions are increasingly confronted with the responsibility of preparing students for a world in which interaction with intelligent technologies will form part of academic and professional life. UNESCO (2024) emphasized that education systems need to prepare students to engage with AI safely, ethically and meaningfully, while the World Economic Forum (2025) identified AI and big data, technological literacy, analytical thinking and creative thinking among the skills gaining increasing importance in the changing labor market.

The increasing presence of AI in education has also changed the meaning of technological preparedness among university students. Students are no longer expected merely to possess general computer or digital skills; they increasingly need to understand what AI is, how it works at a basic level,

what it can and cannot do, how it can be applied, and how its outputs should be examined before being accepted or used. This broader preparedness is captured in the concept of artificial intelligence literacy. Chiu et al. (2024) distinguished AI literacy from mere technical knowledge by explaining that literacy concerns knowledge and skills for understanding AI, while competency extends to the ability to apply such knowledge effectively. Similarly, Kassorla et al. (2024) described AI literacy in higher education as technical understanding, evaluative skills, practical application and ethical considerations. Thus, AI literacy represents a broader educational competence through which students can understand, use, question and responsibly interact with AI technologies.

A major dimension of AI literacy is therefore the understanding of AI concepts and applications. Students need foundational knowledge of AI, including awareness of common AI technologies and their applications in academic and workplace contexts. Beyond understanding, however, AI literacy requires practical application, that is the ability to use AI tools appropriately to support learning, information processing, communication, problem-solving and other legitimate tasks. UNESCO (2024) similarly identifies understanding and application as important stages in the development of students AI competencies. This means that a student who knows that AI exists but cannot meaningfully and appropriately use an AI tool demonstrates a different level of preparedness from a student who can apply AI tools to accomplish tasks effectively.

Yet, effective AI literacy cannot stop at the ability to use AI. The capacity to critically evaluate AI-generated information is equally important because AI systems can produce inaccurate, incomplete, biased or misleading outputs. Students therefore need to examine AI-generated information, verify important claims and recognize situations in which human judgment remains necessary. The EDUCAUSE AI literacy framework for higher education places particular emphasis on critical evaluation and awareness of bias, misuse and misapplication of AI technologies (Kassorla et al., 2024). Zhong and Liu (2024) also conceptualized AI literacy around knowledge, affective dispositions and AI thinking, highlighting the importance of higher-order thinking in students engagement with AI. Thus, critical evaluation provides an important bridge between knowing AI and using AI responsibly.

Another important dimension of AI literacy is ethical and responsible use. The increasing ability of AI systems to generate text, images, analyses and recommendations raises questions relating to privacy, academic integrity, bias, transparency, accountability and appropriate human oversight. Students need to understand that technological capability does not automatically make every use of AI appropriate. UNESCO's AI Competency Framework for Students places ethics of AI and a human-centred mindset alongside AI techniques and applications, emphasizing responsible and meaningful engagement with AI (Miao et al., 2024). Ethical AI literacy therefore requires students to understand the responsibilities associated with AI use, protect personal information, acknowledge appropriate AI assistance and maintain human judgment when using AI-supported outputs.

The relevance of these competencies becomes clearer within the context of Business Education. Business Education is designed to provide learners with knowledge, skills and competencies for participation in business, office, accounting, entrepreneurship, management and related occupational activities. As business processes become increasingly digitalized and AI supported, the preparation of Business Education students can no longer depend solely on traditional business knowledge and conventional occupational skills. The Nigerian Business Education literature has increasingly drawn attention to the importance of digital competencies for students employability and workplace preparedness. Amesi and Allison (2022) examined digital skills acquired by university Business Education students for employability, while Okonkwo and Agwazie (2023) reported the importance of digital technologies in supporting Business Education students' acquisition of employability skills. These developments position AI literacy as an emerging extension of the technology-related competencies required within contemporary Business Education.

The transformation of the workplace also gives greater significance to the concept of the future world of work. The future world of work refers to the changing conditions, technologies, practices and competency demands that characterize emerging workplaces. Technological advancement, automation, artificial intelligence, digitalization and changing organizational practices are altering the tasks workers perform and the competencies required to perform them effectively. Davey and Harney (2023) noted that higher education has an important role in nurturing skills needed for future forms of work, particularly within an increasingly digital environment. The World Economic Forum (2025) similarly reported that employers expect technological skills to grow rapidly while human-centered competencies such as analytical thinking, creative thinking, resilience, flexibility, agility, curiosity and lifelong learning remain important.

Within this changing work environment, future world-of-work competencies extend beyond technical knowledge. They encompass a combination of digital, cognitive, interpersonal and self-

management competencies that enable individuals to perform effectively in changing workplace contexts. Digital competence enables workers to use technological tools appropriately; critical thinking supports the analysis and evaluation of information; problem-solving enables workers to respond to workplace challenges; creativity supports the generation of new ideas; communication and collaboration facilitate effective interaction with colleagues and clients; while adaptability, initiative, time management and continuous learning enable workers to respond to changing technologies and job requirements. The World Economic Forum (2025) identifies analytical thinking, creative thinking, resilience, flexibility and agility, technological literacy, curiosity and lifelong learning among important skills for the evolving labor market. These competencies therefore represent important dimensions of preparedness for the future world of work.

For Business Education students, the development of future world-of-work competencies is particularly important because the program is directly concerned with preparing learners for participation in business and occupational environments. Nigerian studies have continued to emphasize the importance of digital skills, employability skills and work readiness among Business Education students and graduates. Amesi and Allison (2022) reported attention to digital skills for employability among university Business Education students, while studies on digitalization have highlighted the need for Business Education programs to respond to changing workplace skill requirements. More recent Nigerian research has also examined AI adoption and its implications for the development of Business Education students, indicating that AI is becoming an increasingly relevant issue within the discipline.

The connection between AI literacy and future world-of-work preparedness is therefore conceptually important. AI literacy equips students with the capacity to understand and appropriately engage with an emerging workplace technology, while future world-of-work competencies equip them with the broader cognitive, digital, interpersonal and adaptive capacities required to function in changing work environments. AI literacy provides the technological foundation for responsible engagement with AI, while competencies such as critical thinking, problem-solving, creativity, communication, collaboration and adaptability provide the human capacities needed to use technology effectively rather than depend on it uncritically. In this sense, preparing Business Education students for the future of work requires attention to both their ability to engage with AI and their broader capacity to function effectively in technology-rich workplaces.

However, the growing discussion of AI in education does not automatically establish that students possess adequate AI literacy or future world-of-work competencies. Existing literature has examined AI adoption, digital skills, employability and the use of AI in Business Education from different perspectives, but there remains a need for institution-specific empirical evidence on the current levels of these competencies among undergraduate Business Education students. This is particularly important because students' preparedness cannot be assumed solely from the increasing availability of AI tools or from the presence of technology-related content within an academic program. Empirical assessment is necessary to identify the areas in which students demonstrate stronger preparedness and the areas requiring further development. The present study therefore examines the level of artificial intelligence literacy and future world-of-work competencies among undergraduate Business Education students at the University of Nigeria, Nsukka.

Statement of the problem

Ideally, undergraduate Business Education students should possess adequate artificial intelligence literacy and future world-of-work competencies before entering a workplace increasingly shaped by digital technologies and AI. They should understand basic AI concepts, apply AI tools appropriately, evaluate AI-generated information critically, use AI ethically and demonstrate competencies such as digital competence, critical thinking, problem-solving, creativity, communication, collaboration, adaptability and continuous learning.

However, the rapid development of AI and changing workplace demands have created new competency expectations, while there is limited empirical evidence showing the extent to which undergraduate Business Education students possess these competencies, particularly within Nigeria. Although studies have examined digital skills, employability and AI adoption in Business Education, less attention has been given to an integrated assessment of students' AI literacy and broader future world-of-work competencies.

Thus, Business Education students in Nigeria, are being prepared for workplaces in which digital technologies and AI-supported activities are increasingly relevant. Without evidence of their current levels of AI literacy and future world-of-work competencies, areas of strength and areas requiring further development may remain unclear. The problem of this study, therefore, is to determine the levels of artificial intelligence literacy and future world-of-work competencies among undergraduate Business Education students in Nigeria.

Significance of the study

The findings of the study may be useful to Business Education lecturers, students, curriculum planners, university administrators and researchers. The findings may help lecturers identify areas of AI literacy and future world-of-work competencies requiring greater attention in teaching and learning. Students may gain greater awareness of the competencies required for effective participation in technology-driven workplaces. Curriculum planners may use the findings as evidence for reviewing Business Education content in response to emerging technological and workplace demands. University administrators may use the findings to inform training and capacity-building initiatives, while researchers may find the study useful as a basis for further investigation into AI literacy and future-of-work preparedness in Business Education.

Purpose of the study

The main purpose of the study is to examine artificial intelligence literacy and future world-of-work competencies among undergraduate Business Education students in Nigeria. Specifically, the study seeks to:

1. Determine the level of artificial intelligence literacy among undergraduate Business Education students in Nigeria.
2. Determine the level of future world-of-work competencies among undergraduate Business Education students in Nigeria.

Research questions

1. What is the level of artificial intelligence literacy among undergraduate Business Education students in Nigeria?
2. What is the level of future world-of-work competencies among undergraduate Business Education students in Nigeria?

Methodology

The study adopted a descriptive survey research design. The design is considered appropriate because the study seeks to obtain information on the existing levels of artificial intelligence literacy and future world-of-work competencies among undergraduate Business Education students without manipulating any variable or introducing a treatment. The design will enable the researcher to collect and describe respondents' views and self-reported competencies as they exist at the time of the study.

The study was carried out at the University of Nigeria, Nsukka, Enugu State. The university provides an appropriate setting for the study because it has undergraduate students enrolled in Business Education and provides an academic environment in which students are exposed to business, professional and technology-related learning experiences.

The population of the study comprised 110 undergraduate Business Education students at the University of Nigeria, Nsukka. The population consists of 64 students at the 300 level and 46 students at the 400 level. The study will focus on these levels because the students are relatively advanced in their undergraduate program and are closer to transitioning into the world of work.

Since the population of 110 students is manageable, the study adopted total enumeration sampling. Consequently, all the 110 undergraduate Business Education students in the 300 and 400 levels was included in the study, subject to their availability and willingness to participate.

The instrument for data collection was a structured questionnaire titled "Artificial Intelligence Literacy and Future World-of-Work Competencies Questionnaire (AIL-FWWCQ)." The questionnaire was developed in line with the research questions and consist of three sections. Section A was to obtain relevant demographic information from the respondents. Section B contained items measuring artificial intelligence literacy, while Section C contained items measuring future world-of-work competencies. The questionnaire items was be structured on a four-point Likert scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD), weighted 4, 3, 2 and 1 respectively.

The questionnaire was subjected to face and content validation by experts in Business Education and measurement and evaluation. The experts examined the items in terms of clarity, relevance, appropriateness, coverage of the concepts and alignment with the research questions. Their observation and suggestion was used to improve the final version of the instrument before administration.

A pilot study was conducted using students with characteristics similar to those of the study population but who are not part of the main study. The response obtained from the pilot study was used to determine the internal consistency of the questionnaire using Cronbach's alpha reliability coefficient. A reliability coefficient of 0.70 was obtained.

Data collected for the study was analyzed using mean and standard deviation. Mean scores was used to determine the level of artificial intelligence literacy and future world-of-work competencies among the respondents, while standard deviation was used to determine the extent to which

respondents responses vary around the mean. The research questions was answered using the mean scores and standard deviations obtained from the responses. No inferential statistical test was used because the study is a pure descriptive survey.

Results and discussion of findings

Research Question 1: What is the level of artificial intelligence literacy among undergraduate Business Education students in Nigeria?

Table 1: Mean and Standard Deviation of Respondents' Artificial Intelligence Literacy

SN	ARTIFICIAL INTELLIGENCE LITERACY ITEMS	MEAN	SD	DECISION
1	I understand the basic meaning and uses of artificial intelligence	3.42	0.62	HIGH
2	I can identify AI-powered tools commonly used in education and business	3.36	0.67	HIGH
3	I can use AI tools to support academic or business-related tasks	3.28	0.71	HIGH
4	I can give appropriate prompts or instructions to AI tools to obtain useful responses	3.11	0.78	HIGH
5	I can evaluate AI-generated information before using it	3.18	0.73	HIGH
6	I understand that AI-generated information may contain errors or misleading information	3.51	0.59	VERY HIGH
7	I am aware of the capabilities and limitations of AI technologies	3.24	0.70	HIGH
8	I understand ethical issues associated with the use of artificial intelligence	3.30	0.69	HIGH
9	I understand the importance of protecting personal information when using AI tools	3.47	0.61	HIGH
10	I understand the importance of human judgement when using AI for important decisions	3.55	0.57	VERY HIGH

Cluster Mean| 3.34| 0.67| High

Discussion of Findings

The findings presented in Table 1 indicate that undergraduate Business Education students at the University of Nigeria, Nsukka demonstrated a high level of artificial intelligence literacy, as shown by the cluster mean of 3.34. The result suggests that the students generally possess an understanding of artificial intelligence, its applications and some of the considerations necessary for its responsible use. The highest mean score was recorded for the statement that students understand the importance of human judgment when using AI for important decisions (M = 3.55, SD = 0.57), followed by their understanding that AI-generated information may contain errors or misleading information (M = 3.51, SD = 0.59). This suggests that the respondents show considerable awareness that AI should not be relied upon without human oversight. The relatively high score for protecting personal information when using AI tools (M = 3.47, SD = 0.61) also indicates awareness of responsible use of AI technologies. The lowest mean score was recorded for the ability to give appropriate prompts or instructions to AI tools to obtain useful responses (M = 3.11, SD = 0.78). Although the item was still rated high, the comparatively lower score may indicate that students' practical ability to interact effectively with AI tools requires further development. Similarly, the ability to evaluate AI-generated information before using it recorded a mean of 3.18, suggesting that critical evaluation of AI-generated information remains an important area for continued development. Overall, the findings indicate that the students possess a generally high level of AI literacy, particularly in their awareness of AI limitations, human judgment and responsible use. However, the results also suggest the need to strengthen practical AI-use skills, particularly effective prompting and critical evaluation of AI-generated information.

Research Question 2

What is the level of future world-of-work competencies among undergraduate Business Education students in Nigeria?

Table 2: Mean and Standard Deviation of Respondents' Future World-of-Work Competencies

SN	FUTURE WORLD OF WORK COMPETENCY	MEAN	SD	DECISION
1	I can use digital technologies effectively to perform work-related tasks	3.38	0.65	HIGH
2	I can analyse information before making work-related decisions	3.31	0.68	HIGH

3	I can identify problems and develop practical solutions.	3.25	0.72	HIGH
4	I can generate new ideas for improving a task, service or business activity	3.20	0.75	HIGH
5	I can communicate my ideas clearly in a work environment	3.43	0.63	HIGH
6	I can work effectively with others in a team.	3.52	0.58	VERY HIGH
7	I can adapt when workplace technologies, tasks or procedures change	3.16	0.76	HIGH
8	I can learn to use new digital tools when required	3.54	0.57	VERY HIGH
9	I can use initiative when a task requires a new approach	3.19	0.74	HIGH
10	I am willing to continue developing my skills as workplace demands change	3.61	0.52	VERY HIGH

Cluster Mean| 3.36| 0.66| High

Discussion of Findings

The findings in Table 2 show that undergraduate Business Education students at the University of Nigeria, Nsukka demonstrated a high level of future world-of-work competencies, with a cluster mean of 3.36. This indicates that the students generally perceive themselves as possessing competencies needed to function effectively in a changing and technology-driven workplace. The highest mean score was recorded for the willingness to continue developing skills as workplace demands change (M = 3.61, SD = 0.52). This was followed by the ability to learn to use new digital tools when required (M = 3.54, SD = 0.57) and the ability to work effectively with others in a team (M = 3.52, SD = 0.58). These findings suggest that continuous learning, adaptability to technological demands and collaboration are relatively strong areas among the respondents. The lowest mean score was recorded for the ability to adapt when workplace technologies, tasks or procedures change (M = 3.16, SD = 0.76), followed by the ability to use initiative when a task requires a new approach (M = 3.19, SD = 0.74). Although these competencies were still rated high, their comparatively lower mean scores suggest that students may require additional opportunities to develop practical adaptability and initiative. The findings are particularly relevant to Business Education because graduates are expected to function in workplaces where digital technologies, changing procedures and new forms of work continue to emerge. The relatively high rating for continuous learning suggests that the students recognize the importance of ongoing skill development, while the comparatively lower ratings for adaptability and initiative point to areas that may benefit from greater emphasis in Business Education programs.

Conclusion

Based on the findings of the study, it is concluded that undergraduate Business Education students at the University of Nigeria, Nsukka demonstrate a high level of artificial intelligence literacy and future world-of-work competencies. The students appear to have good awareness of the meaning, applications, limitations and responsible use of artificial intelligence, while also demonstrating competencies considered important for functioning in a changing workplace.

However, the findings also indicate that some areas require further attention. In particular, practical skills in prompting AI tools and critically evaluating AI-generated information recorded comparatively lower mean scores within the area of AI literacy. Similarly, adaptability to changing workplace technologies and procedures and the use of initiative when approaching new tasks recorded comparatively lower mean scores among the future world-of-work competencies.

The study therefore concludes that although the students possess a generally positive foundation for an AI-driven and changing world of work, Business Education programmes should continue to provide practical learning experiences that strengthen students' ability to use AI effectively, evaluate its outputs critically, adapt to technological changes and take initiative in solving emerging workplace problems.

Recommendations

Based on the findings, the following recommendations are made:

1. Business Education programs should provide more practical AI-based learning activities that enable students to interact with different AI tools and develop effective prompting and task-specific application skills.
2. Lecturers should incorporate critical evaluation of AI-generated information into classroom activities. Students should be taught to verify AI-generated content, identify possible errors and distinguish reliable information from misleading outputs.

3. Business Education curriculum and instructional practices should place greater emphasis on adaptability and initiative. Students should be exposed to practical tasks, simulations, projects and problem-solving activities that require them to respond to unfamiliar workplace situations.
4. Universities should encourage continuous digital skills development among Business Education students. Workshops, seminars and practical training can be used to expose students to emerging technologies relevant to accounting, business, education and office-related occupations.
5. Students should be encouraged to practice responsible and ethical use of AI. This should include attention to privacy, human judgment, responsible use of AI-generated information and appropriate academic use of AI tools.
6. Business Education lecturers should model the appropriate integration of AI into teaching and learning. This can help students understand not only how to use AI tools but also when, why and when not to rely on them.

LEVERAGING ARTIFICIAL INTELLIGENCE AND AUTOMATION FOR ENTREPRENEURIAL LEARNING IN AFRICAN BUSINESS EDUCATION

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Abstract

The rapid advancement of Artificial Intelligence (AI) and automation is fundamentally transforming global business operations, entrepreneurial practices, and the competencies required for success in the 21st century. In the African context, this transformation presents a unique duality of opportunities and challenges for business education systems striving to remain relevant in an increasingly digital economy. This paper critically examines how business education can strategically leverage AI and automation to drive digital and entrepreneurial transformation across African institutions. Adopting a conceptual and analytical research design, the study explores the integration of AI-powered tools, automated learning systems, and digital simulation environments in enhancing entrepreneurial knowledge, innovation capacity, and data-driven decision-making skills among students. The paper further evaluates the extent to which African higher education institutions are incorporating these technologies into their curricula and pedagogical practices. Findings reveal that AI and automation have significant potential to improve curriculum relevance, foster experiential learning, and bridge the gap between theoretical instruction and real-world entrepreneurial practice. However, challenges such as inadequate digital infrastructure, limited faculty capacity, and policy gaps continue to hinder widespread adoption. The study emphasizes the need for strategic investment in digital ecosystems, continuous professional development for educators, and stronger collaboration between academia and industry. The paper concludes that proactive integration of AI and automation into business education can empower students with critical digital competencies, enhance innovation, and position African graduates to compete effectively in global, technology-driven markets. Practical recommendations are provided to guide policymakers, educators, and institutions toward building sustainable and future-oriented entrepreneurial learning environments.

Keywords: *Business Education, Artificial Intelligence, Automation, Entrepreneurship Education, Digital Transformation, Africa*

Background of the Study

The global economy is undergoing a profound transformation driven by rapid advancements in Artificial Intelligence (AI), automation, big data analytics, and digital technologies. These innovations are reshaping how businesses operate, compete, and create value. AI technologies—including machine learning, natural language processing, and intelligent automation—are increasingly being deployed to enhance decision-making processes, optimize operations, and generate predictive insights (Brynjolfsson & McAfee, 2014; Kaplan & Haenlein, 2020).

Automation has significantly altered the nature of work by reducing reliance on manual and repetitive tasks while increasing demand for cognitive, analytical, and creative skills. As routine business functions become automated, entrepreneurs and employees are expected to focus more on innovation, strategic thinking, and problem-solving. This shift has major implications for business education, which must evolve to prepare students for technology-driven environments.

In Africa, the digital transformation of business presents both significant opportunities and structural challenges. On one hand, AI and automation offer the potential to accelerate economic development, improve productivity, and foster innovation-driven entrepreneurship. On the other hand, many African educational institutions face constraints such as limited access to digital infrastructure, inadequate funding, and insufficient integration of emerging technologies into curricula (Abdullahi et al., 2020; World Bank, 2021).

Traditionally, business education in many African institutions has emphasized theoretical instruction, basic accounting, and general management principles, often with limited exposure to digital tools and real-world entrepreneurial applications. Consequently, graduates may lack the practical competencies required to operate in modern digital economies, including data literacy, technological adaptability, and innovation skills (Chigona & Chigona, 2013).

To remain relevant, business education must transition from conventional teaching approaches to more dynamic, technology-enhanced learning models. Integrating AI and automation into entrepreneurship education can facilitate experiential learning, improve student engagement, and equip learners with the skills needed to thrive in increasingly complex and competitive markets.

Problem Statement

Despite the growing importance of AI and automation in modern business environments, many business education programs in Africa continue to rely heavily on traditional teaching methods that prioritize theoretical knowledge over practical application. This has resulted in a significant disconnect between the skills students acquire during their education and the competencies required in the digital economy. Graduates often lack exposure to AI tools, data analytics platforms, and automated business systems, which are increasingly essential for entrepreneurial success. This skills gap limits their employability, reduces their capacity for innovation, and constrains their ability to establish and manage technology-driven enterprises (Abdullahi et al., 2020; OECD, 2019).

Furthermore, institutional challenges such as inadequate digital infrastructure, limited faculty expertise in emerging technologies, and absence of supportive policy frameworks hinder the effective integration of AI and automation into business education. Without deliberate intervention, this gap may widen, leaving African graduates at a disadvantage in the global marketplace.

Objectives

The main objective of this study is to examine the role of Artificial Intelligence and automation in transforming business education and entrepreneurial learning in Africa.

Specifically, the study aims to:

1. Analyze the impact of AI and automation on entrepreneurial learning processes and business practices.
2. Assess the extent of integration of AI and automation technologies in African business education curricula.
3. Identify effective strategies for enhancing digital literacy, innovation, and entrepreneurial competencies among students.
4. Explore institutional and policy factors influencing the adoption of AI-driven education systems.

Research Questions

The study seeks to answer the following research questions:

1. In what ways does Artificial Intelligence influence entrepreneurial learning, innovation, and business practices in Africa?
2. To what extent are AI and automation technologies currently integrated into business education programs in African institutions?
3. What strategies can be implemented to enhance the adoption and effective use of AI and automation in entrepreneurship education?
4. What challenges hinder the integration of digital technologies in African business education systems?

Significance of the Study

This study is highly significant in several respects:

1. **Educational Significance:** It provides insights into how business education can be restructured to align with digital transformation trends, thereby improving teaching effectiveness and student learning outcomes.
2. **Policy Significance:** The findings offer guidance for policymakers in developing frameworks that support the integration of AI and automation into education systems.
3. **Economic Significance:** By equipping students with relevant digital and entrepreneurial skills, the study contributes to workforce development, innovation, and economic growth in Africa.
4. **Institutional Significance:** Higher education institutions can use the recommendations to redesign curricula, invest in digital infrastructure, and enhance faculty capacity.

Concept of Business Education

Business education is a multidisciplinary field that focuses on equipping learners with the knowledge, skills, and attitudes required for effective participation in business environments, entrepreneurship, and organizational management. It encompasses areas such as accounting, finance, marketing, management, and entrepreneurship, with an increasing emphasis on digital competencies and innovation (Robinson & Hayes, 2020).

Modern business education extends beyond theoretical instruction to include experiential learning, problem-based approaches, and real-world applications. This shift is necessary to prepare students for

dynamic and complex business environments characterized by rapid technological change. In the digital era, business education must incorporate emerging technologies such as AI, data analytics, and automation to remain relevant.
Furthermore, business education plays a critical role in fostering entrepreneurial mindsets by encouraging creativity, risk-taking, and opportunity recognition. It is a key driver of economic development, particularly in developing regions like Africa, where entrepreneurship is essential for job creation and poverty reduction.

Digital Transformation in Business Education

Digital transformation refers to the integration of digital technologies into all aspects of business and education, fundamentally changing how value is delivered and how learning occurs. In the context of business education, digital transformation involves the adoption of e-learning platforms, AI-powered systems, virtual simulations, and data-driven instructional methods (Westerman et al., 2014).
These technologies enable more personalized, flexible, and interactive learning experiences. For example:

1. **AI-driven learning platforms** adapt content based on student performance.
2. **Virtual simulations** allow students to practice business decision-making in risk-free environments.
3. **Learning analytics** provide real-time feedback to improve student outcomes.

Digital transformation also supports blended learning approaches, combining traditional classroom instruction with online and technology-enhanced methods. This approach enhances accessibility, especially in regions where physical educational resources may be limited. However, successful digital transformation requires not only technological infrastructure but also institutional readiness, faculty competence, and supportive policies.

Artificial Intelligence and Automation in Entrepreneurship

Artificial Intelligence (AI) and automation are transforming entrepreneurial ecosystems by enabling data-driven decision-making, operational efficiency, and innovative business models. AI technologies such as machine learning, natural language processing (NLP), and computer vision allow entrepreneurs to analyze large datasets, predict market trends, and personalize customer experiences (Kaplan & Haenlein, 2020; Dwivedi et al., 2021).
AI-powered tools are increasingly used in:

1. Market analysis and forecasting (predictive analytics)
2. Customer relationship management (CRM) through chatbots and recommendation systems
3. Financial decision-making, including risk assessment and fraud detection
4. Supply chain optimization

Automation complements AI by handling repetitive and routine tasks such as bookkeeping, inventory management, and customer service interactions. This allows entrepreneurs and learners to focus on strategic and creative functions, which are critical for innovation.
In entrepreneurship education, AI-driven platforms and simulation tools create immersive learning environments where students can experiment with business ideas, test strategies, and receive real-time feedback. According to OECD (2019), such technologies enhance experiential learning and reduce the risks associated with real-world business experimentation.
Moreover, AI fosters entrepreneurial innovation by enabling the creation of new products and services, such as fintech solutions, e-commerce platforms, and digital marketplaces, which are particularly relevant in the African context.

Entrepreneurial Learning in the Digital Era

Entrepreneurial learning in the digital era is characterized by a shift from traditional classroom instruction to technology-enhanced, learner-centered approaches. This form of learning emphasizes the development of critical competencies such as digital literacy, problem-solving, creativity, adaptability, and innovation.
Digital technologies enable:

1. Collaborative learning environments through online platforms

2. Access to global knowledge resources
3. Real-time data analysis for decision-making
4. Simulation-based learning for practical experience

Students are expected not only to understand business concepts but also to apply them using digital tools. For instance, learners may use data analytics software to identify market opportunities or AI tools to design marketing strategies. Chigona and Chigona (2013) argue that integrating digital technologies into education enhances student engagement and improves learning outcomes. Additionally, digital entrepreneurial learning encourages self-directed learning, where students take responsibility for their educational progress.

In Africa, digital learning platforms have expanded access to education, particularly in remote areas. However, disparities in access to technology and internet connectivity remain a significant challenge.

Case Studies in Africa

Several African institutions have begun integrating AI and automation into business education, demonstrating the transformative potential of these technologies:

University of Cape Town (South Africa):

The University utilizes virtual business simulations and digital case studies to enhance entrepreneurial decision-making. These tools allow students to manage virtual enterprises and respond to real-time business challenges.

Covenant University (Nigeria):

Incorporates AI-based tools and digital platforms into entrepreneurship education, enabling students to analyze business data and develop innovative solutions.

Strathmore University (Kenya):
Employs data analytics and automated learning systems to track student performance and improve instructional delivery.

Ashesi University (Ghana):
Focuses on integrating technology and leadership training, promoting innovation-driven entrepreneurship among students.
These case studies highlight the growing recognition of AI and automation as essential components of modern business education in Africa. However, adoption remains uneven across institutions due to resource constraints and varying levels of digital readiness.

Theoretical Framework
This study is anchored on the Diffusion of Innovation Theory developed by Rogers (2003). The theory explains how new ideas, technologies, and innovations spread within a social system over time.

According to Rogers, the adoption of innovation is influenced by:

1. Relative advantage (perceived benefits over existing methods)
2. Compatibility (alignment with existing values and practices)
3. Complexity (ease of use)
4. Trialability (ability to test the innovation)
5. Observability (visibility of results)

In the context of this study, AI and automation represent innovations that must be adopted by educational institutions. The theory helps explain why some institutions adopt these technologies quickly while others lag behind.
It also highlights the importance of:

1. Institutional leadership

2. Faculty readiness
3. Policy support
4. Technological infrastructure

Understanding these factors is crucial for designing effective strategies to promote the integration of AI and automation in business education.

Research Methodology

Research Design

This study adopts a conceptual and analytical research design, which involves the systematic review and synthesis of existing literature on AI, automation, and entrepreneurship education. This approach is appropriate because it allows for the exploration of theoretical perspectives, emerging trends, and best practices without relying on primary data collection.

Population and Sample

The population of the study consists of scholarly articles, policy reports, institutional publications, and conference proceedings related to business education, AI, and entrepreneurship in Africa

A purposive sampling technique was used to select relevant materials published between 2015 and 2025, ensuring that the study reflects current developments in technology and education.

Data Collection Methods

Data were collected from:

1. Peer-reviewed academic journals
2. Books and scholarly publications
3. Reports from international organizations (e.g., World Bank, OECD)
4. Institutional case studies
5. Credible online databases

This multi-source approach enhances the reliability and validity of the study.

Data Analysis

A thematic analysis was employed to identify key patterns and themes in the literature. The analysis focused on:

1. AI applications in education
2. Automation tools in entrepreneurship
3. Curriculum integration strategies
4. Pedagogical innovations

This method enabled the identification of gaps, challenges, and opportunities in the integration of AI and automation in African business education.

Discussion of Findings

Impact of AI on Entrepreneurial Learning

The findings indicate that AI significantly enhances entrepreneurial learning by improving students' ability to analyze data, identify opportunities, and make informed decisions. AI tools provide real-time insights, enabling learners to simulate business scenarios and evaluate outcomes effectively (Dwivedi et al., 2021).

Students exposed to AI-driven learning environments demonstrate:

1. Improved critical thinking skills
2. Enhanced innovation capacity
3. Better risk assessment abilities

Integration of AI and Automation in African Institutions

Although some institutions have made progress, the integration of AI and automation in African business education remains limited. Key barriers include:

1. Inadequate digital infrastructure
2. Limited funding
3. Lack of faculty expertise
4. Policy constraints

These challenges hinder the widespread adoption of digital technologies in education.

Strategies for Effective Integration

1. Curriculum Redesign

Curricula should incorporate AI tools, data analytics, and digital business models. Courses should emphasize practical applications and real-world problem-solving.

2. Faculty Development

Continuous training programs should be provided to equip educators with the skills needed to use AI technologies effectively.

3. Policy Support
Governments and institutions should develop policies that promote digital transformation and provide funding for technological infrastructure.

4. Industry Collaboration
Partnerships with technology companies can provide students with hands-on experience and exposure to real-world business environments.

Implications

The integration of AI and automation has far-reaching implications:

1. **Educational:** Enhances teaching and learning effectiveness
2. **Economic:** Promotes innovation and entrepreneurship
3. **Social:** Improves employability and digital inclusion

Limitations

The study is limited by its reliance on secondary data. Future research involving empirical methods such as surveys and interviews could provide deeper insights.

Future Research
Future studies should:

1. Examine specific AI tools in education
2. Conduct cross-country comparative studies
3. Investigate long-term impacts of automation on employment and entrepreneurship

Conclusion

The study concludes that AI and automation are critical drivers of transformation in business education and entrepreneurship. Their integration enhances learning outcomes, fosters innovation, and prepares students for the demands of the digital economy.
For Africa to remain competitive, educational systems must embrace these technologies and adapt to changing global trends.

Recommendations

1. Integrate AI and automation into entrepreneurship curricula.
2. Provide continuous professional development for educators.
3. Invest in digital infrastructure and policy frameworks.
4. Promote industry-academia collaboration.
5. Encourage research and innovation in digital entrepreneurship.

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SUB-THEME 3

DIGITAL TRANSFORMATION AND SKILLS ACQUISITION FOR TECHNO-PRENEURSHIP IN AFRICA

REIMAGINING BUSINESS EDUCATION FOR DIGITAL TRANSFORMATION AND TECHNO-PRENEURSHIP SKILL ACQUISITION IN AFRICA: A SYSTEMATIC LITERATURE REVIEW:

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Abstract
Digital transformation is reshaping how entrepreneurial competence is taught, learned and practised, yet Business Education programmes across Africa continue to grapple with curricula, infrastructure and staff capacity that lag behind the technologies their graduates are expected to master. This systematic literature review (SLR), undertaken in accordance with the PRISMA 2020 framework, synthesizes evidence from 30 peer-reviewed studies published mainly between 2020 and 2026 to examine how Business Education can be reimagined to support digital transformation and techno-preneurship skill acquisition in Africa. Organized around three research questions and examined through the lens of the Theory of Planned Behaviour, the review identifies six overarching themes: curricular and pedagogical transformation; institutional, infrastructural and leadership enablers; conceptualization of techno-preneurial competencies; the role of artificial intelligence and digital platforms as skill-development tools; access, gender and inclusion; and policy, sustainability and labour-market alignment. Findings show that while digital transformation is expanding opportunities for experiential, technology-mediated entrepreneurship learning, its benefits in Africa remain unevenly distributed because of infrastructural deficits, inconsistent policy implementation, and gaps in educators' own digital competence. The review concludes that reimagining Business Education for techno-preneurship requires coordinated curriculum reform, sustained investment in digital infrastructure and lecturer capacity building, and closer alignment between training institutions, government policy and the labour market. Implications for theory, practice and future research are discussed.
Keywords: *Business Education, Digital Transformation, Techno-preneurship, Skill Acquisition*

Introduction
Some persons have defined Business Education in several ways; some sees Business Education as teacher education, education for secretaries, management education, and lots more. For a better understanding of business education, the concept can be better understood by considering its historical, contemporary and future orientations. Nolan, Hayden, and Malsbary (1967), in Ekpenyoung (2015), described business education as programmes and courses in business subjects commonly offered at the secondary-school level. Popham (1975), sought the views of several individuals on the meaning of business education, and their responses were as follows: a business executive replied, "Business Education is education to produce goods and services." A radical responded that it is "the avenue to enormous profit." One teacher responded with "economic concepts necessary for living in a business economy," while another answered "learning skills to enter a business or distributive job." Business education may therefore be interpreted across historical, contemporary and future contexts as technology, innovation and creativity continue to evolve. This means that the discipline must continually adjust to changing conditions and emerging trends.
Osuala (1989), regarded business education as a vital component of preparing young people for productive life. In 2004, Osuala further explained that business education consists of two broad instructional components: office education, which provides vocational preparation and continuing development for office careers, and general business education, which develops the knowledge and competencies required to manage personal business matters and make effective use of business

services. Njoku (1997), defined Business Education as an area of educational preparation that enables individuals to develop practical skills relevant to everyday life, while Njoku, in NOUN (2020), viewed business education as a programme designed to develop the functional skills, knowledge, attitudes and values that enable individuals to participate effectively in their environment. These definitions represented the field until more recent scholarship extended the concept further.

Bassey (2015), viewed Business Education programme as one whose curriculum is oriented toward developing graduates who can function independently and productively. To Enang and Okute (2019), Business Education develops competencies for specific office responsibilities while also providing the understanding required to engage effectively with business services and practices. Oyerinde, Onajite and Aina (2020), in Ukata and Amini (2022), saw, Business Education as a core component of vocational education intended to prepare learners for entrepreneurship through the development of relevant digital business competencies, making them functional in the society. Iyoha et al. (2023), in Nebolisa and Okeke (2024), described Business Education as structured instruction and training in business operations, including management, finance, marketing and entrepreneurship, aimed at equipping students with the knowledge, competencies and dispositions required to operate effectively within complex business environments to make informed professional decisions.

Business education develops competencies across fields that include Office Technology and Management, Management Information Systems, management, marketing, digital marketing, entrepreneurship, cooperative studies, insurance and accounting. Effective delivery of these components is expected to prepare learners for entrepreneurship and strengthen their digital entrepreneurial capabilities. Business education in the future refers to the purposeful incorporation of emerging digital technologies into teaching and learning so that students are better prepared for contemporary employment. In this vein, Onyeson, Egbute and Okwuokenye (2017), in Oluwo, Soneye and Apetu (2025), described Business Education as a field that combines conceptual knowledge with practical experience to prepare learners for business-related careers, including management, accounting, marketing, finance, entrepreneurship and business law. Over time, the concept has continued to develop in response to shifting economic needs, technological progress and changing educational philosophies.

The NUC Core Curriculum and Minimum Academic Standards, in Edeh and Olumakinwa (2025), describes Business Education as a specialized professional field intended to develop the knowledge, skills and competencies required for employment and career progression in office-related occupations, pedagogical skill for teaching business subjects, and capacity for self-employment or employing others. Within vocational education and training, business education connects theoretical learning with practice by combining general education with specialized preparation in areas such as accounting, entrepreneurship, marketing and office management. Edeh et al. (2025), citing the NUC CCMAS (2023), further noted that the philosophy of the Business Education programme emphasizes developing the knowledge and competencies needed for self-reliance, economic independence, gainful employment, meaningful living and contribution to societal progress. Atah, Nwuso and Bessong (2022), in Edeh et al. (2025), opined that, Business Education is structured to prepare graduates for employment and career development in office-based occupations, to develop expertise in delivering business instruction, and to enable self-employment. The core curriculum minimum academic standards have increasingly oriented business education toward the development of twenty-first-century entrepreneurial and employability skills, including digital citizenship, digital literacy, media literacy, teamwork, multitasking, information literacy, capacity building, adaptability, critical thinking, business analytics, customer service, research, communication, problem-solving and flexibility. Taken together, these conceptions confirm that business education, as a course of study, must continually respond to changing times and emerging trends.

Digital Transformation

Digital transformation represents a far-reaching change in how technology is embedded in everyday activities, with digital systems increasingly underpinning domains such as education and business. Developments in artificial intelligence, the Internet of Things (IoT) and big data are reshaping how people live, work and learn. Park and Kim (2025), describe digital transformation as a broad restructuring of educational ecosystems and value-creation processes driven by the rapid growth of intelligent technologies, including artificial intelligence, big data and learning analytics. Such developments create new possibilities such as personalized learning pathways and real-time formative feedback alongside complex challenges for present-day educational practice. Bouwmans, Lub, Orlowski and Nguyen (2024), note that, accelerating developments in automation, artificial intelligence, big data, cloud computing, robotics and the IoT have transformed organizational operations by

expanding capacities for information processing, storage and retrieval, enabling real-time analysis and supporting gains in productivity, efficiency and quality.

Techno-preneurship Skill Acquisition:
Techno-preneurship can be defined as the ability to effectively use digital technologies to drive business goals and foster innovation, playing a vital role in the development of technology-based enterprises. Among the associated benefits include wider access, stronger learner participation and the development of digital capabilities increasingly required by contemporary entrepreneurs. A major benefit of digital transformation is its capacity to broaden participation in education. Eze et al. (2024), note that, digital technologies can narrow educational inequalities by expanding access to high-quality learning resources that many learners might otherwise be unable to reach, ensuring that aspiring technopreneurs irrespective of location or socio-economic circumstances can develop the knowledge and competencies required for entrepreneurial success. Digital tools can also strengthen student engagement by supporting interactive and immersive learning. Multimedia resources, including videos, podcasts and interactive quizzes, can maintain interest, aid retention and accommodate varied learning preferences, thereby improving inclusion and instructional effectiveness. The integration of digital technologies into Business Education is therefore an important avenue for advancing techno-preneurship and stimulating innovation across African countries. Available digital resources now extend from basic internet connectivity to advanced technologies such as artificial intelligence and virtual reality revolutionizing how entrepreneurship is taught and practised.
The digitalization of entrepreneurship education has become a major development in contemporary education, altering the ways entrepreneurship is taught, learned and applied. It involves embedding digital tools and technologies within curricula to support learning experiences that are more flexible, accessible, interactive and personalized (Othman et al., 2021). This systematic literature review examines how Business Education can be reimagined to support digital transformation and techno-preneurship skill acquisition among African learners. The review synthesizes evidence from 30 recent scholarly studies appearing mainly from 2020 through 2026, with particular attention to Business Education, digital transformation and techno-preneurship skills. The review was guided by three research questions focusing on Business Education, digital transformation, and the techno-preneurship skills required by recipients of Business Education.

Statement of the Problem: Emerging technologies present transformative opportunities for Business Education, enabling students to adapt to future trends associated with digital transformation. Digital transformation opens avenues for reimagining Business Education, enabling students to acquire techno-preneurship skills that lead organizations toward innovation and sustainable growth. However, achieving this vision requires a shift away from traditional pedagogical methods toward embracing innovative digital skills, a shift that involves curriculum, lecturers, students, infrastructure, institutional policy, and the connection between educational institutions and the labour market. Despite the rapid growth of techno-preneurship in Africa, challenges such as low technology adoption in underdeveloped areas, limited access to funding for tech start-ups, gaps in education and digital skills remain prevalent. By addressing this gap, this study integrated existing literature to establish how Business Education can be reimagined to respond to digital transformation and techno-preneurship in Africa.
Purpose of the Review: This systematic literature review aims to integrate recent empirical and scholarly evidence concerning the role of Business Education in promoting digital transformation and techno-preneurship acquisition skill in Africa.
Research Questions: Three research questions guided this systematic literature review:

1. to what extent is Business Education being reimagined and transformed to respond to the changing demands of digital transformation in Africa
2. to what extent does Business Education prepare learners to adapt to techno-preneurship skills in Africa
3. to what extent does Business Education integrate digital transformation for techno-preneurship skill acquisition in Africa

Theoretical Framework
The Theory of Planned Behaviour (TPB) provided the theoretical foundation for this systematic literature review propounded by Ajzen's (1985). TPB is a cognitive framework which holds that, an individual's intention is a central predictor of whether a particular behaviour will be performed (Brookes, 2026). The TPB is highly relevant to understanding entrepreneurial intentions, especially within the realm of digital transformation and techno-preneurship skills acquisition. The theory posits that behavioural intention is

influenced by three principal factors: attitude toward the behaviour, subjective norms and perceived behavioural control. TPB remains a robust lens for this study because the perceived benefits and strengths of digital transformation can shape attitude, subjective norms and perceived behavioural control, thereby shaping intention and subsequent use. Lopes, Cunha, Silva and Martins (2026), note that, in entrepreneurial settings this theory is relevant because, digital transformation can support opportunity exploration, content generation and preliminary market analysis, thereby influencing how individuals evaluate the desirability and feasibility of entrepreneurial action in a digital environments.

Research Methods and Design

This study systematically examines peer-reviewed scholarly evidence on Business Education, Digital Transformation and Techno-preneurship Skill Acquisition. The review procedure was structured in accordance with PRISMA 2020 (see Supplementary Materials, figure 1, PRISMA Checklist) and proceeded through four stages: identification, screening, eligibility assessment and final inclusion of relevant studies (Figure 1).

Identification: The literature search was conducted through the Google Scholar database, covering the period 2020 to 2026. The search strategy combined key expressions including "Business Education", "Digital Transformation" and "Techno-preneurship Skill Acquisition", combined with Boolean operators (AND/OR) and applied to titles, abstracts and keywords. Additional records were sought by manually examining the reference lists of retrieved articles through a snowballing approach in order to identify additional eligible studies not captured by the database search terms.

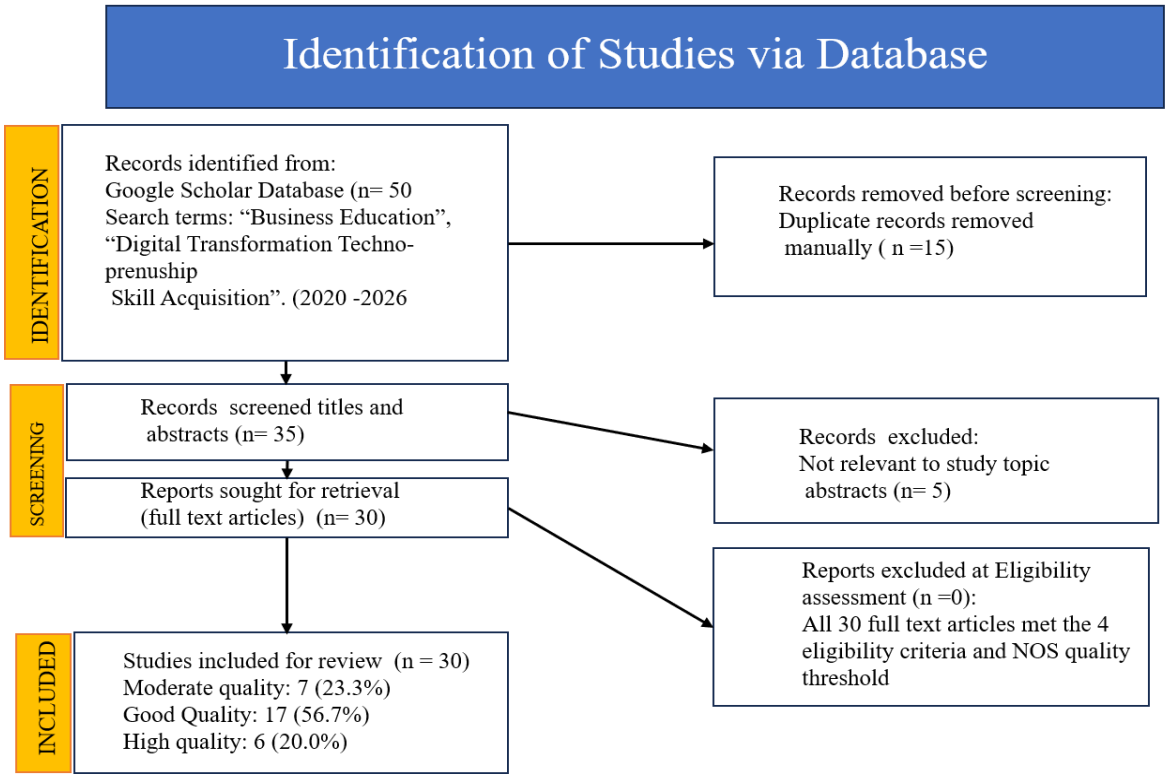


Figure 1. PRISMA 2020 flow diagram outlining systematic review process.

Screening

The search produced 50 records. Manual removal of 15 duplicates reduced the pool to 35. Two research assistants then independently assessed the titles and abstracts for eligibility. Five records were excluded because they were not sufficiently relevant to the topic, leaving 30 articles for full-text assessment. Agreement between the reviewers was evaluated with Cohen's κ and produced a coefficient of 0.88, reflecting a high level of inter-rater agreement (κ ≥ 0.75). Differences concerning three records were settled through discussion and, when required, a final determination by a third researcher.

Eligibility

All 30 records that advanced beyond screening were obtained in full text and evaluated using four eligibility criteria: relevance to the review topic, methodological quality, implications for educational theory or practice, and the specificity with which digital technologies were applied. Two researchers

assessed the papers independently, and differences concerning two articles were resolved by discussion and consensus. Study quality was subsequently appraised with the Newcastle-Ottawa Scale (NOS): 7 studies (23.3%) were rated moderate (score ≤ 6), 17 (56.7%) were rated good (score = 7), and 6 (20.0%) were rated high quality (score ≥ 8). Each of the 30 studies satisfied the minimum quality requirement and was retained for analysis.

Inclusion

At the inclusion stage, no additional study was removed for inadequate educational relevance, uncertain peer-review status or methodological weakness. Consequently, the 30 studies meeting both the eligibility and quality requirements formed the final review dataset. Supplementary Table S2 provides details of the included studies.

Data Extraction and Synthesis

For the final body of studies, two researchers independently extracted information with a pre-established codebook. The extracted fields covered: (1) author(s) and publication year, (2) research design and analytical procedures, (3) sample characteristics, (4) digital technologies examined, and (5) major educational outcomes and entrepreneurial-competency variables. Data organization was checked through repeated comparison and consensus between the researchers.

The thematic synthesis applied Braun and Clarke's six-stage process: becoming familiar with the data, generating initial codes, identifying candidate themes, reviewing those themes, defining and naming them, and preparing the report. MaxQDA 24 supported visualization of coding frequencies and relationships among categories. The researchers held repeated discussions and refinement sessions to strengthen interpretive agreement. Saturation was considered achieved when additional analysis produced no new themes; six broad themes accompanied by fourteen sub-themes were then finalized. Supplementary Table S3 presents the detailed thematic structure with illustrative examples.

Risk of Bias Assessment

The quality of the included studies was assessed using a modified Newcastle Ottawa Scale (NOS). Evaluation criteria were adapted as follows: (1) the clarity and representatives of sampling procedures, including the absence of exposure bias in the comparison group; (2) the control of major confounding variables; and (3) the reliability and validity of measurement tools, procedures to prevent observer bias, and the completeness of outcome reporting. Each item was rated on a scale of 0-3 points. Based on the total score, studies were categorized as high quality (≥7 points), moderate quality (4–6 points), or low quality (<4 points). The overall average score across studies was 7.2 (±1.1).

Data Analysis

Data analysis was conducted in alignment with the study's three research questions (RQs), with analytical categories structured accordingly. First, in response to RQ1, the analysis explored structural transformations in the educational landscape induced by digital transformation, particularly their contextual and environmental implications for entrepreneurship education. Second, addressing RQ2, the review investigated how entrepreneurial competencies are conceptualized, categorized and interrelated within the framework of digital transformation. Third, in relation to RQ3, the analysis identified empirical cases involving the application of digital technologies such as AI, large language models (LLMs) and online collaborative platforms to the development of entrepreneurial competencies, and assessed their educational effectiveness.

Results

The thematic synthesis of the 30 included studies produced six broad themes accompanied by fourteen sub-themes, distributed across the three research questions as summarized in Table 1 and discussed in turn below.

Theme 1: Curricular and Pedagogical Transformation in Business Education (RQ1)

A recurring finding across the reviewed literature is that Business Education curricula are being actively redesigned to accommodate digital transformation. Zeng, Chieng and Liu (2024) propose a conceptual curriculum development framework that bridges theory and practice for digital transformation, while Kamsker and Slepcevic-Zach (2021) examine what the digital change of vocational training demands of Business Education in preparing students for future labour-market challenges. In the Nigerian context specifically, Ufondu, Obi and Chiedozie (2023), document the digital transformation of Business Education programmes in Nigerian universities for twenty-first-century skill acquisition, Wahab and Akintade (2025), analyse the incorporation of digital technologies within entrepreneurship education, and Ogwunte, Okah and Micah (2026), map emerging trends and challenges confronting Business Education in Rivers State universities. Arya (2025), similarly frames digital transformation in Business Education as preparation for the future of work. Collectively, these studies indicate that curricular reform is progressing through the redesign of course content, the introduction of digital tools into instructional

delivery, and closer attention to employability outcomes that, reform is proceeding faster in policy documents than in classroom practice.

Theme 2: Institutional, Infrastructural and Leadership Enablers of Digital Transformation (RQ1)

A second cluster of studies situates digital transformation at the institutional rather than the classroom level. Benavides, Tamayo Arias, Arango Serna, Branch Bedoya and Burgos (2020), conducted a systematic review examining digital transformation across higher education institutions and identify governance, infrastructure and organizational culture as decisive factors. Rof, Bikfalvi and Marques (2020, 2023), examine digital transformation as a driver of business-model innovation in higher education and the associated tensions institutions must overcome to sustain it, while Pridmore and Godin (2021), link business process management with digital-transformation outcomes in higher education. Leadership emerges as a distinct enabler: Cheng (2026) models how digital leadership by principals and the prevailing school digital culture together influence organizational digital agility and digital transformation in secondary education, and Kikomeko (2026), reports that, artificial intelligence adoption in strategic management improved organizational performance in a Ugandan university case study. Al-Abdallat, Al-Abdallat and Al-Abdallat (2026), and Saeed and Taher (2026), both find that, faculty and administrators regard institutional digital transformation as still uneven, with infrastructural and change-management gaps constraining implementation. At continental scale, Kangwa, Msafiri, Charles and Antony (2026), argue that advancing SDG4 through systemic digital transformation in African higher education requires coordinated investment across infrastructure, policy and staff capacity. A conclusion consistent with the Nigeria-specific findings of Nebolisa and Okeke (2024), Edeh and Olumakinwa (2025), Atah, Onwubuya and Bessong (2024) and Oluwo, Soneye and Apetu (2025), on the implementation gaps affecting the Core Curriculum Minimum Academic Standards applicable to Business Education.

Theme 3: Conceptualizing Techno-preneurial Competencies (RQ2)

The second research question is addressed most directly by studies that conceptualize and classify the competencies digital transformation demands of entrepreneurs. Park and Kim (2025), in a systematic review addressing entrepreneurial competencies within the digital-transformation era, synthesize the field into digital literacy, adaptive innovation and opportunity-recognition competency clusters. Bouwmans, Lub, Orlowski and Nguyen (2024), developed a framework of digital-transformation skills through systematic literature review, distinguishing technical, cognitive and socio-behavioural skill dimensions. Country-specific applications of these frameworks appear in Masenya's (2021), analysis of technopreneurship development as a digital strategy for youth self-employment, in Smidt and Jokonya's (2023), framework for developing technopreneurs within South Africa's digital agriculture value chains. Musa, Slamet and Abubakari (2025), extended this conceptual work empirically, showing that gender and educational level both moderate technopreneurial skills development in higher education.

Theme 4: AI, Digital Platforms and Emerging Technologies as Skill-Development Tools (RQ3)

A substantial and rapidly growing body of literature examines specific digital technologies as mechanisms for building entrepreneurial and techno-preneurial competence directly addressing RQ3. Bell and Bell (2023), discuss entrepreneurship education within the emerging context of generative artificial intelligence, and Lopes, Cunha, Silva and Martins (2026), showed how digital competencies shape entrepreneurial success in AI-powered ventures, with implications for how attitude and perceived behavioural control (per the TPB) are formed around AI tools. Cantú-Ortiz, Galeano Sánchez, Garrido, Terashima-Marin and Brena (2020), propose an AI-based educational strategy intended to support digital transformation, and Duan (2026), describes a teaching approach that integrates deep learning and case analysis for entrepreneurship education in an increasingly intelligent digital environment. At the level of specific market-facing skills, Ismiyanti et al. (2026), find that, technopreneurship training enhances student-run MSMEs' competitive edge through digital marketing, while Zulkarnaen Khidzir, Mat Daud and Hamid (2023), show how creative techno-preneurship can be accelerated through innovative design and technology integration. Broader smart-education infrastructure is illustrated by Pan, Ren, Peng, Liu and Zeng's (2026), analysis of nearly a thousand smart-education cases in China, and by Demartini, Benussi, Gatteschi and Renga's (2020), account of Italy's "Riconnessioni" digital-transformation project, both offering models, if not direct African evidence, for how large-scale technology-enabled skill development can be organized.

Theme 5: Access, Gender and Inclusion in Techno-preneurship Skill Acquisition (RQ2)

A fifth theme concerns who benefits from digital-transformation-enabled business education. Emah, Doneys, Kusakabe and Pathak (2025), apply a gender perspective to TVET skill development and pathways to employment in Nigeria, finding persistent disparities in outcomes. Musa, Slamet and Abubakari (2025), similarly, report gender- and education-level-based variation in technopreneurial

skills development. Studies focused on Generation Z learners. Hasan, Januddin and Tahir (2026), on the mediating power of digital business and financial literacy in technopreneurial intention, and Hasan, Nurhaliza, Nurjannah, Melati and Dewi (2026), on self-directed entrepreneurship education and digital literacy suggest that, younger cohorts show stronger baseline digital fluency but still require structured educational scaffolding to convert that fluency into venture-relevant competence. Gupta and Jeswal (2026), extended the inclusion lens to employability, examining how entrepreneurship education develops employability skills among Indian youth, a comparison that underscores how much variation exists in institutional support across emerging economies.

Theme 6: Policy, Sustainability and Labour-Market Alignment (RQ3)

The final theme links digital transformation and techno-preneurship education to policy and sustainability outcomes. Bello and Zakari (2026), argue that, digital economy and techno-preneurship-oriented economics education can advance sustainable development, poverty reduction and global prosperity in Nigeria, while Ogongo, Oduwole, Medetaji and Ehinmonorin (2025), trace the impact that digital technology has on entrepreneurship and innovation among business education graduates in Lagos State. Mohammed, Mustapha and Lawan (2025), provided firm-level evidence that digital transformation and technological orientation improve the performance of small and medium enterprises, and Wu, Zhu and Qu (2024), drawing on the China General Social Survey, confirm a positive relationship between digital technology use and entrepreneurship at national scale. Arce Paul (2026), models digital transformation, innovation capability and sustainable entrepreneurial learning structurally in higher education, and Xiao and Dahlstrand (2023), showed how skill-biased technology acquisition shapes human-capital development and employee mobility within small technology firms throgh a labour-market dynamic with direct relevance for how Business Education graduates are absorbed into technopreneurial employment. Baloyi and Obokoh (2026), framed technopreneurship as a sustainable employment pathway for youth in South Africa, and cross-cutting review evidence from Kissoka (2026), on training-needs assessment and Mwasi and Wanami (2026), on pedagogical and institutional factors influencing TVET skills acquisition in Kenya reinforces that policy coherence and institutional readinessare not technology availability alone but determine whether digital transformation translates into usable techno-preneurship skills.

Summary of Findings

Theme	Focus	Illustrative Studies
RQ1	Curricular & pedagogical transformation	Zeng et al. (2024); Ufondu et al. (2023); Wahab & Akintade (2025); Ogwunte et al. (2026); Arya (2025)
RQ1	Institutional, infrastructural & leadership enablers	Benavides et al. (2020); Rof et al. (2020, 2023); Cheng (2026); Kangwa et al. (2026); Saeed & Taher (2026)
RQ2	Conceptualizing techno-preneurial competencies	Park & Kim (2025); Bouwmans et al. (2024); Masenya (2021); Smidt & Jokonya (2023)
RQ3	AI & digital platforms as skill-development tools	Bell & Bell (2023); Lopes et al. (2026); Cantú-Ortiz et al. (2020); Ismiyanti et al. (2026)
RQ2	Access, gender & inclusion	Emah et al. (2025); Musa et al. (2025); Hasan et al. (2026a, 2026b); Gupta & Jeswal (2026)
RQ3	Policy, sustainability & labour-market alignment	Bello & Zakari (2026); Mohammed et al. (2025); Wu et al. (2024); Baloyi & Obokoh (2026)

Across all six themes, a consistent pattern emerges: digital transformation is expanding the range of tools available for techno-preneurship skill acquisition, but the realization of this potential in African contexts is bottlenecked less by technology itself than by curriculum lag, uneven institutional infrastructure, gaps in educator digital competence, and inconsistent policy implementation.

Discussion

Theoretical Implication

Through the Theory of Planned Behaviour, the findings suggest that digital transformation operates on all three antecedents of entrepreneurial intention identified by Ajzen (1985). Exposure to AI-powered tools, digital marketing platforms and generative-AI applications (Theme 4) shapes attitude toward

techno-preneurial behaviour by making entrepreneurial action feel more achievable and less resource-intensive. Institutional culture, leadership and peer norms around digital adoption (Theme 2) function as subjective norms that either encourage or discourage students from pursuing digital ventures. Curriculum design and access to infrastructure (Themes 1, 5 and 6) shape perceived behavioural control by determining whether students believe they possess the competence and resources to act on entrepreneurial intent. This synthesis therefore extends TPB's application beyond individual psychology to the institutional level: for African Business Education, attitude, norms and perceived control are not purely individual constructs but are actively constructed or constrained by curriculum, infrastructure and policy choices made at the institutional and national level.

Practical Implications

For curriculum planners, the review suggests that reimagining Business Education for techno-preneurship requires embedding digital tools (AI applications, digital marketing platforms, e-commerce systems, data analytics) directly into core Business Education courses rather than treating digital literacy as a stand-alone add-on module. For institutional leaders, the consistent finding that leadership and organizational culture shape digital transformation outcomes (Theme 2) imply that, technology investment alone is insufficient without deliberate change management and lecturer capacity building. For policymakers, the recurring gap between the Core Curriculum Minimum Academic Standards and their classroom implementation in Nigerian universities (Theme 1; Theme 2) points to a need for implementation monitoring, not just standard-setting. For labour-market alignment, the review's Theme 6 findings suggest that techno-preneurship education is most effective for employability and venture creation when institutions build structured links to industry, funding bodies and digital economy initiatives rather than treating skill acquisition as purely classroom-bound.

Research Synthesis and Future Directions

Drawing together evidence from the three research questions, the review indicates that Business Education in Africa is in a transitional rather than a transformed state: reform is visible in policy documents, curriculum frameworks and pilot initiatives (RQ1), and there is a growing conceptual consensus on what techno-preneurial competence entails (RQ2), but the systematic integration of digital transformation into everyday teaching and assessment practice (RQ3) remains the weakest link, constrained by infrastructure, funding and educator readiness. This pattern is broadly consistent across the Nigerian-focused studies and the wider African and comparative-international literature reviewed, suggesting the transitional gap is structural rather than institution-specific. Future research would benefit from more African-based empirical (rather than conceptual or review) studies that measure actual learning and venture-creation outcomes from digitally integrated Business Education curricula, longitudinal studies tracking graduates' techno-preneurial trajectories, and comparative studies examining why some African institutions have progressed further than others in translating digital transformation policy into classroom practice.

Conclusions /Summary

This systematic literature review synthesized 30 studies to examine how Business Education can be reimagined for digital transformation and techno-preneurship skill acquisition in Africa. The evidence shows that digital transformation is reshaping the conceptual and curricular foundations of Business Education (RQ1), that a coherent set of techno-preneurial competencies is emerging in the literature (RQ2), and that specific digital technologies, particularly, AI-based tools and digital platforms are being applied with promising but still limited evidence, to build these competencies in African higher education contexts (RQ3). Across all three questions, institutional infrastructure, educator capacity, and policy implementation consistently emerged as the factors separating stated ambition from realized outcomes.

Research Integration, Limitations and Future Research Directions

Integrating these findings, the review recommends that Business Education programme in Africa pursue curriculum reform, lecturer digital-capacity building, infrastructure investment and stronger institution and industry policy linkages as a coordinated package rather than an isolated interventions, since the reviewed evidence suggests that progress on only one of these fronts is insufficient to produce measurable techno-preneurship outcomes. The review is subject to several limitations. First, the search was restricted to Google Scholar and to publications from 2020 through 2026, which may have excluded relevant earlier or non-indexed African scholarship; future reviews should extend the search strategy to additional databases, including Scopus, Web of Science and African Journals Online to strengthen comprehensiveness. Second, the review draws on a mix of conceptual, review-based and empirical studies, and relatively few of the included studies report African, empirical, classroom-level outcome data specifically on techno-preneurship skill acquisition gap, this review itself highlights rather than resolves. Third, as with any thematic synthesis, the interpretation of themes involved a degree of researcher judgement, mitigated here through dual independent coding, inter-rater reliability checks,

and NOS-based quality appraisal, but not eliminated. Future research should prioritize empirical, outcome-focused studies conducted within African Business Education institutions, comparative cross-country research within Africa, and longitudinal tracking of graduates' techno-preneurial outcomes, in order to move the field from conceptual consensus toward evidence-based curricular reform.

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DIGITAL TRANSFORMATION AND SKILLS ACQUISITION FOR TECHNOPRENEURSHIP AMONG UNDERGRADUATES OF BUSINESS EDUCATION IN CROSS RIVER STATE.

BY

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Abstract

This study examined the relationship between digital transformation, digital skills acquisition and technopreneurial skills among undergraduates of Business Education in Cross River State. Specifically, the study examined the extent of digital transformation, the extent to which digital skills acquisition enhances technopreneurial skills, and the relationship between digital transformation and technopreneurial skills among the respondents. Three research questions and three null hypotheses guided the study. A correlational research design was adopted for the study. The population comprised 200 undergraduates of Business Education in Cross River State, and the entire population was studied. Data were collected using a structured questionnaire, while mean and standard deviation were used to answer the research questions. Pearson Product-Moment Correlation was used to test the null hypotheses at the 0.05 level of significance, with a criterion mean of 2.50. The findings revealed that digital transformation was evident to a high extent, with a cluster mean of 3.05 and standard deviation of 0.53. Digital skills acquisition was also rated high, with a cluster mean of 3.07 and standard deviation of 0.53, while technopreneurial skills recorded a cluster mean of 3.08 and standard deviation of 0.53. The hypothesis tests revealed significant positive relationships between digital transformation and digital skills acquisition ($r = .419$, $p < .001$), digital skills acquisition and technopreneurial skills ($r = .527$, $p < .001$), and digital transformation and technopreneurial skills ($r = .405$, $p < .001$). Accordingly, all three null hypotheses were rejected. The study concludes that digital transformation, digital skills acquisition and technopreneurial skills are positively related among Business Education undergraduates in Cross River State. It recommends, among others, stronger integration of digital technologies into Business Education, improved access to digital infrastructure, practical digital skills training, and greater emphasis on technology-based venture development and technopreneurship education.

Keywords: digital transformation, digital skills acquisition, technopreneurial skills, Business Education, undergraduates, technopreneurship

Introduction

The twenty-first century has witnessed remarkable advances in digital technologies, resulting in profound changes in the way individuals, organisations and economies operate. Technologies such as artificial intelligence (AI), cloud computing, big data analytics, the Internet of Things (IoT), blockchain, mobile applications and digital communication platforms have transformed business processes, service delivery, communication, knowledge management and value creation. These technologies have not only changed the tools used in economic activities but have also altered the competencies required to participate effectively in contemporary workplaces and entrepreneurial environments. Consequently, individuals and organisations are increasingly expected to possess the digital knowledge, technical competencies, adaptability, creativity and problem-solving abilities required to function effectively in a technology-driven economy. The educational sector has equally experienced this transformation, as higher education institutions increasingly integrate digital technologies into teaching, learning, assessment, research and administrative activities. Universities are therefore expected to move beyond the transmission of theoretical knowledge to the development of digital competencies, innovation

capabilities, problem-solving skills and entrepreneurial mindsets that can prepare graduates for the changing world of work (Musa & Auwalu, 2024).

The growing integration of digital technologies into organisational activities has given rise to what is broadly described as digital transformation. Digital transformation is more comprehensive than the mere adoption or use of computers and other electronic devices. It involves a fundamental reconfiguration of organisational processes, capabilities, practices and value-creation mechanisms through the strategic application of digital technologies (Egodawele et al., 2022). Val in Zeng, Chieng and Liu (2024) defined digital transformation as a fundamental change process enabled by the innovative use of digital technologies, together with the strategic leveraging of resources and capabilities to improve an entity and redefine its value proposition to stakeholders. From this perspective, digital transformation represents an ongoing process through which organisations and institutions use technology to improve performance, enhance innovation, expand opportunities and respond to changing environmental demands. Technology and digitalisation-based industries continuously develop tools that promote business activities, strengthen human resources and enable competitive technopreneurs to optimise creativity, innovation, knowledge, experience and skills for improved productivity. Digital transformation has therefore become an important driver of innovation, productivity, entrepreneurship and economic development in both developed and developing economies (Musa & Auwalu, 2024).

The implications of digital transformation are particularly significant within higher education because universities serve as major institutions for developing the human capital required by contemporary economies. The increasing use of digital learning management systems, online learning platforms, virtual classrooms, electronic resources, collaborative technologies and digital assessment tools has changed how students acquire knowledge and develop practical competencies. Rather than relying exclusively on conventional classroom instruction, students can now access current information, collaborate across geographical boundaries, engage with digital content and develop competencies through technology-supported learning environments. This transformation creates opportunities for Business Education students to acquire skills that are directly relevant to modern business practices. However, the availability of digital technologies alone does not guarantee meaningful skills development. Students must have regular opportunities to use these technologies in authentic academic, business and entrepreneurial contexts. Thus, effective digital transformation in higher education should be understood not simply in terms of technological availability but also in terms of its capacity to facilitate meaningful learning, competence development, innovation and practical application.

One of the important areas in which digital transformation has influenced contemporary economic activities is entrepreneurship. Traditional entrepreneurship generally emphasises opportunity identification, resource mobilisation, innovation and value creation for the establishment and growth of business ventures. However, the increasing digitalisation of economic activities has changed the nature and processes of entrepreneurship. Entrepreneurs now rely on digital technologies for identifying market opportunities, developing products and services, communicating with customers, conducting market research, promoting products, processing payments, managing operations and accessing markets beyond their immediate geographical locations. Social media, e-commerce platforms, digital payment systems, mobile technologies, cloud-based applications and other digital tools have consequently created new possibilities for establishing and expanding businesses. This transformation has contributed to the emergence of technopreneurship as an important dimension of contemporary entrepreneurship.

Technopreneurship refers to the systematic application of technological knowledge, digital tools, experiences, skills and entrepreneurial competencies in identifying opportunities, creating ventures and achieving business growth and expansion. According to Atanasova in Shahrim, Azman, Sufian and Jamel (2026), technopreneurship involves entrepreneurial activities in which digital technologies constitute a core platform for opportunity recognition, venture creation and business growth. It therefore represents the intersection between technology and entrepreneurship, where technological knowledge and entrepreneurial thinking are combined to create innovative products, services, processes and business models. Technopreneurs do not merely use technology as an operational tool; they identify ways in which emerging technologies can be transformed into economic opportunities and innovative business solutions. The ability to combine technological competencies with creativity, opportunity recognition, risk-taking, problem-solving and business management is consequently becoming increasingly important for graduates entering the contemporary labour market.

The growth of technopreneurship makes digital skills acquisition an essential component of contemporary education. Skills acquisition refers to the systematic process through which individuals

develop practical, technical, cognitive, managerial and entrepreneurial competencies required to perform effectively in employment or establish and manage enterprises. Within the digital economy, these competencies extend beyond basic computer literacy to include digital communication, information search and evaluation, data management, digital marketing, business analytics, software application, online collaboration, content creation, problem-solving, innovation and creative thinking. Okute et al. (2023) noted the importance of such competencies in enabling graduates to identify opportunities within the digital economy and transform innovative ideas into viable business ventures. Thus, digital skills acquisition provides an important foundation upon which students can develop the technological confidence and practical capabilities necessary for technopreneurship.

The relationship between digital skills and technopreneurship is particularly relevant to Business Education. Business Education occupies a strategic position in preparing individuals for employment, self-employment and participation in business and economic activities. Traditionally, the programme has focused on areas such as accounting, commerce, office technology, marketing and business management. However, the rapid digitalisation of business operations has expanded the knowledge and competencies expected of Business Education graduates. Contemporary Business Education increasingly requires exposure to digital literacy, electronic commerce, digital marketing, financial technology (FinTech), business analytics, cloud computing, cybersecurity awareness and other technology-enabled business practices. Ufondu et al. (2023) and Enang (2024) emphasised the need for Business Education curricula to respond to changing technological and labour-market demands. The implication is that Business Education can no longer be effectively delivered through predominantly traditional approaches if graduates are to function competitively in technology-driven business environments.

The integration of digital transformation into Business Education therefore provides an opportunity to connect classroom learning with emerging workplace and entrepreneurial realities. Through meaningful exposure to digital technologies, students can learn to search for and evaluate business information, communicate with customers through digital platforms, promote products and services online, use digital payment systems, create business content, analyse business problems and identify technology-enabled opportunities. Such experiences can strengthen students' confidence and readiness to apply technology in business settings. More importantly, they can help students move from being passive consumers of technology to becoming innovative users and creators of technology-enabled business solutions. Digital transformation can thus contribute to the development of the digital competencies upon which technopreneurial skills are built.

Empirical evidence supports the importance of digital transformation and digital skills in preparing Business Education students for contemporary economic activities. Ekoh-Nweke and Ikpeama (2024) found that digitalisation significantly enhances entrepreneurial and managerial skills acquisition among Business Education students in public universities in South-East Nigeria. Their findings suggest that exposure to digital technologies can improve students' readiness for self-employment and their ability to function effectively in digitally enabled workplaces. Similarly, David et al. (2024) reported that digitalisation of skills acquisition improves the employability of Business Education graduates by equipping them with competencies required in modern organisations and digital enterprises. These findings indicate that digital transformation has implications that extend beyond academic learning to students' employability and entrepreneurial preparedness.

The role of digital skills in entrepreneurial development is further demonstrated by Falobi (2023), who observed that Business Education students with digital entrepreneurial skills are better positioned to exploit opportunities in areas such as online business, digital marketing, e-commerce and technology-enabled service delivery. Enang (2024) similarly emphasised that digital entrepreneurial competencies have become indispensable for Business Education graduates because employers and contemporary business environments increasingly demand technology-oriented competencies for productivity and innovation. In a related study, Okiridu and Smart (2024) investigated digital entrepreneurial skills acquisition and self-empowerment among postgraduate Business Education students in Rivers State Universities. Using a correlational research design and Pearson Product-Moment Correlation, the study found that data visualisation skill and app development skill acquisition enhanced the self-empowerment of postgraduate Business Education students. The finding provides further evidence that specific digital competencies can contribute to students' capacity for self-reliance and productive engagement.

Evidence from outside the university student population also reinforces the connection between digital skills and entrepreneurial engagement. Adeniyi, Fasanmi and Olawemo (2024) examined the relationship between digital skills acquisition and entrepreneurial interest among business owners in Ekiti State. Using a descriptive survey design and a sample of 1,200 respondents, the study found a

significant relationship between digital skills acquisition and the intention to start a business, as well as between digital skills acquisition and the nature of enterprise engagement among business owners. The finding demonstrates that digital skills are relevant not only to students and graduates but also to individuals already engaged in business activities. It further suggests that the development of digital competencies can strengthen entrepreneurial orientation and participation in technology-enabled business activities.

The importance of digital transformation and technopreneurship is particularly pronounced within the Nigerian context. The Federal Government has increasingly recognised entrepreneurship education and digital skills development as important mechanisms for addressing graduate unemployment, encouraging self-employment, promoting innovation and supporting economic diversification. Entrepreneurship education has consequently been incorporated into university curricula to encourage students to develop entrepreneurial competencies and consider enterprise creation as an alternative or complement to conventional wage employment. Nevertheless, the persistence of graduate unemployment and underemployment suggests that curricular inclusion alone may not be sufficient. Many graduates may still lack the practical digital competencies, technological confidence and entrepreneurial capabilities required to identify opportunities and establish sustainable technology-driven businesses. This situation makes it necessary for higher education institutions to strengthen the practical connection between digital transformation, skills acquisition and entrepreneurial development.

Despite the opportunities presented by digital transformation, its effective implementation in Nigerian higher education continues to face challenges. Inadequate ICT infrastructure, unreliable internet connectivity, unstable electricity supply, insufficient digital learning resources, inadequate funding, outdated curricula, limited practical exposure and low digital competence among some educators may constrain the effective integration of technology into teaching and learning (Ufondu et al., 2023; Musa & Auwalu, 2024). These challenges can limit students' opportunities to acquire the practical competencies required for technology-driven entrepreneurship. Where students have limited access to appropriate digital tools or encounter digital technologies primarily as theoretical concepts rather than practical instruments, their capacity to translate digital knowledge into business innovation may remain constrained. Consequently, the effectiveness of digital transformation should be assessed not only by the presence of technology but also by its contribution to students' actual skills development and entrepreneurial preparedness.

The situation is also relevant to Cross River State, where digital technologies are increasingly becoming part of educational, commercial, banking, governmental and small-business activities. Business Education institutions in the state have a responsibility to prepare graduates whose competencies correspond with these emerging realities. As businesses increasingly rely on digital platforms for marketing, communication, payment, customer engagement and service delivery, Business Education undergraduates require opportunities to develop practical competencies that enable them to participate effectively in such environments. They also need to develop the capacity to recognise technology-enabled opportunities and transform them into viable business ideas. Therefore, integrating digital transformation into Business Education has the potential to contribute significantly to the development of students' digital and technopreneurial competencies.

However, concerns remain about whether the existing level of digital transformation within Business Education programmes in Cross River State is sufficiently connected to the acquisition of skills required for technopreneurship. Challenges such as inadequate ICT facilities, unstable electricity supply, poor internet connectivity, insufficient digital learning resources and limited collaboration between educational institutions and industry may restrict students' practical exposure to technology-driven business activities. These conditions may create a gap between the digital competencies students are expected to acquire and the competencies they actually need to create and manage technology-based enterprises. Thus, there is a need for empirical evidence concerning the extent to which digital transformation is associated with digital skills acquisition and the extent to which those skills are connected with students' technopreneurial capabilities.

The available empirical literature provides useful evidence on digitalisation, digital skills, employability, entrepreneurial interest and entrepreneurship among Business Education students and other business-related populations. However, relatively limited attention has been given specifically to the interconnected relationship among digital transformation, digital skills acquisition and technopreneurial skills among undergraduates of Business Education in Cross River State. Existing studies have examined related issues in other geographical contexts, among postgraduate students, business owners or in relation to employability and self-empowerment. The contextual evidence required to understand the situation among undergraduate Business Education students in Cross River

State remains comparatively limited. This creates a contextual and empirical gap that warrants further investigation.

It is against this background that the present study examines the relationship between digital transformation, digital skills acquisition and technopreneurial skills among undergraduates of Business Education in Cross River State. Specifically, the study seeks to establish the extent of digital transformation and digital skills acquisition among the students, determine the extent to which students demonstrate technopreneurial skills, and examine the relationships between digital transformation, digital skills acquisition and technopreneurial skills. The study is expected to provide empirical evidence that can guide curriculum improvement, strengthen digital skills development, support educational policy and inform strategies for preparing Business Education graduates for employment, self-employment, innovation and technology-driven entrepreneurship.

Statement of the Problem

The rapid advancement of digital technologies has significantly transformed the nature of education, business, employment and entrepreneurship. Technologies such as artificial intelligence, cloud computing, social media, e-commerce platforms, digital payment systems and other emerging technologies have created new opportunities for individuals to acquire skills and establish technology-driven businesses. Consequently, universities are increasingly expected to equip students with relevant digital and entrepreneurial competencies that can enable them to become innovative, self-reliant and employable in a technology-driven economy. Business Education is particularly important in this regard because its curriculum is designed to develop students' knowledge and skills in business, office technology, entrepreneurship, management and related areas. However, the extent to which undergraduates of Business Education are acquiring the digital and entrepreneurial skills required for successful technopreneurship remains a concern. Some students may have access to digital technologies without necessarily possessing the practical competencies required to use them for identifying business opportunities, developing digital products and services, marketing online, managing digital businesses and creating innovative technology-based ventures.

In Cross River State, undergraduates of Business Education are expected to graduate with competencies that can enable them to participate effectively in the emerging digital economy. Nevertheless, challenges such as inadequate access to digital infrastructure, limited practical exposure to emerging technologies, insufficient opportunities for technology-based entrepreneurship training and gaps in digital business skills may restrict students' ability to translate their academic knowledge into viable technopreneurial activities. If these gaps persist, graduates may experience difficulties competing in an increasingly technology-driven labour market and may remain dependent on conventional employment opportunities. The problem, therefore, is that despite the growing importance of digital transformation and technopreneurship, it is not sufficiently clear whether undergraduates of Business Education in Cross River State are acquiring the digital, entrepreneurial and technological skills necessary to take advantage of emerging technology-based business opportunities. It is against this background that this study investigated digital transformation and skills acquisition for technopreneurship among undergraduates of Business Education in Cross River State.

Objectives of the Study

The study examined **Digital Transformation and Skills Acquisition for Technopreneurship among Undergraduates of Business Education in Cross River State**. Specifically, the study sought to:

1. examine the extent to which digital transformation influences digital skills acquisition among undergraduates of Business Education in Cross River State;
2. determine the extent to which digital skills acquisition enhances technopreneurial skills among undergraduates of Business Education in Cross River State; and
3. examine the relationship between digital transformation and the acquisition of technopreneurship skills among undergraduates of Business Education in Cross River State.

Research Questions

The following research questions guided the study:

1. To what extent does digital transformation influence digital skills acquisition among undergraduates of Business Education in Cross River State?
2. To what extent does digital skills acquisition enhance technopreneurial skills among undergraduates of Business Education in Cross River State?

3. What relationship exists between digital transformation and the acquisition of technopreneurship skills among undergraduates of Business Education in Cross River State?

Research Hypotheses

The following null hypotheses were formulated in line with the objectives and research questions of the study:

H_{01}: Digital transformation has no significant influence on digital skills acquisition among undergraduates of Business Education in Cross River State.

H_{02}: Digital skills acquisition has no significant influence on technopreneurial skills among undergraduates of Business Education in Cross River State.

H_{03}: There is no significant relationship between digital transformation and the acquisition of technopreneurship skills among undergraduates of Business Education in Cross River State.

Methods

The study adopted a correlational survey research design. The design was considered appropriate because the study sought to examine the relationships among digital transformation, digital skills acquisition, and technopreneurial skills among undergraduates of Business Education without manipulating the study variables. According to Creswell and Creswell (2018), survey research is useful for collecting data from a population to describe trends, attitudes, opinions, and relationships among variables. Similarly, correlational research enables researchers to determine the degree of association between two or more variables (Cohen, Manion, & Morrison, 2018). The study was conducted in Cross River State, Nigeria. The area was considered suitable for the study because undergraduates of Business Education are being prepared for careers in business, education, entrepreneurship, and technology-related occupations. Furthermore, the increasing use of digital technologies in teaching, learning, business communication, marketing, and entrepreneurial activities makes Cross River State an appropriate setting for investigating digital transformation and skills acquisition for technopreneurship.

The population of the study comprised all final-year undergraduates enrolled in Business Education programmes in three selected universities in Cross River State, namely, the University of Calabar (54 students), University of Cross River State (312 students), and Cross River State University of Education and Entrepreneurship (62 students). The total population was 428 students. The choice of this population was based on the assumption that final-year students had been exposed to courses and learning experiences relating to Business Education, entrepreneurship, information and communication technology, and other related areas. A 50% sampling fraction was used to select 214 respondents from the population of 428 students through a simple random sampling technique.

The instrument used for data collection was a structured questionnaire titled “Digital Transformation and Skills Acquisition for Technopreneurship Questionnaire (DTSATQ).” The questionnaire was developed by the researchers based on the objectives and research questions of the study, as well as relevant literature on digital transformation, digital skills acquisition, and technopreneurship. The questionnaire consisted of two sections. Section A elicited demographic information from the respondents, including gender, age, level of study, and institution. Section B contained statements relating to the major variables of the study. The items were organised into three clusters: Cluster A: Digital Transformation; Cluster B: Digital Skills Acquisition; and Cluster C: Technopreneurial Skills. The items were measured using a four-point Likert scale of Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1. The four-point scale was adopted to eliminate a neutral midpoint and encourage respondents to indicate the direction of their opinions. The questionnaire was subjected to face and content validation by experts in Business Education, Educational Measurement and Evaluation, and Educational Technology. The observations and suggestions of the experts were used to revise and improve the instrument before its final administration.

To establish the reliability of the instrument, a pilot test was conducted using Business Education students at the Federal College of Education, Obudu, who were not part of the study population. The responses obtained from the pilot test were subjected to Cronbach's alpha reliability analysis to determine the internal consistency of the instrument. A reliability coefficient of 0.76 or above was obtained, indicating an acceptable level of internal consistency for the study (Taber, 2018). The researchers, assisted by three trained research assistants, administered the questionnaires directly to the selected respondents through online WhatsApp platforms and hard-copy questionnaires. At the end of the administration, 200 completed questionnaires were retrieved and found usable for data analysis. The data collected were coded and analysed using appropriate statistical techniques. Mean and

standard deviation were used to answer the three research questions, while Pearson Product-Moment Correlation (PPMC) was used to test the three null hypotheses at the 0.05 level of significance. For the hypotheses, a null hypothesis was rejected when the calculated p-value was less than 0.05 and retained when the p-value was greater than or equal to 0.05. These analytical procedures enabled the researchers to determine the extent of digital transformation, digital skills acquisition, and technopreneurial skills, as well as the relationships among the variables among Business Education undergraduates in Cross River State.

Results

Research Question One

To what extent does digital transformation influence digital skills acquisition among undergraduates of Business Education in Cross River State?

Table 1: **Mean and Standard Deviation of Respondents' Ratings on Digital Transformation**

S/N	Digital Transformation Items	Mean	SD	Decision
1	Digital technologies are regularly used in teaching and learning Business Education courses.	3.04	0.54	High Extent
2	Access to computers and other digital devices has improved my learning experience.	3.1	0.51	High Extent
3	The use of online learning platforms has improved my ability to acquire digital skills.	2.99	0.53	High Extent
4	Digital transformation has increased my exposure to modern business practices.	3.07	0.53	High Extent
5	The use of digital technologies enables me to access current business information and learning resources.	3.16	0.52	High Extent
6	Social media platforms provide opportunities for me to learn modern business and marketing practices.	3.09	0.52	High Extent
7	Digital payment technologies have improved my understanding of electronic business transactions.	2.94	0.54	High Extent
8	The use of digital tools in Business Education encourages me to develop technology-based business ideas.	3.01	0.54	High Extent
9	Digital transformation has increased my awareness of emerging employment and entrepreneurial opportunities.	3.15	0.53	High Extent
10	My institution provides adequate opportunities for students to use digital technologies for learning and business activities.	2.98	0.54	High Extent
	Cluster Mean	**3.05**	**0.53**	**High Extent**

The results presented in Table 1 show that all ten items measuring digital transformation had mean scores above the criterion mean of 2.50. The item means ranged from 2.94 to 3.16, while the cluster mean was 3.05, with a standard deviation of 0.53. The highest mean score of 3.16 was recorded for access to current business information and learning resources through digital technologies, while the lowest mean score of 2.94 was recorded for the contribution of digital payment technologies to understanding electronic business transactions. Overall, the cluster mean of 3.05 indicates that digital transformation influences digital skills acquisition to a high extent among Business Education undergraduates in Cross River State.

Research Question Two

To what extent does digital skills acquisition enhance technopreneurial skills among undergraduates of Business Education in Cross River State?

Table 2: **Mean and Standard Deviation of Respondents' Ratings on Digital Skills Acquisition**

S/N	Digital Skills Acquisition Items	Mean	SD	Decision
11	I can effectively use a computer to perform basic business-related tasks.	3.07	0.54	High Extent
12	I can use word-processing and spreadsheet applications for business purposes.	3.13	0.52	High Extent
13	I can search for and evaluate relevant business information online.	3.1	0.54	High Extent
14	I can communicate effectively with customers and business partners through digital platforms.	3.01	0.54	High Extent
15	I can use social media platforms to promote a business or product.	3.15	0.53	High Extent
16	I can conduct basic business transactions using digital payment platforms.	3.03	0.52	High Extent
17	I can create and manage basic digital business content.	3.09	0.53	High Extent
18	My Business Education programme has improved my ability to identify business opportunities.	3	0.53	High Extent
19	I can use digital technologies to solve business-related problems.	3.11	0.53	High Extent
20	I have acquired digital skills that can enable me to start and manage a technology-based business.	3.05	0.54	High Extent
	Cluster Mean	**3.07**	**0.53**	**High Extent**

Table 2 indicates that all the items had mean scores above the criterion mean of 2.50. The item means ranged from 3.00 to 3.15, with a cluster mean of 3.07 and a standard deviation of 0.53. The highest mean score was recorded for the ability to use social media to promote a business or product (3.15), whereas the lowest was recorded for the ability to identify business opportunities through the Business Education programme (3.00). The cluster mean of 3.07 indicates that digital skills acquisition enhances technopreneurial skills to a high extent among the respondents.

Research Question Three

What relationship exists between digital transformation and the acquisition of technopreneurial skills among undergraduates of Business Education in Cross River State?

Table 3: Mean and Standard Deviation of Respondents' Ratings on Technopreneurial Skills

S/N	Technopreneurial Skills Items	Mean	SD	Decision
21	I can identify business opportunities created by emerging digital technologies.	3.11	0.52	High Extent
22	I can develop innovative business ideas using digital technologies.	3.04	0.53	High Extent
23	I can use online platforms to market products and services.	3.16	0.5	High Extent
24	I can develop a basic business model for a technology-based venture.	2.96	0.55	High Extent
25	I can use digital technologies to reach potential customers beyond my immediate environment.	3.13	0.52	High Extent
26	I can identify and use appropriate digital tools to improve business operations.	3.08	0.53	High Extent
27	I am confident in using technology to create or support a small business venture.	3.01	0.54	High Extent
28	I can use digital platforms to obtain information about customers' needs and preferences.	3.05	0.54	High Extent
29	I can adapt my business ideas in response to changes in digital technology.	3.1	0.54	High Extent
30	My digital skills have increased my readiness to become a technopreneur after graduation.	3.15	0.52	High Extent
	Cluster Mean	**3.08**	**0.53**	**High Extent**

The results in Table 3 show that all ten indicators of technopreneurial skills recorded mean scores above the criterion mean of 2.50. The mean scores ranged from 2.96 to 3.16, while the cluster mean was 3.08, with a standard deviation of 0.53. The highest mean score was obtained for the ability to use online platforms to market products and services (3.16), whereas the lowest was recorded for the ability to develop a basic business model for a technology-based venture (2.96). The overall cluster mean of 3.08 indicates that the respondents possessed technopreneurial skills to a high extent.

Test of Hypotheses

Hypothesis One

H_{01}: *Digital transformation has no significant influence on digital skills acquisition among undergraduates of Business Education in Cross River State.*

Table 4: Pearson Product-Moment Correlation between Digital Transformation and Digital Skills Acquisition

Variables	N	r	p-value	Decision
Digital Transformation	200	0.419	< .001	Reject H_{01}
Digital Skills Acquisition	200			

The results in Table 4 show a positive and statistically significant relationship between digital transformation and digital skills acquisition among Business Education undergraduates, r = .419, p < .001. Since the p-value is less than the 0.05 level of significance, the null hypothesis is rejected. This implies that greater exposure to digital transformation is significantly associated with higher levels of digital skills acquisition among the respondents. The relationship is moderate and positive, indicating that improvements in digital transformation tend to be accompanied by corresponding improvements in digital skills acquisition.

Hypothesis Two

H_{02}: *Digital skills acquisition has no significant influence on technopreneurial skills among undergraduates of Business Education in Cross River State.*

Table 5: **Pearson Product-Moment Correlation between Digital Skills Acquisition and Technopreneurial Skills**

Variables	N	r	p-value	Decision
Digital Skills Acquisition	200	0.527	< .001	Reject H_{02}
Technopreneurial Skills	200			

Table 5 indicates a positive and statistically significant relationship between digital skills acquisition and technopreneurial skills, r = .527, p < .001. Since the p-value is less than 0.05, the null hypothesis is rejected. This finding indicates that respondents with higher levels of digital skills acquisition tend to demonstrate higher levels of technopreneurial skills. The correlation coefficient of .527 indicates a moderate positive relationship between the two variables.

Hypothesis Three

H_{03}: There is no significant relationship between digital transformation and the acquisition of technopreneurship skills among undergraduates of Business Education in Cross River State.

Table 6: **Pearson Product-Moment Correlation between Digital Transformation and Technopreneurial Skills**

Variables	N	r	p-value	Decision
Digital Transformation	200	0.405	< .001	Reject H_{03}
Technopreneurial Skills	200			

The results presented in Table 6 reveal a positive and statistically significant relationship between digital transformation and technopreneurial skills among Business Education undergraduates, r = .405, p < .001. Since the p-value is less than 0.05, the null hypothesis is rejected. This indicates that greater exposure to digital transformation is significantly associated with higher levels of technopreneurial skills. The correlation coefficient indicates a moderate positive relationship between the two variables. The findings indicate that digital transformation, digital skills acquisition, and technopreneurial skills were all rated at a high extent among the respondents, with cluster means of 3.05, 3.07, and 3.08, respectively. The hypothesis tests further showed statistically significant positive relationships between digital transformation and digital skills acquisition (r = .419, p < .001), digital skills acquisition and technopreneurial skills (r = .527, p < .001), and digital transformation and technopreneurial skills (r = .405, p < .001). Accordingly, all three null hypotheses were rejected at the 0.05 level of significance.

Overall, the results suggest that digital transformation is an important factor associated with the development of digital skills among Business Education undergraduates, while digital skills acquisition is positively associated with the development of technopreneurial skills. The findings also suggest that increased exposure to digital technologies may strengthen students' readiness to identify opportunities, develop technology-based business ideas, market products and services digitally, and engage in technology-driven entrepreneurial activities.

Discussion of Findings

Digital Transformation and Digital Skills Acquisition

The first finding revealed that digital transformation influences digital skills acquisition among Business Education undergraduates to a high extent, with a cluster mean of 3.05. The individual item means ranged from 2.94 to 3.16, indicating that respondents generally perceived digital technologies as contributing positively to their acquisition of relevant digital competencies. In particular, access to current business information and learning resources recorded the highest mean, while the use of digital payment technologies recorded the lowest mean, although the latter still fell within the high-extent

category. This suggests that digital transformation is increasingly embedded in the learning experiences of Business Education students and provides opportunities for them to develop competencies relevant to contemporary business practices. The finding is in agreement with Ekoh-Nweke and Ikpeama (2024), who reported that digitalisation significantly enhances entrepreneurial and managerial skills acquisition among Business Education students in public universities in South-East Nigeria. The present finding reinforces their position by demonstrating that exposure to digital technologies is associated with the development of practical digital competencies among Business Education undergraduates. The agreement may be attributed to the fact that digital technologies provide students with opportunities to interact with online learning platforms, business information, digital communication tools, electronic payment systems and other technology-enabled resources that support experiential learning.

The finding also agrees with David et al. (2024), who found that digitalisation of skills acquisition improves the employability of Business Education graduates by equipping them with competencies required in modern organisations and digital enterprises. The present study extends this argument by situating digital skills acquisition within the broader context of technopreneurship. While digital competencies improve employability, they also provide a foundation upon which students can identify opportunities, develop technology-based business ideas and participate in digital markets. The significant positive relationship obtained between digital transformation and digital skills acquisition ($r = .419$, $p < .001$) further strengthens this interpretation. Since the relationship is statistically significant and positive, the null hypothesis that digital transformation has no significant influence on digital skills acquisition was rejected. This means that greater exposure to digital transformation is associated with higher levels of digital skills acquisition among the students. The finding therefore supports the argument of Ufondu et al. (2023) and Enang (2024) that Business Education must continually respond to technological developments by incorporating digital competencies into teaching and learning. However, the finding should not be interpreted to mean that digital transformation alone guarantees effective skills acquisition. The literature identifies inadequate ICT infrastructure, poor internet connectivity, unstable electricity, inadequate funding and insufficient practical exposure as important barriers to digital transformation in higher education (Ufondu et al., 2023; Musa & Auwalu, 2024). Thus, although the present result indicates a positive association, the effectiveness of digital transformation is likely to depend on the availability, accessibility and practical use of digital resources within Business Education programmes.

Digital Skills Acquisition and Technopreneurial Skills

The second finding showed that digital skills acquisition was high among the respondents, with a cluster mean of 3.07. The findings indicate that students perceived themselves as possessing competencies such as computer use, spreadsheet and word-processing applications, online information search, digital communication, social media marketing, electronic transactions and digital content creation. Importantly, respondents also indicated that their acquired digital skills could enable them to start and manage technology-based businesses. This finding is consistent with the conceptual position of Atanasova, as cited in Shahrim, Azman, Sufian and Jamel (2026), which conceptualises technopreneurship as entrepreneurial activity in which digital technologies constitute a core platform for opportunity recognition, venture creation and business growth. The finding demonstrates that technopreneurship cannot be separated from the digital competencies required to identify opportunities, communicate with customers, market products, conduct transactions and manage technology-enabled ventures. Digital skills therefore constitute an important foundation for the development of technopreneurial capacity.

The result also agrees with Okute et al. (2023), who emphasised that digital-era competencies such as digital literacy, data management, digital marketing, business analytics, creativity, communication, critical thinking and problem-solving enable graduates to identify opportunities within the digital economy and transform innovative ideas into viable business ventures. The present finding provides empirical support for this position because students who reported relatively high levels of digital skills acquisition also demonstrated relatively high levels of technopreneurial skills. More importantly, the significant positive relationship between digital skills acquisition and technopreneurial skills ($r = .527$, $p < .001$) provides strong empirical support for the importance of digital competencies in technopreneurship. The null hypothesis that digital skills acquisition has no significant influence on technopreneurial skills was therefore rejected. The coefficient represents the strongest relationship among the three relationships examined in the study. This suggests that, within the context of the present study, developing students' practical digital competencies may be particularly important for strengthening their readiness to engage in technology-based entrepreneurship.

This finding is also in agreement with Adeniyi, Fasanmi and Olawemo (2024), who found a significant relationship between digital skills acquisition and entrepreneurial intention as well as enterprise engagement among business owners in Ekiti State. Although the populations and contexts differ, both studies point to the same broad conclusion: digital skills are increasingly relevant to entrepreneurial participation. The present study extends their finding to Business Education undergraduates by showing that digital skills are not only associated with entrepreneurial intentions but are also related to broader technopreneurial competencies such as opportunity recognition, digital marketing, technology-based business modelling and customer engagement. The finding further supports Falobi (2023), who observed that students with digital entrepreneurial skills are better positioned to exploit opportunities in online business, digital marketing, e-commerce and technology-enabled service delivery. Similarly, Enang (2024) argued that digital entrepreneurial competencies are indispensable to Business Education graduates because contemporary employers and business environments increasingly require technology-oriented skills. Thus, the present finding provides further evidence that digital skills acquisition should not be treated as an optional component of Business Education but as a central element of preparation for employment and self-employment in the digital economy.

Digital Transformation and Technopreneurial Skills

The third finding revealed that respondents possessed technopreneurial skills to a high extent, with a cluster mean of 3.08. The highest-rated areas included the ability to use online platforms to market products and services and the ability to develop innovative business ideas using digital technologies. The lowest-rated item concerned the ability to develop a basic business model for a technology-based venture, although its mean remained above the criterion mean. This pattern is noteworthy because it suggests that students may be relatively more confident in using digital platforms for marketing and opportunity exploitation than in the more advanced task of converting an idea into a structured technology-based business model. The significant positive relationship between digital transformation and technopreneurial skills ($r = .405$, $p < .001$) further indicates that increased exposure to digital technologies is associated with stronger technopreneurial competencies. Consequently, the third null hypothesis, which stated that there is no significant relationship between digital transformation and the acquisition of technopreneurship skills, was rejected.

This finding agrees with Iwuoha et al. (2025), who argued that digital transformation has redefined entrepreneurship by changing the ways entrepreneurs develop products, engage customers, market goods and services, conduct financial transactions and manage businesses. Their position is supported by the present finding because students who experience greater exposure to digital transformation also tend to report stronger capabilities for engaging in technology-driven entrepreneurial activities. The finding is also consistent with the broader conceptualisation of technopreneurship provided by Atanasova, as cited in Shahrim et al. (2026). If technopreneurship involves the innovative application of digital technologies to opportunity recognition, venture creation and business growth, then students' exposure to digital technologies should reasonably contribute to their capacity to engage in such activities. The present finding provides empirical support for this proposition among Business Education undergraduates in Cross River State.

Furthermore, the finding supports Falobi (2023) and Enang (2024), who emphasised the importance of digital entrepreneurial competencies for exploiting opportunities in the contemporary business environment. It also complements Adeniyi et al. (2024), whose findings demonstrated that digital skills are significantly associated with entrepreneurial intentions and enterprise engagement. Taken together, these studies and the present finding suggest that the movement from conventional entrepreneurship towards technopreneurship requires a corresponding movement from traditional business competencies towards technology-enabled competencies. Nevertheless, the result does not imply that digital transformation automatically produces successful technopreneurs. The relatively lower rating for the ability to develop a basic business model suggests that students may require more structured practical experiences in venture planning, business modelling, financial management, market validation and technology-based enterprise development. This observation is particularly important for Business Education curriculum development because knowledge of digital tools must be complemented by the ability to apply those tools in developing viable and sustainable enterprises.

Overall Interpretation of the Findings

Taken together, the findings indicate a coherent relationship among digital transformation, digital skills acquisition and technopreneurial skills. The three cluster means—3.05 for digital transformation, 3.07 for digital skills acquisition and 3.08 for technopreneurial skills—show that the

respondents generally perceived all three constructs to be present to a high extent. More importantly, the three correlation coefficients were positive and statistically significant: digital transformation and digital skills acquisition ($r = .419$), digital skills acquisition and technopreneurial skills ($r = .527$), and digital transformation and technopreneurial skills ($r = .405$), all at $p < .001$. The pattern of findings provides a logical explanation of how digital transformation can contribute to technopreneurship. Digital transformation creates an environment in which students interact with digital tools and platforms; such exposure facilitates the acquisition of digital competencies; and these competencies, in turn, provide students with capabilities that can be applied to technology-driven entrepreneurial activities. The relatively stronger relationship between digital skills acquisition and technopreneurial skills suggests that skills acquisition may serve as an important link between digital transformation and technopreneurial readiness.

The findings therefore largely agree with the reviewed empirical and conceptual literature. They support the arguments of Ekoh-Nweke and Ikpeama (2024), David et al. (2024), Falobi (2023), Enang (2024), Okute et al. (2023), Adeniyi et al. (2024), and Iwuoha et al. (2025), all of whom emphasise the growing importance of digital competencies and technology-enabled practices for entrepreneurship, employability and business development. The findings also provide empirical support for the conceptual position that technopreneurship represents the integration of technology, innovation and entrepreneurial activity for opportunity recognition, venture creation and business growth. At the same time, the findings draw attention to an important qualification in the literature. Digital transformation should not be viewed merely as the provision of computers, internet connectivity or digital platforms. Its contribution to technopreneurship depends substantially on whether students are given opportunities to use digital technologies to solve authentic business problems, develop innovative ideas, market products, interact with customers, analyse information, develop business models and create technology-enabled ventures. Consequently, Business Education programmes should move beyond basic digital literacy towards practical and innovation-oriented digital entrepreneurship.

Overall, the findings suggest that strengthening digital transformation and practical digital skills acquisition within Business Education could contribute meaningfully to the development of technopreneurial capabilities among undergraduates in Cross River State. This has important implications for curriculum development, teaching methods, digital infrastructure, industry collaboration and experiential learning. Business Education institutions should therefore provide students with sustained opportunities to apply digital technologies to real or simulated entrepreneurial activities so that digital knowledge can be transformed into practical competencies, innovative business ideas and sustainable technology-driven enterprise opportunities.

Conclusion

The study concludes that digital transformation is an important factor in the development of digital skills and technopreneurial capabilities among Business Education undergraduates in Cross River State. The respondents reported a high extent of exposure to digital transformation, particularly in the use of digital technologies for teaching and learning, access to current business information and learning resources, exposure to modern business practices, use of social media for learning and marketing, and awareness of emerging employment and entrepreneurial opportunities. The overall cluster mean of 3.05 indicates that digital transformation is well integrated into the learning experiences of the respondents. The study further concludes that the acquisition of digital skills among Business Education undergraduates was high, with a cluster mean of 3.07. The respondents demonstrated competence in using computers, word-processing and spreadsheet applications, searching for business information online, communicating through digital platforms, promoting products through social media, conducting digital transactions, creating digital content, and using technology to address business-related problems. These competencies provide an important foundation for participation in technology-driven business activities and entrepreneurial ventures.

The study also concludes that the respondents possessed technopreneurial skills to a high extent, as indicated by the cluster mean of 3.08. In particular, the respondents reported strong abilities to use online platforms for marketing, identify opportunities created by emerging technologies, reach customers beyond their immediate environment, adapt business ideas to technological changes, and use digital technologies to support business ventures. However, the relatively lower mean for developing a basic business model for a technology-based venture suggests that practical venture-development competencies may require further strengthening. The hypothesis tests provide further evidence of meaningful relationships among the major variables. Digital transformation was positively and significantly related to digital skills acquisition ($r = .419$, $p < .001$), indicating that greater exposure to digital technologies is associated with higher levels of digital skills. Digital skills acquisition also had

a positive and significant relationship with technopreneurial skills ($r = .527$, $p < .001$), suggesting that students with stronger digital competencies are more likely to demonstrate stronger technopreneurial capabilities. Similarly, digital transformation was positively and significantly related to technopreneurial skills ($r = .405$, $p < .001$). Consequently, all three null hypotheses were rejected at the 0.05 level of significance.

Overall, the study establishes that digital transformation, digital skills acquisition and technopreneurial skills are positively interconnected among Business Education undergraduates in Cross River State. The findings underscore the importance of providing students with meaningful opportunities to use digital technologies not merely for academic purposes but also for practical business creation, innovation, marketing, problem-solving and venture development. Strengthening these areas can better position Business Education graduates to participate effectively in the increasingly technology-driven world of work and to pursue sustainable technology-based entrepreneurial opportunities.

Recommendations

Based on the findings and conclusion of the study, the following recommendations are made:

1. Business Education programmes should strengthen the integration of digital technologies into teaching and learning. Universities and other tertiary institutions should provide students with regular opportunities to use relevant digital platforms, business software, online learning resources and emerging technologies as integral components of Business Education courses.
2. Institutions should provide adequate access to digital infrastructure and learning resources. Computers, reliable internet connectivity, digital learning platforms, electronic payment technologies and other relevant digital tools should be made sufficiently available to Business Education students to enable them to develop practical digital competencies through continuous use.
3. Business Education curricula should place greater emphasis on practical digital skills development. Students should be engaged in activities involving spreadsheet applications, digital communication, social media marketing, digital content creation, online research, e-commerce and digital payment systems so that digital skills acquired in the classroom can be transferred to real business situations.
4. Technopreneurship education should be strengthened through practical enterprise activities. Business Education students should be required to identify technology-based business opportunities, develop digital business ideas, prepare basic business models, create digital marketing strategies and test their products or services through real or simulated online markets.
5. Institutions should establish digital business incubation and mentorship initiatives for Business Education students. Such initiatives could provide students with access to entrepreneurs, technology professionals and business mentors who can guide them in transforming digital skills and innovative ideas into viable technology-based ventures.
6. Greater emphasis should be placed on developing students' business-model and venture-development competencies. Since developing a basic business model for a technology-based venture recorded the lowest mean among the technopreneurial skills, practical exercises should focus on opportunity identification, value proposition development, customer analysis, revenue models, digital marketing, financial planning and venture sustainability.
7. Business Education lecturers should continually update their digital and entrepreneurial competencies. Institutions should organise professional development programmes that expose lecturers to emerging digital technologies, artificial intelligence, digital entrepreneurship, e-commerce, social media marketing and other contemporary tools that can enrich students' learning experiences.
8. Business Education students should be encouraged to use digital platforms for innovation and enterprise creation. Rather than limiting digital technology to academic activities, students should be encouraged to explore online marketplaces, social media platforms, digital payment systems and other legitimate digital channels for developing, promoting and managing business ventures.

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DIGITAL TRANSFORMATION AND SKILLS ACQUISITION FOR TECHNOPRENEURSHIP IN AFRICA: IMPERATIVES, CHALLENGES AND PATHWAYS FOR SUSTAINABLE DEVELOPMENT

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Abstract

The paper examines the relationship between digital transformation, skills acquisition and technopreneurship in Africa, arguing that the rapid expansion of digital technologies has fundamentally changed economic systems, labour markets and entrepreneurial ecosystems. Within the African context, these developments are particularly significant because the continent faces persistent challenges of unemployment, poverty, economic dependency and underdevelopment, while simultaneously possessing a very large and youthful population. The paper therefore presents technopreneurship as a strategic pathway through which Africa can transform its demographic potential into productive economic activity. The study adopts a conceptual and analytical approach, drawing on existing literature, theoretical perspectives and selected African experiences from Nigeria, Kenya, Rwanda and South Africa. These cases demonstrate different approaches to digital entrepreneurship, ranging from Nigeria's fintech-driven ecosystem and Kenya's mobile financial innovation to Rwanda's government-led digital transformation and South Africa's relatively advanced infrastructure and innovation ecosystem. The central argument is that sustainable technopreneurship requires the simultaneous development of digital infrastructure, human capital, entrepreneurial education, innovation ecosystems, financing mechanisms and supportive policy environments. Business education is identified as particularly important because it can bridge the gap between formal education and the practical competencies demanded by technology-driven economies. The paper consequently recommends curriculum reform, competency-based and experiential learning, stronger industry-academia collaboration, educator capacity building, innovation centres, inclusive digital education, improved financing and regional policy harmonization.

Keywords: Digital Transformation; Skills Acquisition; Technopreneurship; Business Education; Sustainable Development.

Introduction

The twenty-first century has witnessed rapid technological advancement that has transformed the way economies, organizations and individuals operate. Digital technology has altered traditional approaches to production, communication, commerce, education and governance. The emergence of artificial intelligence, blockchain, big data analytics, cloud computing, robotics, fintech, e-commerce and the Internet of Things has created new opportunities for enterprise development and wealth creation (Schwab, 2017; OECD, 2020). The paper links these developments to a movement from conventional entrepreneurship toward technology-driven entrepreneurship, or **technopreneurship**. Technopreneurship represents an important shift because entrepreneurs are no longer limited to conventional trading and business ownership. Instead, technology provides opportunities to create scalable products, digital services and innovative business models that can respond to emerging societal and market needs (Acs et al., 2018). The African context makes this transformation particularly important. Africa has one of the world's youngest populations, with more than 60% of its population below 25 years of age, and the continent is projected to account for a substantial proportion of the global labour force by 2050 (AfDB, 2022; United Nations, 2022). This demographic structure creates a major opportunity for economic development, but it can also become a liability if young people do not acquire the skills necessary for productive participation in changing labour markets. The International Labour Organization therefore emphasizes the importance of skills development and productive engagement in preventing youth unemployment, social instability and economic stagnation (ILO, 2022).

Furthermore, Africa is experiencing expanding mobile connectivity, internet access, digital financial services and technology hubs. Nigeria, Kenya, Rwanda, South Africa, Ghana and Egypt are

identified as countries where digital innovation has developed particularly in fintech, agritech, edtech, health-tech, e-commerce and digital services. Kenya's M-Pesa, Nigeria's fintech ecosystem, Rwanda's digital governance reforms and South Africa's technology startup ecosystem demonstrate the possibilities created by digital entrepreneurship (GSMA, 2023; AfDB, 2022; WEF, 2022). However, digital literacy and technical competence are unevenly distributed, while many graduates leave educational institutions without the practical competencies demanded by digital labour markets (UNESCO, 2021; Okolie et al., 2020). The paper consequently argues that business education must be reoriented. Rather than focusing predominantly on preparing learners for clerical, administrative and conventional managerial occupations, it should develop innovation, digital literacy, creativity, adaptability and entrepreneurial thinking (Amoor, 2021; Nwosu & Iwu, 2021).

Skills acquisition is therefore presented as an essential foundation of technopreneurship. Technical competencies such as coding, software development, data analytics and cybersecurity must be combined with digital marketing, financial literacy, innovation management, opportunity recognition and entrepreneurial orientation (Dutta & Lanvin, 2023; European Commission, 2022).

The paper consequently examines the intersection of digital transformation and skills acquisition for technopreneurship in Africa. Its purpose is to explain how digital transformation can stimulate enterprise development, employment and sustainable development; identify the challenges limiting this process; examine selected African experiences; and propose pathways for strengthening business education and the broader technopreneurial ecosystem.

Conceptual Clarifications and Theoretical Framework

Digital Transformation: Digital transformation is defined in the paper as the systematic integration of digital technologies into organizational, economic, educational and social processes in order to improve efficiency, innovation, service delivery and competitiveness. It is more than simply digitizing existing processes. It involves fundamental changes in institutional culture, operating models and systems of value creation (Vial, 2019). The transformation is facilitated by technologies including artificial intelligence, cloud computing, blockchain, big data analytics, robotics and the Internet of Things (Schwab, 2017). In the economic context, digital transformation involves the development of infrastructure, digital skills, digital financial services and innovation ecosystems that enable wider economic participation (World Bank, 2021). In education, digital transformation means incorporating technology into teaching, learning and skills acquisition so that learners are prepared for digitally driven economies (UNESCO, 2021). In Africa, this is linked to the broader objectives of economic diversification, industrialization and employment generation. The paper's operational understanding of digital transformation is therefore strategic: it is the adoption and use of digital technologies to improve entrepreneurial activities, productivity, innovation and sustainable development.

Skills Acquisition: Skills acquisition refers to the process by which individuals obtain practical knowledge, competencies, technical expertise and employable capabilities required for professional, personal and entrepreneurial activities. It encompasses formal, informal and non-formal learning and extends beyond theoretical knowledge to practical competence, creativity, adaptability, critical thinking, communication and problem-solving (Okorie & Ezeji, 1988). The digital economy has expanded the meaning of skills acquisition to include digital competencies such as programming, software development, cybersecurity, data analytics, digital marketing, e-commerce, artificial intelligence and information management (European Commission, 2022). The importance of skills acquisition is particularly pronounced in Africa because of youth unemployment, poverty and changing labour-market requirements. The paper therefore conceptualizes skills acquisition as the development of practical digital and entrepreneurial competencies necessary for participation in technology-driven ventures and digital economic activities.

Technopreneurship: Technopreneurship combines technology and entrepreneurship. It involves using technological knowledge, innovation and entrepreneurial skills to create, manage and scale enterprises that respond to market and societal needs (Bailetti, 2012). The distinction between traditional entrepreneurship and technopreneurship lies particularly in the latter's emphasis on technological innovation, research, product development, scalability and commercialization. Technopreneurs use technology to develop products, services and business models capable of creating economic and social value. The Fourth Industrial Revolution has increased the importance of technopreneurship through sectors such as fintech, artificial intelligence, blockchain, health-tech, edtech, agritech and e-commerce. African examples include M-Pesa in Kenya, Nigeria's fintech ecosystem, Rwanda's digital public services and South Africa's technology innovation hubs (Schwab, 2017; WEF, 2022). The paper therefore defines technopreneurship as technology-driven

entrepreneurial activity that uses digital innovation to create sustainable business opportunities, employment and socio-economic development in Africa.

Theoretical Framework

The study is anchored on four complementary theories: **Human Capital Theory, Innovation Diffusion Theory, Digital Economy Theory, and Entrepreneurial Ecosystem Theory**.

Human Capital Theory: Human Capital Theory, associated with Schultz (1961) and Becker (1964), emphasizes investment in education, training and skills as a means of improving productivity, income and economic performance. Digital and entrepreneurial skills are treated as forms of human capital that can improve the ability of African youths to establish technology-based enterprises, create employment and contribute to sustainable development. Conversely, inadequate investment in digital education limits entrepreneurial productivity. The theory therefore supports the paper's argument for practical, technology-oriented business education.

Innovation Diffusion Theory: Rogers' Innovation Diffusion Theory explains how innovations spread through societies. Adoption depends on characteristics such as relative advantage, compatibility, complexity, observability and trialability. Rogers identifies innovators, early adopters, early majority, late majority and laggards as categories of adopters (Rogers, 1962, 2003). The theory helps explain differences in digital entrepreneurship across African countries. Digital transformation depends not merely on technological availability but also on societal readiness, infrastructure, knowledge and digital literacy. Kenya, Rwanda and South Africa are presented as examples of countries where supportive policies, infrastructure and skills programmes have facilitated technological adoption.

Digital Economy Theory: Digital Economy Theory explains the role of digital technologies in production, value creation, market interaction and entrepreneurship. Tapscott (1996) emphasizes the transformational effects of digital technologies, while Bukht and Heeks (2017) conceptualize the digital economy around digital interactions among individuals, organizations, devices and businesses. The theory supports the paper's contention that technopreneurship is fundamentally embedded in digitally enabled economic systems. As fintech, e-commerce, digital services and remote business models expand, digital competencies become essential to economic participation.

Entrepreneurial Ecosystem Theory: Entrepreneurial Ecosystem Theory emphasizes that entrepreneurship is influenced by the interaction of institutions, policies, finance, culture, infrastructure, education and support networks (Isenberg, 2010; Stam, 2015). The theory is important because the paper does not regard individual skills as sufficient for technopreneurial success. Entrepreneurs also require finance, infrastructure, mentorship, government support, incubators, innovation hubs and favourable policies. The four theories collectively establish the paper's central conceptual position that **skills,** technology, innovation and enabling ecosystems must operate together if technopreneurship is to contribute to sustainable development in Africa.

Overview of Digital Transformation and Entrepreneurship

Digital transformation has become a major driver of socio-economic restructuring. It changes business operations, education, governance and economic systems while creating new opportunities for technology-based entrepreneurship (Vial, 2019). The Fourth Industrial Revolution has accelerated these changes through the convergence of digital, physical and biological technologies. AI, blockchain, robotics, cloud computing, big data and IoT have altered production systems and created opportunities for new forms of entrepreneurship (Schwab, 2017). Technopreneurship consequently contributes to economic diversification, employment, innovation and competitiveness. However, entrepreneurial outcomes depend on access to infrastructure, education, finance and innovation-support systems. Countries with stronger digital ecosystems are better positioned to exploit these opportunities (World Bank, 2021).

Africa's digital transformation has accelerated through increased mobile penetration, internet connectivity, digital financial services and innovation hubs. Mobile technology has been especially important because it has expanded access to financial services, education, e-commerce and entrepreneurship. M-Pesa in Kenya is used as an important example of mobile technology facilitating financial inclusion and small-business participation in digital commerce. Rwanda has developed digital governance and smart-city initiatives, while Nigeria has experienced strong growth in fintech and startup activity. South Africa possesses a relatively advanced digital entrepreneurial ecosystem. Despite these achievements, transformation remains uneven. Poor electricity supply, weak broadband infrastructure, high internet costs, regulatory barriers and digital inequality restrict participation. Women, rural populations and marginalized groups are particularly vulnerable to exclusion (UNESCO, 2021; World Bank, 2021).

Digital entrepreneurship requires a combination of technical, entrepreneurial, managerial and socio-emotional skills. These include digital literacy, coding, software development, cybersecurity, data

analytics, AI, digital marketing, financial literacy, opportunity recognition, innovation management, communication, resilience and problem-solving. The paper highlights the continuing mismatch between educational outputs and labour-market expectations. Many graduates possess theoretical qualifications but lack practical digital and entrepreneurial competencies (Okolie et al., 2020; Nwosu & Iwu, 2021). This skills gap makes curriculum transformation essential. Business education should become more practical and competency-based and should expose learners to technologies and entrepreneurial environments.

Technopreneurship and Economic Development in Africa: Technopreneurship is presented as a catalyst for employment generation, financial inclusion, innovation and productivity. Digital startups in Nigeria, Kenya, Egypt and South Africa demonstrate how technology-enabled enterprises can contribute to economic transformation. M-Pesa illustrates how technological innovation can expand financial inclusion, while Nigeria's fintech ecosystem demonstrates how digital entrepreneurship can attract investment and generate employment. Rwanda's digital governance illustrates how technology can improve business efficiency. However, weak entrepreneurial ecosystems continue to constrain these benefits. Inadequate financing, infrastructure deficits, inconsistent policy implementation, gender inequality and rural-urban disparities limit the expansion of digital entrepreneurship.

Business Education and Technopreneurial Skills Development: Business education traditionally focused on office administration, accounting, marketing and management, particularly for salaried employment. The digital economy requires a shift toward entrepreneurship, innovation, digital literacy and practical technology applications (Amoor, 2021). The paper argues that experiential learning—including internships, startup incubation, innovation laboratories, mentorship, digital simulations and industry partnerships—is needed to prepare graduates for technology-driven business environments. The paper identifies a gap in existing literature. Although digital transformation, entrepreneurship and skills development have each been extensively studied, they are often treated separately. There is comparatively limited integrated analysis of how digital transformation, skills acquisition and technopreneurship interact within African business education systems. The author also identifies insufficient contextual attention to African realities such as infrastructural deficits, policy inconsistency, digital inequality and educational limitations. The paper therefore seeks to provide an integrated analysis that places **business** education at the intersection of digital transformation, skills acquisition and sustainable technopreneurship.

Digital infrastructure provides the foundation for digital enterprise. Broadband, electricity, cloud computing, mobile technologies and data centres are necessary for technology-driven business. **Innovation hubs and business incubators** provide mentorship, technical support, networking and access to investors. Examples identified in the paper include CcHub and Ventures Platform in Nigeria, Kenya's Silicon Savannah ecosystem and Kigali Innovation City in Rwanda. **Startup financing** is another critical component. Venture capital, digital finance, crowdfunding and other financing mechanisms have expanded opportunities, but investment remains concentrated in a limited number of countries and sectors. **Government policies and regulatory systems** determine whether entrepreneurs can operate in supportive environments. Startup legislation, digital economy policies, tax incentives and broadband investment can facilitate entrepreneurship, while regulatory uncertainty and bureaucratic bottlenecks can discourage it. **Educational institutions** provide the human capital needed by the ecosystem. Universities, technical institutions and business education programmes therefore need to integrate technology, entrepreneurship and practical learning.

The paper identifies several rapidly developing sectors. **Fintech** has transformed digital payments, financial inclusion and cross-border transactions. **Agritech** uses digital platforms, mobile applications and AI to improve agricultural productivity, market access and food security. **Edtech** has expanded through online courses, virtual classrooms and mobile education platforms. **Health-tech** is improving healthcare access through telemedicine, mobile diagnostics and digital patient-management systems. **E-commerce** is expanding online buying and selling, logistics and digital services. The paper also identifies AI, blockchain, cybersecurity, digital manufacturing and green technologies as emerging areas of opportunity. AfCFTA is presented as a potential mechanism for expanding cross-border digital entrepreneurship and regional markets.

Skills acquisition is presented as indispensable for sustainable participation in the digital economy. Digital entrepreneurship requires more than traditional business knowledge because it combines technology, innovation, data systems and digital market access. The paper divides relevant competencies broadly into **digital/technical skills, entrepreneurial skills, business management skills and socio-emotional competencies**. Digital literacy provides the basic foundation for using computers, smartphones, software and internet-based tools. Programming and software development enable entrepreneurs to create digital products and platforms. Data analytics supports market and

operational decision-making, while AI facilitates automation, prediction and customer engagement. Cybersecurity has become essential because digital businesses face growing cyber risks. Digital marketing—including social media management, SEO, content marketing, email marketing and online branding—is important for reaching customers and expanding markets. Entrepreneurial competencies include opportunity recognition, innovation, creativity, risk assessment, adaptability and resilience. Management competencies include financial management, strategic planning, business modelling, customer segmentation and leadership. Communication and networking are also emphasized because entrepreneurs must engage customers, investors, partners and mentors and continuously update their knowledge as technology evolves.

Approaches to Skills Acquisition for Digital Entrepreneurship

The paper identifies several mechanisms for developing digital entrepreneurial skills. **Educational institutions** can integrate entrepreneurship and digital literacy into curricula, although the author notes that many continue to emphasize theory over practical experience. **TVET institutions** provide hands-on training in ICT, programming, business management and technical innovation. **Online learning platforms and MOOCs** provide opportunities for African youths to obtain globally relevant competencies despite geographical barriers. **Technology hubs and startup incubators** provide technical training, mentorship, networking and acceleration support. **Informal learning** through peer mentoring, digital communities, internships and workplace experience also contributes to skills development.

The major challenges include inadequate digital facilities, outdated curricula, insufficiently trained instructors, poor internet connectivity, inadequate electricity and the high cost of digital devices and training. The paper also highlights gender and social inequalities. Women and marginalized groups frequently experience reduced access to digital technologies and entrepreneurial opportunities. The continuing mismatch between educational outcomes and labour-market needs is particularly important. Graduates may possess qualifications without the practical competencies necessary for digital entrepreneurship. The paper consequently calls for curriculum reform, infrastructure investment, stronger partnerships between educational institutions and technology firms, expansion of innovation hubs and inclusive digital education.

African Case Studies: Digital Transformation and Skills Acquisition for Technopreneurship:

The paper examines Nigeria, Kenya, Rwanda and South Africa to demonstrate different approaches to digital transformation and technopreneurship.

Nigeria: Fintech Revolution and Youth-Led Digital Entrepreneurship: Nigeria is presented as one of Africa's leading technology and startup ecosystems. Its large population, youthful demographic structure, expanding internet use and growing digital financial services provide substantial opportunities for technology-driven entrepreneurship. The fintech sector is particularly significant. Flutterwave, Paystack, Moniepoint, Interswitch and Opay are identified as examples of enterprises that have transformed digital payments, online transactions and financial inclusion. Nigeria has also developed edtech, agritech, logistics and health-tech activities. CcHub, Ventures Platform and the Tony Elumelu Foundation Entrepreneurship Programme provide mentorship, incubation, skills training and investor access. Government and private initiatives—including the National Digital Economy Policy and Strategy, Digital Nigeria Programme, Google Digital Skills for Africa and Andela programmes—are identified as supporting digital skills development. However, Nigeria continues to experience inadequate electricity, rural broadband limitations, digital inequality, financing gaps and policy inconsistency. The paper nevertheless presents Nigeria as evidence that digital transformation, skills acquisition and startup ecosystems can promote technopreneurship and employment.

Kenya: The Silicon Savannah and Mobile Financial Innovation: Kenya is described as a major African digital entrepreneurship success story, particularly because of its **Silicon Savannah** ecosystem. The most prominent example is **M-Pesa**, launched in 2007. The platform transformed financial inclusion by allowing millions of people to send, receive and save money digitally. It also enabled small businesses to participate more effectively in digital commerce. Kenya's iHub and other innovation centres and accelerators provide mentorship, networking, technical support and access to investment. Skills acquisition has been supported through public-private partnerships, universities, coding academies, entrepreneurship boot camps and ICT training programmes. Government investment through initiatives such as the National ICT Master Plan and digital literacy programmes has also strengthened the ecosystem. Kenya nevertheless faces youth unemployment, rural-urban digital inequalities and startup financing challenges. Its experience demonstrates the value of combining mobile technology, infrastructure, skills development and entrepreneurial support.

Rwanda: Digital Governance and Innovation-Driven Entrepreneurship: Rwanda demonstrates the importance of strong government leadership in digital transformation. Over the past two decades, the country has made technology, innovation and human capital central to national development. Investment in broadband, digital infrastructure, e-governance and smart-city initiatives has supported Rwanda's ambition to become a regional technology hub. **Kigali Innovation City** is identified as a major component of this ecosystem. Digital registration, online tax systems, e-payments and simplified regulatory processes reduce bureaucratic barriers for entrepreneurs. Rwanda has also prioritized ICT education, coding, digital literacy and entrepreneurship training. Government-backed incubation, financing and innovation programmes further support technology-driven enterprises. Its limitations include the small domestic market, startup financing challenges and dependence on external investment. Nonetheless, Rwanda illustrates how coordinated government policy, infrastructure and skills development can accelerate technopreneurship.

South Africa: Advanced Digital Infrastructure and Innovation Ecosystems: South Africa possesses one of the continent's more advanced digital economies, supported by comparatively stronger infrastructure, financial systems and internet penetration. The country's technology sectors include fintech, e-commerce, software development, digital services and artificial intelligence. Cape Town, Johannesburg and Pretoria have developed startup ecosystems supported by venture capital, innovation hubs and research institutions. The Silicon Cape Initiative and technology incubators provide mentorship, training, funding access and networking. Universities contribute through research commercialization and entrepreneurship. South Africa's relatively developed financial markets facilitate startup financing and venture capital. However, inequality, youth unemployment and uneven digital access remain significant challenges. The South African experience therefore demonstrates the importance of infrastructure, higher education and innovation financing in developing technopreneurship.

The four cases reveal different pathways for instance; Nigeria demonstrates the power of youth-driven fintech innovation but also the consequences of infrastructure deficits and policy inconsistency. Kenya demonstrates the transformative impact of mobile financial innovation and entrepreneurial hubs. Rwanda demonstrates the importance of government-led digital reforms, infrastructure and skills development. South Africa demonstrates the value of relatively advanced infrastructure, higher education and startup financing. The common lesson is that no single intervention is sufficient. Successful technopreneurship requires **digital infrastructure, entrepreneurial education, supportive policies, startup financing, innovation ecosystems and skills acquisition** working together. The paper therefore argues that Africa's broader technopreneurial potential depends on reducing infrastructure gaps, expanding digital skills, strengthening business education and creating inclusive entrepreneurial ecosystems.

Challenges, Opportunities, and Policy Implications of Digital Transformation and Skills Acquisition for Technopreneurship in Africa

Digital transformation has created substantial opportunities for economic modernization, but Africa's ability to realize these opportunities remain constrained by structural, institutional and socio-economic barriers. Reliable internet, broadband, electricity and digital communication infrastructure remain unevenly distributed. Urban communities generally enjoy better access than rural communities, while affordability continues to limit digital inclusion. Poor electricity supply increases the cost of operating digital enterprises and reduces their competitiveness. Many young people and graduates lack practical technological skills. Educational systems often emphasize theoretical learning instead of coding, software development, digital marketing, AI, cybersecurity and business analytics. This creates a mismatch between education and labour-market requirements and contributes to unemployment and entrepreneurial stagnation. Startup financing remains a major constraint. Young entrepreneurs struggle to access venture capital, grants, loans and investment. Traditional lenders often consider startups high-risk and require collateral that young entrepreneurs may not possess. Venture capital has expanded but remains concentrated in a few countries and sectors. Policy inconsistency, bureaucratic bottlenecks, unstable tax systems and regulatory uncertainty can discourage innovation and investment. The lack of harmonized regional digital regulations also restricts cross-border entrepreneurship and digital trade. Women, rural populations, persons with disabilities and economically disadvantaged groups frequently experience weaker access to digital technologies, finance and training. Gender disparities are particularly important because unequal access to digital devices, internet services and technology education limits women's participation in technopreneurship.The migration of skilled technology professionals to developed economies reduces the supply of talent available to local innovation

ecosystems. Better employment opportunities, infrastructure and financial rewards abroad contribute to this movement.

Opportunities for Digital Transformation and Technopreneurship in Africa

Africa's youthful population represents a major potential workforce for innovation and entrepreneurship. If appropriately equipped with digital skills, young people can drive enterprise development in fintech, e-commerce, agritech, health-tech and digital services. Mobile technology facilitates digital payments, online education, communication, e-commerce and remote business operations. Growing smartphone use therefore creates new market opportunities. **African Continental Free Trade Area (AfCFTA) c**reates opportunities for startups to expand across borders, access larger markets and strengthen regional value chains. Digital trade can stimulate innovation, investment and employment. AI, blockchain, cloud computing, cybersecurity and fintech create opportunities for new enterprises. Africa's demand for financial inclusion and digital payment services provides particularly strong opportunities for fintech innovation. Growing international investment creates opportunities for startup expansion, mentorship, partnerships and innovation. However, the paper emphasizes the need for broader access to financing beyond established countries and sectors.Online platforms such as Coursera, Udemy, Google Digital Skills for Africa, Microsoft Learn and LinkedIn Learning provide opportunities for youths to acquire digital competencies regardless of geographical location.

Policy Implications for Strengthening Technopreneurship in Africa

Strengthening Digital Infrastructure: Governments should invest in broadband, electricity, digital communication systems and affordable internet, using public-private partnerships to extend access to rural communities.

Reforming Educational Systems and Curricula: Educational institutions should integrate coding, AI, fintech, digital marketing, business analytics, cybersecurity, entrepreneurship and innovation management. Business education should emphasize competency-based and experiential learning.

Expanding Access to Startup Financing: Governments and financial institutions should develop innovation grants, youth entrepreneurship funds, venture capital schemes and low-interest digital enterprise loans. Angel investment, crowdfunding and fintech-enabled financing should also be supported.

Strengthening Innovation Ecosystems: Technology hubs, incubators, innovation parks and digital laboratories should be established and expanded. Universities, private companies and development organizations should collaborate in mentorship and entrepreneurial training.

Promoting Inclusive Digital Participation: Digital literacy programmes should specifically target women, rural populations and disadvantaged youths. The goal is to prevent digital transformation from reinforcing existing inequalities.

Harmonizing Regional Digital Policies: African governments should cooperate on digital trade, startup laws, cybersecurity and digital taxation. Such harmonization would facilitate cross-border entrepreneurship and strengthen AfCFTA implementation.

Implications for Business Education: Repositioning Business Education Institutions for Digital Transformation and Technopreneurship Development in Africa

The paper argues that digital transformation fundamentally changes the role of business education. Traditional programmes designed mainly for clerical, administrative and conventional managerial employment are no longer sufficient. Business education must become a platform for developing digital competence, entrepreneurial creativity, innovation and enterprise development. Curricula should integrate: Digital Marketing and Social Media Management, E-Commerce and Digital Business Models, Financial Technology (FinTech), Artificial Intelligence in Business, Data Analytics and Business Intelligence, Cybersecurity and Digital Ethics, Business Innovation and Design Thinking, Coding and Digital Product Development, Blockchain and Digital Finance, Cloud Computing Applications in Business. The fundamental objective is to move from curriculum models centred on theoretical knowledge toward programmes that prepare students to create enterprises and solve problems using technology.

Business education should shift from predominantly teacher-centred approaches to competency-based and experiential learning. Students should undertake digital business simulations, startup projects, coding workshops, innovation challenges and incubation activities. Learners should develop prototypes and practical solutions to societal and market problems, including mobile applications, e-commerce platforms and fintech innovations. Institutions should develop partnerships with technology companies, startups, financial institutions and innovation hubs to expose students to

real-world digital business environments. Business education institutions should incorporate Learning Management Systems, Virtual Learning Environments, AI tools, business simulation software, data analytics platforms, e-commerce platforms, virtual laboratories and digital innovation spaces. Blended learning, online simulations and virtual entrepreneurship laboratories can help learners understand the practical realities of digital business. Students need creativity, innovation, critical thinking, problem-solving, opportunity recognition, leadership, collaboration, resilience, adaptability, risk management and decision-making. The paper proposes pitch competitions, innovation fairs, hackathons, startup exhibitions and mentorship programmes as mechanisms for developing entrepreneurial culture.

Business education institutions should establish stronger relationships with technology companies, startups, fintech organizations, telecommunications firms, innovation centres and financial institutions. Such partnerships can support curriculum development, internships, mentorship, technology transfer, commercialization, incubation and funding. Educators themselves must acquire contemporary competencies. Professional development should cover digital pedagogy, AI applications, business analytics, fintech, e-commerce, entrepreneurship education, innovation management and digital marketing. Teacher retraining, workshops, industry immersion and international collaboration can strengthen instructional capacity. Institutions should create centres that provide: Startup incubation, Business mentorship, Product development, Digital skills training, Innovation research, Enterprise funding support, such centres can help students move from classroom ideas to viable technology-driven enterprises. Institutions should improve access for women, rural learners, persons with disabilities and disadvantaged populations. The paper proposes affordable digital devices, scholarships, gender-inclusive entrepreneurship programmes, rural technology outreach and accessibility-focused digital learning systems. Business education should be repositioned from a narrow academic function into a catalyst for innovation, entrepreneurship and socio-economic transformation. This requires curriculum redesign, pedagogical transformation, infrastructure investment, staff development and stronger industry engagement. Educational institutions must prepare learners to become innovators, digital entrepreneurs and creators of economic opportunities. The paper regards the transformation of business education as both **urgent and strategic**. Curriculum reform, experiential learning, educator retraining, innovation centres, digital inclusion and industry collaboration are presented as the principal mechanisms for bridging Africa's digital skills gap. Business education consequently has the potential to prepare a new generation of technopreneurs capable of contributing to sustainable economic development.

Conclusion

The paper concludes that digital transformation is now one of the major forces shaping economic restructuring, entrepreneurship and social progress. In Africa, digital technologies create substantial possibilities for innovation, enterprise creation, employment generation and sustainable development. However, technopreneurship does not develop through technology alone. It requires an enabling ecosystem comprising infrastructure, entrepreneurial competencies, supportive policies, startup financing, innovation hubs and technology-oriented education. The experiences of Nigeria, Kenya, Rwanda and South Africa demonstrate different ways in which digital transformation and skills acquisition can stimulate technology-driven enterprise creation. Their experiences also show that infrastructure, policy, finance and education determine how successfully technological opportunities are converted into sustainable enterprises. Africa's youthful population is identified as a major demographic advantage, but the advantage can only be realized if young people possess digital literacy, coding, business analytics, cybersecurity, digital marketing, problem-solving, creativity and innovation-management skills. At the same time, inadequate infrastructure, unreliable electricity, limited internet access, skills deficits, financing constraints, policy inconsistency and digital inequality continue to restrict participation. Business education is therefore strategically positioned to address the skills deficit. Its transformation must include curriculum reform, competency-based learning, industry collaboration, educator retraining and investment in innovation ecosystems. The paper ultimately argues that Africa should move beyond being predominantly a consumer of imported technologies and strengthen its capacity to produce innovative solutions. Technopreneurship, if appropriately supported, can contribute to reducing unemployment, promoting innovation, diversifying economies and advancing sustainable development.

Recommendations

i. Business education institutions should redesign curricula around AI, fintech, coding, software development, data analytics, digital marketing, e-commerce, cybersecurity, digital ethics, innovation management and design thinking.

ii. Governments should increase investment in broadband, affordable internet, reliable electricity, rural digital infrastructure, technology parks and digital innovation ecosystems.
iii. Continuous digital skills programmes should target youths, graduates, women and vulnerable groups, covering digital literacy, software development, cybersecurity, AI, business automation, digital finance and entrepreneurial innovation.
iv. Governments and higher institutions should expand technology hubs, incubators, accelerators, innovation laboratories and entrepreneurship development centres that provide technical support, mentorship, networking and funding.
v. Partnerships with technology companies, fintech organizations, digital startups, telecommunications companies, innovation centres and financial institutions should be strengthened to improve practical exposure and graduate employability.
vi. Digital policies should deliberately support women, rural entrepreneurs, persons with disabilities and economically disadvantaged youths through scholarships, devices, subsidized internet and targeted entrepreneurship programmes.
vii. Governments and development institutions should establish youth entrepreneurship funds, startup grants, innovation financing schemes, venture capital mechanisms and low-interest technology loans.
viii. Business educators should receive continuous professional development in digital pedagogy, AI, fintech, digital business models, data analytics, entrepreneurship education and innovation management.
ix. African governments should harmonize policies relating to digital trade, cybersecurity, startup laws, cross-border entrepreneurship and technology investment in support of AfCFTA.
x. Governments and institutions should establish monitoring and evaluation systems covering digital skills outcomes, entrepreneurship programmes, startup sustainability and labour-market relevance of educational programmes.

The purpose of these recommendations is to move digital transformation from isolated technological adoption toward a coordinated ecosystem involving governments, educational institutions, private-sector actors, development partners and entrepreneurs.

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DIGITAL ENTREPRENEURSHIP IN AFRICA: BRIDGING THE BUSINESS EDUCATION GAP

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Abstract

Digital entrepreneurship spanning fintech, e-commerce, and platform-based ventures is reshaping African economies by expanding market access, driving innovation, and creating employment, as illustrated by the growth of firms such as M-Pesa, Jumia, Paystack, and Flutterwave. Yet the sustainability of this growth remains constrained by a persistent gap in business education, particularly in strategic planning, market research, financial literacy, business model design, and digital marketing. This paper examines that gap, identifying three interlocking constraints: curriculum deficiencies that emphasize theory over applied, digital-centric practice; accessibility barriers rooted in regional, infrastructural, and gender disparities; and limited mentorship and industry linkages that leave entrepreneurs without practical guidance. Drawing on evidence from across the African digital entrepreneurship landscape, the paper argues that these gaps are mutually reinforcing and therefore require coordinated, rather than isolated, solutions. It proposes a set of strategies for bridging the divide, including curriculum reform centred on applied digital tools and iterative business-model methodologies, technology-enabled and low-bandwidth learning approaches to widen access, and formalized partnerships between educational institutions and industry to embed mentorship and real-world experience into training. The paper concludes with recommendations for educators, policymakers, and entrepreneurs aimed at building a more inclusive and resilient digital entrepreneurship ecosystem across the continent.

Keywords: Digital Entrepreneurship, Business Education, Africa, Innovation, Curriculum, Entrepreneurial Competencies

Introduction

Africa has witnessed exponential growth in digital technologies over the past decade. The proliferation of mobile broadband, expanding fintech ecosystems, and the growth of digital platforms has created fertile ground for entrepreneurial activity (Nambisan, 2017; Ndung'u & Signé, 2018). Platforms such as mobile money services, e-commerce marketplaces, and digital service applications have proliferated across Kenya, Nigeria, Ghana, and South Africa, demonstrating the potential of technology-driven entrepreneurship to drive socio-economic transformation. Despite this progress, digital entrepreneurs in Africa face significant challenges that undermine the performance and scalability of their ventures. One of the most pervasive challenges is the business education gap the disconnect between the competencies needed to build and manage successful digital enterprises and the training provided through formal and informal educational institutions (Boso, Story, & Cadogan, 2013). Consequently, many digital startups struggle with strategic execution, market validation, financial management, sustainable business modelling, and online customer engagement. This paper explores the nature of the business education gap in African digital entrepreneurship, analyses its root causes, and proposes structured solutions for bridging the divide.

Digital Entrepreneurship and Its Scope

Digital entrepreneurship refers to entrepreneurial activity that leverages digital technologies to create, deliver, and capture value. Nambisan (2017) defines it as the creation of new ventures and the transformation of existing businesses through novel digital technologies such as cloud computing, big data, artificial intelligence, and digital platforms; he argues that these technologies reduce entry barriers, enable rapid scalability, and foster innovation ecosystems. Zhao & Collier (2016) similarly frame digital entrepreneurship as the pursuit of opportunities that are enabled or constrained by digital technologies, emphasizing digital ecosystems and network effects. Kraus et al. (2019) focuses on the platform economy, social media ventures, and digital transformation, while Hair, Wetsch, & Hull (2012) treats digital entrepreneurship as a subcategory of entrepreneurship in which activities that would traditionally be physical are instead digitized, citing e-commerce and platform-based firms as examples. Taken together, these perspectives converge on a single working definition: digital entrepreneurship is the process of identifying, creating, and exploiting entrepreneurial opportunities through digital

technologies, platforms, and online ecosystems to develop innovative products, services, or business models. This aligns with Gartner's (1988) broader views that entrepreneurship is not solely about identifying opportunity but about mobilizing resources to create long-term value a process that, in digital contexts, depends heavily on sound business strategy. The scope of digital entrepreneurship spans several categories. E-commerce and online retail businesses operate through digital marketplaces such as Amazon & Jumia, engaging in online sales, dropshipping, and related activities. Platform-based businesses, such as Uber and Airbnb, connect users and providers to facilitate transactions. Fintech and digital financial services encompass payment solutions such as Paystack and Flutterwave, along with blockchain and crypto currency ventures. Digital content and social media ventures involve entrepreneurs monetizing content on platforms such as YouTube and TikTok, including influencer marketing and digital advertising. Software and application development covers mobile apps, SaaS platforms, and AI-driven solutions, particularly in edtech, healthtech, and agritech. Finally, the digital transformation of traditional businesses involves the integration of e-commerce, digital marketing, and automation into existing firms, alongside broader emerging technologies such as AI, blockchain, IoT, and cloud computing. According to Nambisan (2017) and Kraus et al. (2019), digital entrepreneurship as a whole is characterized by scalability, low marginal cost, global reach, rapid innovation, and platform dependency.

Digital Entrepreneurship in the African Context

Digital entrepreneurship in Africa is shaped by distinctive socio-economic and technological dynamics. Friederici, Wahome, & Graham (2020) observes that African digital entrepreneurs creatively adapt technologies to local markets, building sustainable businesses by scaling through relationships and customizing platform business models to fit local infrastructure constraints. Mobile technologies and digital platforms have lowered barriers to entry, allowing innovators to reach customers directly (Donner, 2015), fueling growth in fintech, e-commerce, health technology, and agritech. However, this growth has not translated into consistently high survival rates. Ndung'u & Signé (2018) finds that limited business management training, constrained access to funding, inadequate infrastructure, and regulatory hurdles all suppress the scalability and sustainability of digital startups. They emphasize the need for supportive ecosystems including access to finance, mentorship, and digital infrastructure as well as stronger government policy support. Reported failure rates are substantial: Ndung'u & Signé (2018, Brookings Institution report) cite an early-stage failure rate for African digital startups of approximately 54% over the 2010–2018 period, attributed primarily to limited funding, inadequate digital infrastructure, regulatory hurdles, and skills gaps. Readers seeking the underlying dataset should consult the original Brookings report, as figures of this kind vary across sources and time periods. Contextualized business training has been identified as a key mitigating factor. Dutta, McKellen, Boating, & Donner highlights the value of tailoring training programmes to local market conditions incorporating African case studies, addressing market-specific challenges such as mobile payment systems and regulatory frameworks, and leveraging local mentor and peer networks. Such contextualization helps entrepreneurs develop practically relevant skills and improves their prospects of building sustainable ventures. Governments can play a catalytic role in addressing these challenges by developing supportive regulatory frameworks, investing in digital infrastructure, expanding access to funding, implementing digital skills training, and encouraging public-private partnerships. Rwanda and Kenya illustrate this potential, having introduced tax incentives, startup incubators, and investment funds that actively promote digital entrepreneurship.

Current Landscape of Digital Entrepreneurship in Africa

The digital entrepreneurship landscape in Africa is undergoing significant transformation, driven by technological advancement, a youthful demographic and increasing investment. Several converging trends illustrate this shift.

a. Rapid Growth of Internet Penetration
   Expanding mobile and internet connectivity has been pivotal in fostering digital entrepreneurship across the continent. The International Telecommunication Union (2021) reports that Africa has seen a marked increase in internet users, surpassing 500 million people online connectivity that allows entrepreneurs to reach larger markets and engage consumers in new ways (Makhubela, 2022).
b. A Youthful Population
   With approximately 60% of Africa's population under the age of 25, the continent has a demographic advantage well suited to digital entrepreneurship, as younger populations tend to be more receptive to technology and innovation. Afolabi & Olorunfemi (2021) notes that this demographic are driven growth in tech startups, particularly in urban centres where resources are more accessible.

Emerging Technology Hubs Cities such as Nairobi, Lagos, and Cape Town have emerged as prominent technology hubs, home to incubators and accelerators that support early-stage ventures. Ojo, (2020) notes that these hubs facilitate collaboration among entrepreneurs, investors, and mentors cultivating an environment conducive to innovation and growth. They also provide entrepreneurs with access to essential resources, networking opportunities, business support services, and mentorship, thereby strengthening their capacity to develop innovative ideas, establishes viable ventures, and sustains entrepreneurial activities.

c. Diverse and Expanding Sectors

Digital entrepreneurship in Africa spans fintech, e-commerce, healthtech, and agritech. The fintech sector has seen particularly rapid growth: mobile payment solutions such as M-Pesa have revolutionized financial transactions (Jack & Suri, 2011), substantially increasing financial inclusion for previously unbanked populations.

Case Studies of Successful Digital Startups in Africa

The African digital entrepreneurship landscape has produced several notable startups that illustrate how technology can be leveraged to create innovative, scalable solutions. M-Pesa: Launched by Safaricom in 2007, M-Pesa is among Africa's most successful mobile money platforms, enabling users to transfer money, pay bills, and conduct transactions via mobile phone. Jack & Suri (2011) documents its transformative effect on financial inclusion in Kenya; by 2020, the platform had over 40 million users. Jumia: Often described as the "Amazon of Africa," Jumia is an e-commerce platform operating across multiple African countries. Founded in 2012, it has expanded into food delivery, travel, and logistics. Afolabi & Olorunfemi (2021) attributes its success to its adaptation to local market conditions; the company listed on the New York Stock Exchange in 2019.Andela: Founded in 2014, Andela identifies and trains software developers across Africa and connects them with global technology companies, addressing the sector's skills gap. Hwang (2018) notes that Andela has trained thousands of developers and raised significant funding, including a $100 million Series D round in 2020.Paystack: Founded in 2015, Paystack enables businesses to accept online payments and processed over $1 billion in transactions within three years. Its acquisition by Stripe in 2020, for approximately $200 million, marked one of the largest exits in African technology (Higgins, 2020). Flutterwave: Founded in 2016, Flutterwave facilitates cross-border payments for African businesses and has raised over $225 million in funding from investors including Tiger Global Management and Y Combinator (Oluwaseun, 2021). These cases demonstrate that digital startups in Africa can innovate and disrupt traditional markets while contributing meaningfully to economic development and job creation, provided they can navigate the structural constraints discussed in the following section.

Challenges and Barriers Facing Digital Entrepreneurs

Despite this promising landscape, digital entrepreneurs face considerable challenges, including inadequate infrastructure, limited access to funding, and regulatory hurdles. Abor & Quartey (2010) argues that these systemic barriers stifle innovation and constrain the ability of startups to scale effectively. Governments are increasingly recognizing the importance of supporting the digital economy, introducing measures such as reduced regulatory burdens and tax incentives (Akpan & Adebayo, 2020); however, the implementation and effectiveness of these policies vary considerably across countries. International investment has also grown, with venture capital and global technology firms showing increasing interest in African startups. Chisanga & Mbewe (2021) argues that such global partnerships are essential for knowledge transfer and capacity-building, both of which are vital for local entrepreneurs to thrive. In sum, the current landscape is vibrant and full of potential, yet remains constrained by structural barriers. Addressing these barriers through targeted policy and investment in education and infrastructure will be essential to unlocking the continent's full digital economic potential.

The Role of Business Education in Africa's Entrepreneurship Landscape

Business education is vital for fostering an entrepreneurial mindset and equipping individuals with practical skills. Nabi et al. (2017) argues that business education enhances critical thinking, problem-solving and decision-making competencies essential to successful entrepreneurship while also improving understanding of market dynamics, financial management, and strategic planning (Rae, 2006). Kauffman (2016) similarly finds that well-structured business education programmes substantially increase the likelihood of entrepreneurial success by equipping students with the tools to develop viable business models. Business education and entrepreneurial competency encompass formal and informal learning that strengthens business knowledge, strategic thinking, and management capability (Volery & Mueller, 2006). For digital entrepreneurs specifically, this includes competencies in strategic planning, market research, financial literacy, business model design, and digital marketing. Entrepreneurs with strong business competencies are more likely to innovate, grow, and sustain their

ventures (Man, Lau, & Chan, 2008; Morris, Kuratko, & Cornwall, 2013). However, entrepreneurship education in many African nations remains largely theoretical and poorly aligned with real-world practice and the demands of digital ecosystems (Akanbi & Akinbinu, 2017), leaving many entrepreneurs ill-equipped to navigate complex markets or scale their ventures effectively.

Current State of Business Education in Africa

The state of business education across Africa is uneven. Many universities and colleges offer business programmes, but their quality and relevance vary considerably. A report by the African Development Bank (2019) finds that while some institutions have begun adapting their curricula to the demands of the digital economy, many continue to rely on traditional teaching methods that do not adequately prepare students for entrepreneurial ventures. Makhubela (2022) similarly finds that many programmes lack experiential learning opportunities such as internships and real-world projects that are crucial for developing practical entrepreneurial competencies. Beyond curriculum content, the business education gap is also a matter of pedagogical approach. Passive, theory-heavy teaching fails to cultivate the applied competencies needed to navigate digital markets (Kolb, 1984), whereas integrative and experiential learning case studies, simulations, and field projects has been shown to deepen entrepreneurial capability across these competencies (Rae & Carswell, 2000).

Identifying Gaps in Business Education for Entrepreneurship in Africa

The disconnect between what African business education delivers and what digital entrepreneurship demands is not a single deficiency but a cluster of interlocking gaps. These gaps operate at different levels of the education system what is taught, who can access it, and what surrounds the learner outside the classroom and each compounds the others. A curriculum gap without an accessibility gap might still be closed by motivated self-learners; an accessibility gap without a mentorship gap might still leave students able to find guidance elsewhere. It is the layering of all three that produces the persistently low entrepreneurial performance documented across the region.

i. Curriculum Deficiencies: Theory versus Practice

Many business education programmes in Africa emphasize theoretical knowledge at the expense of practical skills. Akpan & Adebayo (2020) finds that curricula often focus on traditional business theory without integrating experiential learning that reflects the real-world challenges entrepreneurs' face. Makhubela (2022) similarly finds that limited hands-on training and project-based learning constrain students' ability to apply their knowledge in practice, while Ojo (2020) notes that outdated curricula fail to keep pace with rapid changes in technology and market dynamics, leaving graduates ill-prepared for the modern business landscape.This theory–practice imbalance is particularly consequential for digital entrepreneurship because the underlying technologies and business models change faster than conventional curriculum review cycles can accommodate. A business plan module built around static market analysis, for instance, does little to prepare a student to iterate a digital product based on real-time user data, run A/B tests on a landing page, or interpret platform-level analytics from a service such as Paystack or Jumia's seller dashboard. Osterwalder & Pigneur's (2010) business model canvas and Blank & Dorf's (2012) lean startup methodology both widely used internationally to teach iterative, evidence-based venture design remain marginal in many African curricula relative to older, plan-driven approaches to business education (Akanbi & Akinbinu, 2017). The result is a structural mismatch: graduates are trained to write a business plan once, rather than to test, discard, and rebuild a business model repeatedly, which are the core discipline digital markets actually reward. The gap also extends into functional competency areas specific to digital ventures. Financial literacy modules frequently address budgeting and accounting fundamentals but rarely extend to digital-specific financial skills such as reading unit economics for platform businesses, managing cash flow under delayed payment-gateway settlement cycles, or evaluating equity dilution in venture funding rounds of the kind Flutterwave and Paystack has raised (Oluwaseun, 2021; Higgins, 2020). Similarly, marketing curricula often remain anchored in traditional four-P frameworks with limited coverage of digital marketing analytics, search and social advertising, or conversion funnel design (Chaffey & Ellis-Chadwick, 2019; Tiago & Veríssimo, 2014) precisely the skill set that determines customer acquisition cost and survival for early-stage digital ventures.

ii. Accessibility: Location, Resources, and Technology

Access to quality business education varies significantly across regions. Rural areas often lack educational institutions altogether, producing marked disparities in access (Chisanga & Mbewe, 2021). The African Development Bank (2019) reports that limited resources textbooks, technology, and infrastructure further compound these issues, while outdated facilities

constrain the learning experience more broadly (Abor & Quartey, 2010). The digital divide compounds these constraints: many students in underserved areas lack reliable internet access, limiting their ability to engage with online learning resources (Afolabi & Olorunfemi, 2021). This accessibility gap creates a paradox worth making explicit: digital entrepreneurship education is disproportionately delivered through digital means online courses, cloud-based tools, virtual mentorship yet the students most in need of digital-entrepreneurship training are often the least well connected to consume it. Fatoki & Asah (2011) notes that entrepreneurial skill acquisition is closely tied to the learning infrastructure available to a student; where that infrastructure is itself digital, connectivity becomes a precondition for the very competencies the curriculum is meant to build, not simply a delivery-channel inconvenience. Regional disparities also carry a gender dimension: women entrepreneurs in rural and peri-urban areas face a compounding of geographic and social access barriers, limiting their participation in both formal business education and informal digital-skills communities that often substitute for it in urban hubs such as Lagos, Nairobi, and Cape Town (Ojo, 2020).

Resource constraints extend beyond connectivity to the tools of digital practice itself. Effective digital-entrepreneurship pedagogy increasingly assumes access to functioning e-commerce sandboxes, analytics dashboards, cloud computing credits, and even reliable electricity for sustained coursework none of which can be assumed uniformly across institutions (African Development Bank, 2019). Where such resources are available only intermittently, students can acquire conceptual familiarity with digital tools without ever developing the hands-on fluency that distinguishes competent practice from theoretical awareness.

iii. Limited Mentorship and Networking Opportunities

Mentorship is critical to entrepreneurial development, yet many students in Africa struggle to access it. Nabi et al. (2017) finds that effective mentorship significantly enhances the entrepreneurial experience by providing guidance, support, and industry insight; however, the absence of established mentorship programmes within many institutions means students miss valuable connections and learning opportunities (Ojo, 2020). Chisanga & Mbewe (2021) argues that stronger partnerships between educational institutions and industry stakeholders could help close this gap by creating structured networking opportunities for aspiring entrepreneurs.

The mentorship gap is especially costly in digital entrepreneurship because much of the tacit knowledge required how to price a subscription product, when to pivot a business model, how to negotiate with a payment processor, how to structure an early funding round is rarely codified in textbooks and is instead transmitted informally through networks of practitioners. Case studies such as Andela, which was built in part around structured mentorship pairing junior developers with experienced technologists (Hwang, 2018), illustrate what formal mentorship infrastructure can accomplish when it exists; its relative rarity in mainstream business education programmes is precisely the deficit this section identifies. Without comparable structures, students graduate with formal credentials but without the informal network capital that experienced entrepreneurs rely on to navigate early-stage uncertainty.

Addressing these three interlocking gaps curriculum deficiencies, accessibility constraints, and limited mentorship is essential to improving the quality and relevance of business education across Africa.

Strategies for Bridging the Education Gap

The gaps identified above suggest that no single intervention can close the business education deficit on its own; curriculum reform without access, or access without mentorship, addresses only part of the problem. The strategies below are therefore presented as complementary and mutually reinforcing rather than as alternatives, and are sequenced roughly from the classroom outward from what is taught, to how it is delivered, to who surrounds the learner.

a. Curriculum Development: Integrating Practical Skills and Digital Tools Curricula should be redesigned to combine theoretical grounding with practical, experiential components such as internships, live projects, and case studies reflecting real business challenges (Akpan & Adebayo, 2020). Makhubela (2022) emphasizes the importance of embedding digital tools directly into coursework, giving students hands-on experience with the technologies reshaping the business landscape and cultivating an entrepreneurial mindset through applied problem-solving. Concretely, this reform can draw on frameworks already well-established in international entrepreneurship pedagogy but underused in African programmes. Adopting the business model canvas (Osterwalder & Pigneur, 2010) and lean startup methodology (Blank & Dorf, 2012) as core teaching tools, rather than supplementary readings, would shift students

from writing static plans to practicing iterative validation testing assumptions about customers, pricing, and channels against real feedback before committing resources. Coursework built around live, revenue-generating digital ventures (however small) gives students direct exposure to the metrics that matter in digital markets: customer acquisition cost, retention, and unit economics, echoing the applied, data-driven competencies that Kraus et al. (2019, 2023) identify as central to digital business model innovation. Embedding basic financial-literacy instruction specific to digital ventures reading platform payout structures, projecting cash flow under variable transaction volume, and understanding early-stage equity terms directly targets the functional skills gap identified in the preceding section (Lusardi & Mitchell, 2014). Institutions should also treat curriculum reform as continuous rather than periodic. Given how quickly digital business models evolve as the trajectories of Paystack, Flutterwave, and Jumia themselves illustrate over just the past decade a curriculum locked to a multi-year review cycle will structurally lag the market it is meant to prepare students for (Ojo, 2020). Lightweight, annually revisited modules built and updated in collaboration with industry practitioners offer one practical route to keeping pace without requiring a full curriculum overhaul each time.

b. Leveraging Technology for Remote Learning and Access
The COVID-19 pandemic underscored the value of technology-enabled learning. Chisanga & Mbewe (2021) notes that digital platforms can extend access to quality education, particularly for students in remote or underserved areas, while Afolabi & Olorunfemi (2021) highlights the benefit of blended learning approaches in enhancing engagement and broadening access to educational resources. Online communities for collaboration and knowledge-sharing can further enrich this experience. Because the accessibility gap identified above is partly a connectivity problem, technology-enabled learning strategies need to be designed for low-bandwidth and intermittent-connectivity conditions rather than assuming continuous broadband access. Low-data-mode course delivery, downloadable offline modules, and SMS- or USSD-based components modeled on the same lightweight mobile infrastructure that made M-Pesa usable across low-connectivity environments (Jack & Suri, 2011) can extend reach into precisely the rural and peri-urban areas where institutional access is thinnest (Chisanga & Mbewe, 2021). Blended models that pair a compact digital core curriculum with in-person facilitation at local hubs or partner institutions can also reduce dependence on any single student's personal connectivity or device access, addressing the resource constraints noted in the accessibility discussion above.

c. Partnerships Between Educational Institutions and Industry Partnerships between universities and industry stakeholders help align academic programmes with market demands. Nabi et al. (2017) finds that such collaborations facilitate mentorship, internships, and joint projects that give students real-world experience, while Ojo (2020) notes that industry involvement in curriculum design helps keep programmes current and responsive to a fast-changing business environment. These partnerships also expand students' professional networks within their chosen industries. Such partnerships also offer the most direct route to closing the mentorship gap described earlier. Structured mentorship programmes pairing students with practitioners from fintech, e-commerce, and platform businesses can replicate at institutional scale what companies such as Andela have demonstrated works at organizational scale: that structured, sustained mentorship measurably accelerates the transition from formal training to practical competence (Hwang, 2018). Guest lectures and short-term placements with firms such as Paystack, Flutterwave, or Jumia would additionally expose students directly to the operational realities payment processing, logistics, cross-border compliance that case-study teaching can only approximate. Formalizing these arrangements through memoranda of understanding, rather than relying on ad hoc guest lectures, would help ensure continuity of access across cohorts rather than depending on individual staff relationships (Chisanga & Mbewe, 2021).

Implemented together, curriculum reform, technology-enabled access, and industry partnership offer a coherent pathway to improving the quality and relevance of business education across Africa, better preparing students for the demands of entrepreneurship and strengthening the continent's broader economic development.

Findings and Discussion

Curriculum gaps remain pervasive across African business schools and technical colleges, with insufficient emphasis on applied, digital-centric business competencies. Entrepreneurial support programmes such as incubators and accelerators often provide useful skills training, but remain fragmented and lack standardization, limiting their scalability. Industry–education linkages are generally weak, producing a disconnect between academic knowledge and industry requirements. Gender and

regional disparities further compound the business education gap, with women and rural entrepreneurs facing disproportionately limited access to quality training. The
findings align with broader research showing that entrepreneurial education incorporating experiential learning, mentorship, and digital tools significantly enhances venture performance (Pittaway & Cope, 2007; Kolb, 1984). Read together, they suggest that closing the business education gap requires coordinated action across curriculum design, institutional access, and industry engagement, rather than isolated reform in any single area.

Conclusion

This paper has examined digital entrepreneurship in Africa and its relationship to the persistent gap in business education. While the continent is rich in innovative potential, substantial barriers to effective digital entrepreneurship remain ranging from limited access to technology and inconsistent internet connectivity to gaps in essential business education and mentorship. The evidence reviewed suggests that fostering a more robust ecosystem for digital entrepreneurship could meaningfully enhance economic growth and job creation across the continent.

Addressing these challenges will require coordinated effort across several fronts. Educators should integrate technology-focused curricula that prioritise digital skills, entrepreneurship, and practical application. Policymakers should advocate for infrastructure development and support institutions that promote entrepreneurial initiatives, ensuring young entrepreneurs have access to necessary resources. Entrepreneurs themselves should actively engage with community networks and mentorship programmes that can strengthen their skills and knowledge. Collaboration among technology hubs, universities, and businesses can further create the synergy needed to sustain innovation. Future research should examine specific case studies of successful digital entrepreneurs across diverse African contexts, investigate the impact of government policy on digital entrepreneurship, and explore the role of cultural factors in entrepreneurial success. Additional studies assessing the long-term sustainability of digital businesses emerging from improved educational frameworks and their contribution to local economies would further strengthen this evidence base. Through sustained, coordinated effort across these sectors, Africa can build a more vibrant and inclusive digital entrepreneurial landscape, bridging the education gap and empowering the next generation of innovators.

Recommendations

i. Curriculum Reform
   Integrate practical skills: revise curricula to include hands-on experience, case studies, and projects reflecting real-world business challenges, enabling students to apply theoretical knowledge in practice. Embrace digital tools: incorporate training in emerging technologies and digital platforms including e-commerce, digital marketing, and data analytics to prepare students for the digital economy.

ii. Technology Infrastructure and Access
   Invest in connectivity: governments and the private sector should collaborate to improve internet access and digital infrastructure, particularly in rural and underserved areas. Leverage online learning platforms: encourage the development and use of flexible online learning platforms that allow students to learn at their own pace.

iii. Industry Partnerships
   Formalize collaboration with businesses: establish partnerships with local and international firms to create internship, mentorship, and job-placement programmes.Involve industry in curriculum design: use guest lectures, workshops, and collaborative projects to bridge academic knowledge and practical industry needs.

iv. Entrepreneurial Mindset and Mentorship
   Encourage innovation: foster a culture of entrepreneurship by supporting student-led business ideas through incubators and accelerators. Develop mentorship programmes: connect students with experienced entrepreneurs and business leaders who can provide guidance and insight into the entrepreneurial journey.

v. Policy Support
   Strengthen government initiatives: create supportive regulatory and funding environments for startups, including simplified business registration and targeted tax incentives. Prioritize inclusivity: ensure policies address the needs of marginalized groups, including women and rural entrepreneurs, to foster an inclusive entrepreneurial ecosystem.

vi. Continuous Research and Development

Monitor and evaluate: conduct ongoing research to assess the effectiveness of educational programmes aimed at bridging the business education gap, identifying best practices and areas for improvement. Adapt to change: ensure educational programmes remain responsive to evolving market demands and technological advancement. Implementing these recommendations in a coordinated manner can help stakeholders build a more resilient and vibrant digital entrepreneurship ecosystem in Africa empowering the next generation of entrepreneurs while contributing meaningfully to economic development and innovation across the continent.

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STRENGTHENING BUSINESS EDUCATION FOR DIGITAL AND ENTREPRENEURIAL TRANSFORMATION IN AFRICA

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Abstract

Business education serves as a pivotal mechanism for fostering digital innovation, entrepreneurship, and sustainable economic development in Africa. In an increasingly technology-centric global economy, African nations face the imperative to develop a workforce proficient in digital skills, entrepreneurial capabilities, innovative strategies, and managerial expertise to effectively navigate the challenges posed by the Fourth Industrial Revolution. However, these nations face significant challenges, including high youth unemployment rates, insufficient digital infrastructure, underdeveloped entrepreneurial ecosystems, limited technological adoption, and educational frameworks that frequently misalign with the emerging needs of the labor market. Such challenges have hindered Africa's progress toward achieving meaningful digital and entrepreneurial transformation. This paper examines the crucial role that business education plays in facilitating this transformation. It articulates the concepts of business education as well as digital and entrepreneurial transformation, critiques existing theoretical frameworks, and highlights key challenges that diminish the effectiveness of business education as a catalyst for such transitions. Furthermore, it proposes actionable strategies aimed at fortifying business education to align it with the demands of the digital economy. Employing a qualitative methodology, the study incorporates a comprehensive analysis of relevant scholarly literature, policy documents, and institutional reports. The findings emphasize that business education plays a vital role in equipping learners with essential competencies, including digital literacy, entrepreneurial skills, innovation capabilities, financial management knowledge, leadership skills, problem-solving abilities, and comprehensive business management techniques. These competencies not only enhance individual employability but also foster enterprise creation, technological adaptation, and sustained economic growth. In conclusion, the study posits that strategic investment in business education, modernization of curricula, enhancement of digital infrastructure, development of entrepreneurial initiatives, cooperation with industries, and the implementation of supportive government policies are critical steps towards significantly accelerating digital transformation, fostering entrepreneurial growth, generating employment opportunities, and enhancing economic competitiveness throughout Africa.

Key words: Business education, Critical driver, Innovation, Digital infrastructure, Entrepreneurial transformation, Africa

Introduction

The twenty-first century has marked a significant period of technological progress and globalization, greatly influenced by the fourth industrial revolution (4IR), which encompasses various digital technologies such as artificial intelligence, big data analytics, cloud computing, financial technology (FinTech) and e-commerce. These innovations have transformed global business operations, government services, and educational practices, creating both opportunities for economic growth and challenges necessitating a re-evaluation of educational systems (Adeyemi, et al, 2022). According to Elujekwete et al (2021), and Okafor, et al, (2021) Business Education has become increasingly important as it equips individuals with essential knowledge, attitudes, values, digital skills, entrepreneurial insight, and management capabilities vital for success in the rapidly evolving digital economy. Traditionally centered on clerical and administrative roles, modern business education now encompasses areas like digital literacy, innovation management, and financial technology, aligning closely with evolving labor market demands.

Africa's burgeoning youth population presents a unique opportunity for economic advancement if adequately empowered through quality education, digital skills development, and entrepreneurship.

However, Ojo, et al (2023) submit that challenges such as high youth unemployment, underemployment, weak industrialization, inadequate digital infrastructure, low productivity, and limited technological capability hinder progress. Over the years, millions of young Africans have entered the workforce, but job opportunities have not kept pace, reinforcing calls for educational reforms to focus on digital competencies and entrepreneurship (International Labour Organization, 2022). Digital transformation is a critical driver of economic growth, impacting various sectors by enhancing efficiency and service delivery through the integration of technology (OECD, 2023). In Africa, digital technologies have transformed banking through mobile money and digital payment systems; and have expanded access to education through online learning, and created new opportunities for e-commerce and digital entrepreneurship. Yusuf et al (2022) however aver that despite these remarkable developments, issues of digital inequality remain pervasive, stemming from inadequate infrastructure and digital literacy.

Entrepreneurial transformation is vital for fostering inclusive economic development in Africa. Entrepreneurship education supports the development of skills needed to create and sustain businesses, encouraging innovation and employment. Integrating entrepreneurship education into business education curricula is increasingly recognized as essential for preparing students to navigate complex economic landscapes (Yusuf et al, 2022). Business education acts as a link between digital transformation and entrepreneurship, with curricula designed to impart skills in digital literacy, management, critical thinking, and entrepreneurship, preparing graduates for the demands of the modern workforce.

However, despite advancements, business education in Africa faces numerous obstacles. According to Adebayo et al (2023), these obstacles include outdated curricula, inadequate funding, insufficient digital infrastructure, shortage of qualified educators with digital competencies, weak partnerships between educational institutions and industry, poor internet connectivity, inadequate entrepreneurial support services, and policy implementation gaps, among others. These limitations hinder the effectiveness of educational outcomes, potentially widening the gap between students' skills and labor market needs. Addressing these challenges is imperative for enhancing Africa's global competitiveness in the digital economy. Therefore, this paper emphasizes the urgent necessity to strengthen business education to foster digital entrepreneurial transformation across the continent.

Concept of Business Education

Business Education is an aspect of vocational education concerned with preparing students to acquire knowledge, skills and competencies for teaching of business courses, and employment in business-related fields. In business education, attitudes and skills learnt help the recipients to be efficient and effective in their work in accordance to the needs of the society at any point in time. Elujekwete (2019) and Fayolle et al (2019) consider business education as a comprehensive educational programme designed to prepare students with knowledge and skills for employment in business-related fields and office occupations, entrepreneurship, and leadership. Nwosu and Okoro (2020) cite Edokpolor and Owenvbiugie as asserting that the actual goals of Business Education are to prepare students for specific career in office occupations, equip students with the requisite skills for job creation and entrepreneurship, and expose students with knowledge about business, including a good blend of Information and Communication Technology (ICT). According to Nabi et al (2017), Business education is identified as a vital discipline within vocational and technical training, equipping learners with the necessary knowledge, skills, and competencies to succeed in various business roles, including employment and entrepreneurship. Its curriculum blends theoretical and practical experiences to foster skills in areas like accounting, office technology and management, marketing, finance, entrepreneurship, and ICT, aligning with labor market demands as highlighted by the Federal Republic of Nigeria (FRN, 2018).The ideal of business education curriculum should prepare individuals for productive employment, self-reliance, lifelong learning, and meaningful contributions to economic and national development. Over time, business education has evolved from focusing primarily on traditional office roles such as bookkeeping and secretarial duties to incorporating contemporary elements like digital literacy, e-commerce, FinTech, and innovation management. This shift is a response to globalization and rapid technological advancements. Akinwale and Suleiman (2021) note that a key objective of business education is to cultivate employable skills, empowering graduates with competencies in communication, decision-making, and teamwork, thereby enhancing their employability across various sectors.

Moreover, the integration of digital technologies into business education is becoming increasingly pertinent. Anyadike et al. (2018) argue that digital competencies are vital for leveraging innovations in the business sphere, especially within the context of Africa’s fast-evolving technological landscape. Business education is thus seen as a catalyst for digital and entrepreneurial transformation,

preparing graduates to thrive in the digital economy while contributing to technological progress in Africa.

Digital Transformation

Digital transformation has become one of the most significant developments shaping the global economy, educational systems, public administration, healthcare, manufacturing, agriculture, finance, and business operations in the 21st century. It is characterized as the pervasive integration of digital technologies into organizational, economic, and educational frameworks. It represents a strategic priority for sustainable growth by enhancing efficiency and competitiveness through the modernization of processes and structures (World Bank, 2023; OECD, 2020). UNESCO (2021) considers digital transformation as the integration of digital technologies into educational systems to improve teaching, learning, research, administration and knowledge dissemination. The focus on digital transformation encompasses several emerging technologies from the Fourth Industrial Revolution, including AI, blockchain, and big data analytics, all of which redefine traditional business operations and models.

Hisrich and Peters (2018) emphasize that digital transformation drives innovation, enabling organizations to develop new offerings and streamline current processes in response to market demands, enabling businesses to remain competitive while meeting the expectations increasingly technology-oriented customers. It also fosters a culture of data-driven decision-making. According to International Labour Organization (2022), organizations utilize digital tools to analyze significant volumes of data for strategic insights into business operations and organizational performance. Successful adoption of digital technologies leads to improved productivity, reduced costs, and enhanced market reach, marking a shift in how businesses engage with their customers and operate overall.

Entrepreneurial Transformation

Entrepreneurial transformation refers to the comprehensive policy of developing entrepreneurial knowledge, competences, attitudes, innovative capabilities, and business management skills that enable individuals, organizations, and societies to create, sustain and expand productive enterprises capable of transforming economic and social conditions (Adebayo et al, 2023). Entrepreneurial transformation involves changing individuals from being job seekers into job creators by equipping them with the capacity to identify opportunities, develop innovative solutions, mobilize resources, manage risks, establish enterprises, and contribute to national development through wealth creation and employment generation.

Entrepreneurial transformation has emerged as a pivotal strategy for achieving sustainable economic growth, employment generation, poverty alleviation, industrialization, and technological advancement in the twenty-first century. Increasingly, countries recognize entrepreneurship as a key driver of innovation, competitiveness, productivity, and socio-economic development. Hisrich et al, (2020) submit that in Africa, this transformation is particularly relevant, as it holds the potential to address entrenched developmental challenges including unemployment, poverty, inequality, low industrial productivity, overreliance on government jobs, and weak economic diversification.

Furthermore, entrepreneurial transformation extends beyond mere business ownership; it cultivates an entrepreneurial mindset characterized by creativity, critical thinking, resilience, opportunity recognition, and calculated risk-taking. Individuals equipped with these qualities are better prepared to navigate shifting economic landscapes and competitive environments. According to Hisrich et al, innovation plays a crucial role in this process, as it enables entrepreneurs to launch new products, enhance services, and respond to consumer needs—contributing substantially to industrial growth and economic competitiveness.

Enterprise creation, particularly through micro, small, and medium-sized enterprises (MSMEs), is another significant aspect of entrepreneurial transformation (Elujekwete et al, 2021). These businesses are vital for job creation, income generation, and economic diversification. Moreover, entrepreneurial transformation heavily emphasizes skills development. Entrepreneurs must possess a blend of technical, managerial, and digital competencies, cultivated through education, vocational training, and mentoring, which are essential for establishing and maintaining successful enterprises.

Opportunity identification and resource mobilization are critical components of this transformation. Entrepreneurs must learn to pinpoint unmet market needs and assess viable business opportunities. Yusuf et al (2022) suggest that those adept at recognizing opportunities are more likely to build successful enterprises that generate sustainable income. As entrepreneurial activities grow, they spur job creation, thereby alleviating youth unemployment and reducing dependency on government jobs.

Finally, entrepreneurial transformation fosters economic diversification, moving beyond traditional sectors like agriculture, mining, and oil exports. It encourages investments in varied fields

such as manufacturing, agribusiness, tourism, creative industries, renewable energy, healthcare, and education, all of which are essential for enhancing economic resilience and promoting long-term growth.

Business Education and Entrepreneurial Transformation in Africa

Business education plays a crucial role in promoting digital entrepreneurship, which facilitates entrepreneurial transformation by enhancing market opportunities and increasing business efficiency. According to Fayolle and Gailly (2019), it significantly contributes to the growth of Small and Medium Enterprises (SMEs), essential for most African economies. SMEs are vital as they account for a considerable share of employment, production, innovation, and income generation across the continent. Business education equips entrepreneurs with the skills necessary to establish and sustain SMEs, focusing on areas such as financial management, strategic planning, marketing, accounting, and organizational leadership. The development of strong SMEs bolsters economic diversification, creates jobs, supports industrialization, and helps alleviate poverty. To further enhance its impact, business education must continually modernize its curriculum by incorporating emerging technologies, artificial intelligence, digital entrepreneurship, innovation management, business analytics, financial technology, and sustainable enterprise development.

Theoretical Framework

The study was anchored on Human Capital Theory as proposed by Theodore W. Schultz in 1961 and further developed by Gary S. Becker in 1964. This theory emphasizes the significance of investing in education, training, skills acquisition, health, and knowledge as crucial to enhancing productivity, competence, and earning potential across individuals and organizations. It posits that education functions not just as a social service but as a vital economic investment that reaps returns at various societal levels.

According to Schultz, nations that prioritize education will see improvements in labor productivity and the quality of human resources, with education enabling individuals to engage more effectively in economic activities. Becker expands on the concept by defining human capital as the accumulation of knowledge, skills, competencies, talents, and experiences gained through formal education and ongoing training, which collectively boost individual productivity and organizational effectiveness.

The theory further delves into the intersection of education and digital transformation, highlighting the increasing demand for digitally competent professionals as organizations adopt new technologies—such as artificial intelligence, cloud computing, and e-commerce. Business education emerges as a key investment in digital human capital, equipping learners with essential technological knowledge, digital literacy, and innovation skills necessary for thriving in the digital economy.

Overall, the human capital theory is particularly pertinent to understanding how investments in business education can drive digital and entrepreneurial transformation in Africa. It articulates how such education not only fosters knowledge and managerial skills but also prepares graduates to harness modern digital technologies effectively. Consequently, this effectively enhances their employability and entrepreneurial prospects, while simultaneously contributing to the broader goal of achieving digital transformation across the continent.

Challenges of Business Education for Digital and Entrepreneurial Transformation in Africa

Challenges faced by business education in Africa significantly hinder the development of graduates equipped with essential digital competencies and entrepreneurial skills necessary for success in a competitive global economy. Key concerns include

1. Inadequate funding from governments, leading to poorly equipped facilities and limited resources. Additionally, unreliable electricity and a shortage of qualified educators with up-to-date digital skills contribute to ineffective teaching methodologies.
2. Outdated curricula that fail to integrate emerging technologies like artificial intelligence and blockchain; and insufficient digital infrastructure that constrains hands-on learning experiences. Inadequate practical training results in graduates possessing theoretical knowledge but lacking real-world experience, while weak collaborations between educational institutions and industries limit exposure to current market practices.
3. Inadequate digital Infrastructure. Many educational institutions across Africa operate with inadequate computer facilities, unreliable internet connectivity, insufficient broadband access, outdated software, and limited access to digital learning platforms. These infrastructural deficiencies restrict students' opportunities to acquire practical digital skills.
4. Shortage of Qualified Digital-Skilled Educators. Many educational institutions experience shortages of lecturers who possess adequate knowledge of emerging digital technologies and contemporary entrepreneurial practices. This limits their ability to effectively prepare students for the evolving business environment.

5. Weak Partnerships between Educational Institutions and Industries. Effective business education requires strong collaboration between educational institutions and industries. Unfortunately, partnerships between educational institutions and industry remain weak in many African countries. As a result, students receive limited exposure real world business environments, current industry practices, and emerging technological innovations.
6. Corruption and Mismanagement of Educational Resources. Corruption continue to undermine educational development ion several African countries. Misappropriation of educational funds, poor procurement practices, political interference, and weak accountability reduce investments in educational infrastructure, technology, staff development, and entrepreneurship education programmes. Consequently, business education programmes operate below their expected capacities.

7. Policy inconsistencies create an unstable environment for long-term educational planning, while poor research cultures diminish innovation potential across institutions. There is a noticeable digital skills gap, with many students unable to meet the demands of a technology-driven market, further intensified by corruption and mismanagement of educational resources that diminish investment in vital areas.

Conclusion

Business education has become a fundamental instrument for achieving digital and entrepreneurial transformation in Africa. The rapid advancement of digital technologies, globalization, and the knowledge economy have significantly altered the competences required for business success, employment, innovation, and sustainable economic development. The evolving landscape of the knowledge economy necessitates a shift from traditional educational paradigms to a more dynamic approach, equipping learners with the skills needed for sustainable economic development and innovation. Strategies have to be adopted in order to strengthen business education to take its rightful place towards digital and entrepreneurial transformation in Africa. Through these practical strategies, business education can become a catalyst for employment generation and enhanced economic competitiveness across the continent.

Recommendations

The following recommendations are advanced for strengthening business education for digital and entrepreneurial transformation in Africa::

1. Increased Government Funding: Significant financial investment is necessary to provide modern facilities, digital tools, and resources essential for an effective business education environment. This funding will support curriculum implementation and practical training.
2. Curriculum Modernization: Continuous revisions to business education curricula are essential. Emerging technological areas like artificial intelligence, blockchain technology, FinTech, and digital marketing should be integrated to equip graduates with relevant skills.
3. Provision of Digital Infrastructure: Investment in modern digital infrastructure such as high-speed internet, smart classrooms, and digital libraries is crucial for facilitating effective teaching and learning. Institutions should foster research in digital technologies and entrepreneurship, backed by increased government research grants.
4. Training in Digital Literacy: Comprehensive digital training is paramount for all business education students, covering essential skills. Business education should support continuous professional growth to keep individuals relevant in a fast-paced digital economy.
5. Industry-Institution Collaboration: Establishing partnerships with industries will facilitate internships and mentorships, improving employability, real-world relevance, and enhance resources for entrepreneurship education.
6. Reducing corruption and encouraging accountability in business education programmes particularly and educational institutions generally will ensure transparency and provision of adequate educational resources to enhance digital and entrepreneurial transformation.
7. Policy Consistency and Support: Governments should maintain stable educational policies to foster long-term investments and growth in entrepreneurship education.

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DIGITAL SKILLS GAP AND TECHNOPRENEURSHIP: REPOSITIONING BUSINESS EDUCATION FOR NIGERIA'S DIGITAL ECONOMY

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Abstract

The rapid expansion of Africa's digital economy is transforming the nature of work, enterprise development, and employment, creating both opportunities and challenges for Business Education. While digital technologies, artificial intelligence, e-commerce, Fin-tech, digital marketing, and online platforms are generating new pathways for innovation and entrepreneurship, a significant digital skills gap continues to limit the capacity of many young Africans to participate effectively in the emerging economy. This paper examines the relationship between digital skills development and technopreneurship and argues for the repositioning of Business Education as a strategic vehicle for preparing learners for Africa's technology-driven economic environment. The paper highlights the need to move beyond conventional business competencies towards integrated digital, entrepreneurial, innovative, and problem-solving capabilities. It explores how Business Education can incorporate artificial intelligence literacy, data analytics, digital marketing, e-commerce, financial technology, cyber security awareness, coding fundamentals, digital communication, and technology-enabled enterprise development into its curriculum and instructional practices. The paper further identifies inadequate digital infrastructure, limited access to emerging technologies, insufficiently trained educators, outdated curricula, weak industry–institutional partnerships, and unequal access to digital resources as major barriers to effective digital skills acquisition. It proposes curriculum modernization, continuous professional development for Business Education teachers, technology-supported pedagogies, entrepreneurship incubation programmes, industry partnerships, and stronger institutional investment in digital infrastructure as strategic interventions. The paper concludes that repositioning Business Education towards digital competence and techno-preneurship can strengthen employability, stimulate innovation, support enterprise creation, and contribute to Africa's inclusive participation in the global digital economy.

Keywords: Digital Skills Gap, Technopreneurship, Business Education, Digital Economy

Introduction

Information and communication technologies, artificial intelligence, cloud computing, digital platforms, e-commerce, financial technology, data analytics, and social media are all having a significant impact on how businesses are founded, run, and grow. Due to its big youth population, fast expanding digital infrastructure, and rapidly growing population, Africa is a significant player in this shift. Across the continent, new prospects for employment, entrepreneurship, innovation, financial inclusion, and enterprise development have been made possible by the rise of the digital economy. The nature of occupational competencies needed in modern workplaces has also been altered by digital technologies, making digital literacy and technology-related skills more crucial for people looking for work or planning to start their own firms. According to the World Bank (2023), digital transformation has the potential to create new business, employment, and economic participation opportunities in Africa. However, the actualization of these advantages is heavily dependent on the availability of suitable infrastructure, affordability, digital skills, and supportive institutional environments.

The need for people with skills beyond traditional academic and professional knowledge has subsequently expanded due to the growing significance of the digital economy. The ability to use digital platforms, analyze information and data, communicate through digital channels, use online business applications, engage in e-commerce, use digital financial services, and apply emerging technologies to

solve real-world problems are all examples of digital competence. Workers who can combine technical expertise with creativity, adaptability, problem-solving skills, and entrepreneurial spirit are becoming more and more necessary in the evolving labor market. According to the World Bank (2025), businesses in Africa are requiring skills related to digital marketing, social media, data analysis, programming, and other technology-enabled activities. As a result, digital competences are becoming more and more relevant across various occupational categories. Workers who can combine technical expertise with creativity, adaptability, problem-solving skills, and entrepreneurial spirit are becoming more and more necessary in the evolving labor market. According to the World Bank (2025), businesses in Africa are requiring skills related to digital marketing, social media, data analysis, programming, and other technology-enabled activities. As a result, digital competences are becoming more and more relevant across various occupational categories.

Despite the expansion of digital technologies, Africa continues to experience a substantial digital skills gap. The challenge is not merely the availability of internet connectivity or digital devices but the ability of individuals to utilize these technologies productively for learning, employment, innovation and enterprise development. The World Bank (2023) notes that significant disparities remain in digital access, affordability and skills across African countries, while only a relatively limited proportion of tertiary graduates have received adequate formal digital training. This situation creates a mismatch between the competencies acquired through formal education and those increasingly demanded by employers and digital enterprises. The implication is that young people may have access to smartphones, social media and online platforms without possessing the advanced digital, analytical and entrepreneurial capabilities required to transform those technologies into sustainable economic opportunities. Consequently, addressing Africa's digital skills gap requires educational systems to move beyond access-oriented approaches towards deliberate development of productive and market-relevant digital competencies.

The problem is particularly important given the demographic structure of Africa and the increasing number of young people entering the labour market. The continent requires innovative approaches capable of transforming its youthful population into a productive workforce and entrepreneurial resource. Digital technologies offer opportunities for young people to engage in freelancing, e-commerce, digital marketing, software development, online education, content creation, financial technology and other emerging forms of economic activity. However, these opportunities cannot be fully exploited without appropriate digital and entrepreneurial competencies. The International Labour Organization (ILO, 2024), in collaboration with other international and African institutions, has emphasized the importance of strengthening digital skills, entrepreneurship and employability among African youth as part of efforts to promote decent work and participation in the digital economy. This situation places considerable responsibility on educational institutions to ensure that graduates are equipped not only to search for employment but also to identify opportunities and create technology-enabled enterprises.

Within this changing environment, Business Education occupies a strategic position because of its traditional emphasis on business knowledge, entrepreneurship, management, accounting, communication, office technology and employability skills. However, the transformation of the business environment requires these traditional competencies to be reinterpreted within a digital context. Business Education can no longer be restricted to preparing students for conventional office occupations when business processes are increasingly conducted through digital platforms and technologies. Contemporary Business Education should enable students to understand and apply artificial intelligence, data analytics, digital marketing, e-commerce, financial technology, electronic office applications, social media management, cyber security awareness and other technologies relevant to modern business operations. In Nigeria, the World Bank (2019) identified limited digital skills and gaps in the integration of digital competencies into education as important challenges to the development of an inclusive digital economy. This suggests that strengthening Business Education with relevant digital competencies could contribute to improving the preparedness of graduates for emerging employment and entrepreneurial opportunities.

The concept of techno-preneurship is particularly relevant to this transformation because it combines entrepreneurial thinking with the strategic application of technology to identify opportunities, develop innovative solutions and establish technology-enabled businesses. Techno-preneurship goes beyond the conventional understanding of entrepreneurship by placing technological innovation at the Centre of opportunity identification, product development, marketing, service delivery and business growth. For

Business Education, this represents an opportunity to shift the emphasis from merely preparing students to become users of existing business systems towards developing their capacity to create innovative technology-based solutions and enterprises. A techno-preneurially oriented Business Education programme can expose students to practical experiences involving digital business models, e-commerce platforms, digital payment systems, online marketing, data-driven decision-making and the development of technology-supported products and services. Such an approach could make Business Education more responsive to the realities of Africa's changing economic environment.

Nevertheless, a significant curriculum gap exists between traditional Business Education and the competencies required in the contemporary digital economy. Although conventional business competencies remain relevant, the increasing demand for digital marketing, data analytics, artificial intelligence, e-commerce, digital financial services and technology-enabled entrepreneurship suggests that Business Education curricula need to be continuously updated. The World Bank (2025) indicates that digital competencies are increasingly embedded across occupational categories, implying that graduates require more than basic computer literacy to compete effectively in emerging labour markets. Where curricula remain heavily concentrated on conventional business practices without adequate integration of emerging technologies, graduates may possess theoretical business knowledge but lack the practical competencies needed to create and manage digital enterprises. This curriculum–digital economy gap therefore represents an important challenge to the relevance and effectiveness of Business Education in Africa.

There is also a significant gap between entrepreneurship knowledge and practical techno-preneurial competence. Students may be taught concepts such as opportunity identification, business planning, innovation and enterprise management, yet this does not necessarily mean that they can identify technology-driven business opportunities, develop digital products, operate online enterprises or use digital platforms to reach customers. Entrepreneurship education becomes more meaningful when learners are provided with opportunities to apply knowledge to authentic business problems and develop marketable solutions. Recent evidence from Nigeria suggests that entrepreneurship education continues to face challenges associated with experiential learning and alignment with changing labour-market requirements (Abdulrahman et al., 2026). This indicates the need for Business Education programmes to incorporate practical technology-based entrepreneurial activities through innovation hubs, enterprise projects, digital business simulations, internships, mentorship and collaboration with technology-oriented businesses.

Another important gap concerns the difference between digital access and digital capability. Although internet penetration and mobile technology have expanded considerably across Africa, access to technology does not automatically translate into productive digital participation. The World Bank (2024) notes that substantial usage gaps remain in Africa even where network coverage exists, with affordability, access to appropriate devices, digital literacy and skills continuing to constrain meaningful participation. This distinction is important for Business Education because students may possess smartphones and regularly use social media while lacking the ability to employ digital technologies for business analysis, online enterprise creation, digital marketing, financial management or innovation. Educational institutions therefore need to deliberately transform everyday technology use into structured digital competence capable of supporting productive economic activity.

A further gap relates to the capacity of Business Education teachers and institutions to support emerging digital competencies. The rapid development of artificial intelligence, fin-tech, cloud technologies, data analytics and digital platforms means that teachers require continuous professional development to remain relevant. Where educators lack adequate exposure to emerging technologies, they may be unable to integrate these technologies effectively into teaching and learning. Similarly, inadequate digital infrastructure, unreliable electricity supply, limited access to high-speed internet, insufficient technological equipment and inadequate institutional funding can constrain the implementation of digitally oriented Business Education. These challenges suggest that curriculum reform must be accompanied by investment in teacher development, infrastructure, digital resources and institutional capacity.

There is also an institution–industry gap that limits opportunities for students to acquire practical digital business experience. The digital economy changes rapidly, and educational institutions may struggle to update their programmes at the same pace as technology-driven industries. Strong partnerships between Business Education departments and technology companies, fin-tech organizations, e-commerce enterprises, digital marketing agencies, financial institutions and technology entrepreneurs

can provide students with opportunities for internships, mentorship, industry projects and practical exposure. Such partnerships can also enable institutions to understand emerging industry competency requirements and incorporate them into their curricula. The emphasis placed by the ILO (2024) on partnerships and networks for strengthening digital skills and entrepreneurship among African youth reinforces the importance of connecting educational institutions with the wider digital economy.

The foregoing situation also reveals a research and implementation gap. Discussions about digital skills, entrepreneurship and technology education are often treated as separate areas, whereas Africa's digital economy increasingly requires their integration. Digital skills become more economically valuable when they enable individuals to identify opportunities, solve problems, innovate and create enterprises. Similarly, entrepreneurship education becomes more relevant when it equips learners to exploit digital technologies and develop technology-enabled business models. Business Education therefore provides an appropriate platform for integrating these competencies because of its connection to business knowledge, vocational preparation, entrepreneurship and employability. The challenge is to develop a coherent approach in which digital literacy, technological competence, entrepreneurial thinking, innovation and practical business experience are treated as interconnected outcomes rather than isolated components.

Repositioning Business Education for Africa's digital economy consequently requires a fundamental shift from an education model primarily focused on conventional business operations towards one that promotes digital competence, innovation and techno-preneurship. Such repositioning should involve curriculum modernization, continuous professional development of Business Education teachers, technology-supported pedagogies, practical digital enterprise projects, innovation and incubation programmes, stronger industry partnerships and improved access to digital infrastructure. It should also incorporate emerging areas such as artificial intelligence, data analytics, digital marketing, e-commerce, fintech, cybersecurity awareness and digital communication into relevant Business Education programmes. The objective should not simply be to produce graduates who can use digital technologies but graduates who can use technology creatively to identify opportunities, develop solutions, establish enterprises and contribute to economic development.

Therefore, the central concern of this paper is the persistent digital skills gap and the need to reposition Business Education as a vehicle for developing techno-preneurial competencies among Nigeria learners. The paper recognizes that the digital economy presents substantial opportunities for employment, innovation and enterprise creation but that these opportunities can only be effectively exploited when educational systems produce graduates with relevant digital and entrepreneurial capabilities. By integrating digital skills development with techno-preneurship, Business Education can become more responsive to the changing nature of work and enterprise in Africa and contribute more meaningfully to the development of an innovative, adaptable and digitally competent workforce.

Concept of Digital Skills and Techno-preneurship

Digital skills refer to the knowledge, abilities and attitudes required to use digital technologies effectively, confidently, critically and responsibly for learning, work, communication, problem-solving and participation in society. The European Commission’s Digital Competence Framework (DigComp 2.2) conceptualizes digital competence as a combination of knowledge, skills and attitudes covering information and data literacy, communication and collaboration, digital content creation, safety and problem-solving (Vuorikari et al., 2022). This conceptualization demonstrates that digital skills extend beyond the ability to operate computers or mobile devices. They include the capacity to locate, evaluate and manage digital information, communicate through digital platforms, create digital content, protect personal and organizational information, and apply technology creatively to solve problems. In the context of Business Education, digital skills therefore encompass competencies such as word processing, spreadsheets, presentations, online research, digital communication, social media management, e-commerce, digital marketing, data analysis and the use of emerging technologies such as artificial intelligence.

Digital skills can further be understood as existing along a continuum from basic to intermediate and advanced competencies. Basic digital skills involve foundational abilities such as operating digital devices, using software applications, accessing the internet and performing routine online activities. Intermediate digital skills enable individuals to undertake more complex work-related activities, while advanced digital skills involve specialized competencies in areas such as artificial intelligence, big data, programming, cloud technologies and cyber security (World Bank, 2025). This distinction is particularly

relevant to Africa because increasing access to mobile phones and internet services does not automatically translate into the capacity to participate productively in the digital economy. The World Bank (2025) reports that Sub-Saharan Africa is experiencing increasing demand for digital skills, while significant gaps remain, particularly in intermediate and advanced competencies. Thus, the contemporary concept of digital skills should emphasize not merely technology consumption but the ability to use technology to create value, improve productivity, solve economic problems and participate meaningfully in emerging forms of work and entrepreneurship.

Techno-preneurship, on the other hand, represents the intersection of technology and entrepreneurship, involving the identification and exploitation of entrepreneurial opportunities through technological knowledge, digital platforms and innovative solutions. It involves individuals or organizations using technology to develop new products and services, improve existing business processes, create digital business models and respond to emerging market needs. Giones and Brem (2017) explain that technology entrepreneurship has developed into diverse forms as digital technologies increasingly influence entrepreneurial processes and outcomes. Techno-preneurship therefore differs from conventional entrepreneurship primarily in the central role technology plays in opportunity recognition, innovation, product development, marketing, service delivery and business growth. In the Nigerian context, Umukoro (2021) identifies innovation, networking, frugal processes and resource-conscious approaches as important characteristics associated with techno-entrepreneurial practices in technology-oriented business clusters. Techno-preneurship can consequently be viewed as entrepreneurship in which technological knowledge and innovation are deliberately employed to create economic and social value.

The relationship between digital skills and techno-preneurship is particularly important because effective techno-preneurship requires more than entrepreneurial motivation. An aspiring techno-preneur needs sufficient digital competence to identify opportunities, investigate markets, develop digital products or services, communicate with customers, manage online transactions, analyse business data and adapt to technological change. Digital technologies have also altered how entrepreneurial opportunities are identified and how businesses interact with customers, suppliers, employees and investors. Nambisan (2017) argues that digital technologies have transformed entrepreneurial processes and the nature of entrepreneurial outcomes by changing how opportunities and uncertainty are approached. Similarly, Secundo et al. (2020) identify digital technologies as increasingly important in developing entrepreneurial competencies, discovering entrepreneurial opportunities and building digitally supported entrepreneurial ecosystems. Consequently, digital skills provide an important foundation upon which techno-preneurial capabilities can be developed, while techno-preneurship provides a practical avenue through which digital skills can be transformed into innovation, enterprise creation and economic value.

For Business Education in Africa, the concepts of digital skills and techno-preneurship are therefore inseparable from the preparation of learners for the contemporary economy. Business Education can serve as a platform for developing learners who are capable not only of operating existing digital technologies but also of using them to create business opportunities and innovative solutions. This requires educational programmes to integrate competencies such as digital marketing, e-commerce, data analytics, artificial intelligence, financial technology, online business management, cyber security awareness and digital content creation with traditional business and entrepreneurial knowledge. The World Bank (2025) emphasizes the importance of strengthening digital skills while creating stronger connections between education, industry and emerging technology ecosystems. Repositioning Business Education in this direction can enable students to progress from being passive users of technology to active creators of digital value, thereby strengthening their employability, innovation capacity and potential for technology-enabled enterprise development.

The Changing Nature of Work in Nigeria's Digital Economy

The nature of work in Nigeria is undergoing significant transformation as digital technologies increasingly influence how organizations produce goods and services, communicate with customers, recruit workers and conduct business transactions. The expansion of digital platforms, e-commerce, mobile technologies, fin-tech, Cloud- computing and artificial intelligence is creating new forms of work while simultaneously changing the skills required in traditional occupations. The World Bank (2025) notes that Nigeria's future employment landscape is being influenced by digital technologies, with emerging opportunities in information and communication technology, e-commerce and online services, while traditional occupations are also being reshaped by digital devices, mobile payments and

technology-enabled business processes. Similarly, the International Labour Organization (ILO, 2024) observes that technological change continually alters skills requirements because workers need to acquire new technical and transferable competencies as technologies and business processes evolve. Consequently, Nigerian workers increasingly require digital literacy, adaptability, problem-solving, communication and continuous learning capabilities to remain productive in a rapidly changing labour market.

Another important transformation is the emergence of flexible, platform-based and digitally mediated forms of employment. Digital platforms have enabled individuals to provide services beyond traditional organizational boundaries through freelancing, online tutoring, digital marketing, software development, content creation, e-commerce and other forms of gig work. Nigeria's growing technology ecosystem provides opportunities for young people to connect with customers and employers locally and internationally without necessarily being employed in conventional workplaces. The ILO and ITU identify Nigeria as one of the African countries included in a continental programme designed to expand young people's access to decent work and digital skills, reflecting the growing importance of digital employment pathways (ILO, 2024). However, digital work also creates challenges relating to income stability, social protection, working conditions and the need for continuous reskilling. The transformation of work should therefore be understood not simply as the disappearance of conventional jobs but as a reorganization of tasks, occupations, employment relationships and opportunities for self-employment and entrepreneurship.

The increasing adoption of artificial intelligence further intensifies these changes by altering how tasks are performed and the competencies expected from workers. Rather than relying exclusively on routine knowledge and manual processes, contemporary workplaces increasingly require workers who can collaborate with digital technologies, interpret information, solve complex problems, demonstrate creativity and adapt to technological change. The World Bank (2025) emphasizes that digital skills have become fundamental to participation in evolving job markets, while the ILO (2026) reports that AI adoption is reshaping demand for cognitive, socio-emotional, digital and AI-related competencies across occupations. For Nigeria, this changing work environment creates a strong justification for repositioning education, particularly Business Education, towards practical digital competencies, innovation and techno-preneurship. Business Education graduates need to be prepared not only for existing occupations but also for emerging digital enterprises and technology-enabled forms of self-employment. Such preparation can help bridge the skills mismatch in Nigeria and enable graduates to transform digital technologies into productive employment, innovation and enterprise opportunities.

Business Education Curriculum Repositioning for Digital and Techno-preneurial Competence

Business Education curriculum repositioning has become increasingly necessary as technological advancement continues to transform the nature of business, employment and entrepreneurship in Nigeria and across Africa. Traditionally, Business Education has focused on developing competencies in accounting, office technology and management, economics, entrepreneurship, communication and other business-related areas. While these competencies remain relevant, the emergence of artificial intelligence, e-commerce, fintech, digital marketing, cloud computing, data analytics and online business platforms has expanded the range of skills required for effective participation in the contemporary economy. The World Bank (2025) notes that digital skills are increasingly demanded across different occupations and that education and training systems need to respond to changing labour-market requirements. Consequently, Business Education curricula should be periodically reviewed to incorporate emerging digital competencies rather than treating technology as an auxiliary component of business education. Such repositioning should ensure that learners develop the capacity to use digital tools for communication, information management, financial transactions, data analysis, marketing, business decision-making and enterprise development. (world bank)

A digitally repositioned Business Education curriculum should also move beyond theoretical knowledge towards practical techno-preneurial competence. Techno-preneurial competence involves the ability to identify technology-enabled opportunities, develop innovative solutions, utilize digital platforms, create online business models and apply technology to improve the efficiency and competitiveness of enterprises. Nambisan (2017) argues that digital technologies have transformed entrepreneurial processes by influencing how opportunities are identified, evaluated and exploited, while Secundo et al. (2020) emphasize the importance of digital technologies in developing contemporary entrepreneurial

competencies. Business Education programmes can therefore incorporate practical learning experiences involving e-commerce development, digital marketing campaigns, social media entrepreneurship, financial technology applications, data-driven business decisions, artificial intelligence tools and digital product development. Project-based learning, business simulations, innovation challenges, internships, entrepreneurship laboratories and technology incubators can provide learners with opportunities to transform classroom knowledge into practical digital enterprise competencies. This approach would shift Business Education from preparing learners primarily as employees towards preparing them as employees, innovators and creators of technology-enabled enterprises.

Effective curriculum repositioning, however, requires more than adding isolated technology-related courses to existing programmes. It requires an integrated transformation involving curriculum content, teaching methods, teacher competencies, learning resources, assessment practices and partnerships with industry. Business Education lecturers need continuous professional development in emerging technologies so that they can effectively integrate digital tools and techno-preneurial activities into classroom instruction. Similarly, institutions require reliable internet connectivity, digital devices, appropriate software, innovation spaces and other technological resources to support experiential learning. Strong partnerships with technology companies, fin-tech organizations, e-commerce businesses, financial institutions and digital entrepreneurs can further expose students to current industry practices and emerging employment opportunities. The World Bank (2025) emphasizes the importance of aligning digital-skills development with labour-market needs, while the International Labour Organization (ILO, 2024) highlights partnerships, skills development and entrepreneurship as important mechanisms for strengthening young people's participation in Africa's digital economy. Therefore, repositioning the Business Education curriculum around digital and techno-preneurial competence should seek to produce graduates who can confidently navigate existing workplaces, adapt to technological change, identify emerging opportunities and create innovative digital enterprises capable of contributing to Nigeria's economic transformation.

Digital Entrepreneurship, Innovation and Job Creation

Digital entrepreneurship has become an important pathway for transforming technological advancement into economic opportunities, innovation and employment. It involves the creation and management of businesses that depend substantially on digital technologies, platforms and processes to develop products, deliver services, reach customers and generate value. In Nigeria, the growth of e-commerce, fintech, digital marketing, online education, software development and other technology-enabled activities has expanded opportunities for young people to become entrepreneurs and create employment for themselves and others. However, realizing these opportunities requires appropriate digital skills, entrepreneurial competencies, access to technology and supportive institutional environments. Within Business Education, digital entrepreneurship can therefore be used to develop learners' capacity to identify technological opportunities, innovate and create sustainable enterprises. The following digital entrepreneurship can contribute to innovation and job creation include:

1. E-commerce and Digital Retail Entrepreneurship: Business Education students can develop online businesses through e-commerce platforms, social media stores and digital marketplaces, creating opportunities in online retail, product distribution, customer service and logistics.
2. Digital Marketing and Content Creation: Digital platforms have created employment opportunities in social media management, digital advertising, content development, search-engine marketing and brand promotion. Students with relevant skills can establish digital marketing enterprises or provide services to existing businesses.
3. Fin-tech and Digital Financial Services: The expansion of mobile payments, digital banking and financial technology has created opportunities for innovative financial services. Digital entrepreneurs can develop technology-enabled solutions that improve payment systems, financial access and business transactions.
4. Technology-Based Product and Service Innovation: Digital entrepreneurship enables individuals to develop applications, websites, educational technologies, business-management tools and other technology-supported products that respond to identified social and economic problems. Such innovations can generate new enterprises and employment opportunities.
5. Digital Freelancing and Global Service Markets: Digital platforms allow skilled Nigerians to provide services such as graphic design, programming, data analysis, virtual assistance,

writing, online tutoring and consultancy to clients locally and internationally. This creates opportunities for self-employment while also supporting the growth of digital service enterprises.

Challenges Limiting Digital Skills Acquisition in African Institutions

The acquisition of digital skills in Nigeria educational institutions is constrained by interconnected infrastructural, financial, institutional, pedagogical and human-capacity challenges. Major challenges include:

1. Inadequate Digital Infrastructure – Limited availability of computers, smart devices, digital laboratories, reliable internet connectivity and modern ICT facilities restricts students' opportunities for practical digital learning.
2. Unreliable Electricity Supply – Frequent power interruptions and inadequate alternative power sources affect the regular use of computers, internet facilities and other digital learning technologies.
3. High Cost of Internet Access and Digital Devices – The cost of internet subscriptions, computers, smartphones, software and other digital resources makes technology-based learning difficult for many students and institutions.
4. Limited Digital Competence among Teachers and Lecturers – Some educators lack sufficient knowledge and practical experience in emerging technologies such as artificial intelligence, data analytics, cloud computing and digital entrepreneurship.
5. Outdated Educational Curricula – Some institutional curricula do not adequately reflect emerging digital skills, leaving graduates insufficiently prepared for technology-driven workplaces and enterprises.
6. Inadequate Institutional Funding – Limited financial resources constrain institutions' ability to acquire, maintain and regularly upgrade digital infrastructure and software.
7. Poor Maintenance of ICT Facilities – Existing digital equipment may become obsolete or unusable because of inadequate maintenance, technical support and replacement mechanisms.
8. Limited Industry–Institution Partnerships – Weak collaboration between educational institutions and technology-oriented industries reduces students' exposure to current workplace technologies, internships, mentorship and practical digital projects.
9. Digital Divide and Socioeconomic Inequality – Differences in students' access to devices, connectivity and digital learning opportunities can produce unequal levels of digital competence.
10. Limited Opportunities for Practical Learning – Excessive emphasis on theoretical instruction without sufficient project-based learning, simulations, internships and digital enterprise activities limits students' ability to apply digital knowledge.
11. Cyber security and Digital Safety Concerns – Inadequate awareness of cybersecurity, privacy, online fraud and responsible technology use can discourage institutions and learners from fully exploiting digital platforms.
12. Rapid Technological Change – The speed at which technologies such as AI, fintech and digital platforms evolve makes it difficult for institutions, curricula and educators to remain continuously up to date.

Conclusion

Africa's digital economy is creating a new economic landscape in which digital competence, innovation and techno-preneurship are becoming increasingly important determinants of employability, enterprise development and economic participation. The persistent digital skills gap, however, threatens to limit the extent to which young Africans can benefit from these opportunities. Business Education therefore stands at a critical point where its relevance depends on its ability to move beyond conventional business competencies and embrace the realities of artificial intelligence, e-commerce, fin-tech, digital marketing, data analytics and technology-enabled entrepreneurship. Repositioning the curriculum towards practical digital and techno-preneurial competence can equip learners not only to participate in

existing employment opportunities but also to identify problems, develop innovative solutions and create technology-driven enterprises.

The transformation of Business Education should consequently be viewed as a strategic investment in Africa's future workforce and entrepreneurial capacity. This requires coordinated action involving curriculum modernization, continuous professional development of educators, improved digital infrastructure, affordable connectivity, practical learning opportunities and stronger partnerships between educational institutions and industry. When learners are provided with the knowledge, skills and environment required to transform technology into innovation and enterprise, Business Education can become a powerful platform for developing digitally competent graduates, stimulating entrepreneurship and expanding opportunities for meaningful employment. The ultimate goal should be to transform African learners from passive consumers of digital technologies into innovators, creators, problem-solvers and techno-preneurs capable of shaping Africa's digital economic future.

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LEVERAGING ARTIFICIAL INTELLIGENCE FOR INNOVATION AND ENTREPRENEURIAL GROWTH AMONG YOUTHS IN IMO STATE, NIGERIA: OPPORTUNITIES, CHALLENGES AND POLICY PERSPECTIVES

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Abstract

Artificial Intelligence (AI) has become one of the most influential technologies shaping contemporary economic, educational and entrepreneurial activities. The rapid development of generative AI, predictive analytics, intelligent automation, chatbots and AI-supported decision-making has created new possibilities for entrepreneurs to develop products, identify market opportunities, engage customers and improve business performance. These developments are particularly relevant to young people in developing economies such as Nigeria, where entrepreneurship is increasingly viewed as an important pathway for employment creation, economic participation and poverty reduction. This opinion paper examines how Artificial Intelligence can be leveraged to promote innovation and entrepreneurial growth among youths in Imo State, Nigeria. Drawing on recent empirical literature published between 2020 and 2026, the paper argues that AI can support youth entrepreneurship through opportunity recognition, product and service innovation, digital marketing, customer relationship management, business planning, market intelligence, productivity improvement and access to wider markets. Recent Nigerian evidence indicates that AI knowledge and technological exposure can strengthen entrepreneurial strategic thinking and cognitive adaptability, while studies of Nigerian SMEs have associated AI adoption with improved enterprise performance and sustainable entrepreneurship. However, the paper contends that access to AI tools alone will not automatically produce entrepreneurial growth. Digital and AI literacy, internet connectivity, electricity, access to finance, entrepreneurial education, ethical awareness, data protection and human oversight are essential for translating technological access into sustainable business value. The paper recommends the establishment of AI-enabled youth entrepreneurship hubs, integration of practical AI competencies into entrepreneurship education, targeted funding for technology-driven youth enterprises, improved digital infrastructure and stronger collaboration among government, tertiary institutions, industry and private technology organisations. The paper concludes that responsible and inclusive AI adoption could position youths in Imo State as important contributors to innovation, enterprise development, employment creation and the emerging digital economy.

Keywords: Artificial Intelligence, innovation, entrepreneurial growth, youth entrepreneurship, digital entrepreneurship, Imo State, Nigeria.

Introduction

The twenty-first century has witnessed remarkable advances in digital technologies, with Artificial Intelligence (AI) emerging as one of the most transformative. AI has moved beyond specialised applications in large corporations and research laboratories and has increasingly become accessible to individuals, small businesses, students and entrepreneurs. Contemporary AI applications can analyse information, generate written and visual content, identify patterns, automate routine tasks, support decision-making, interact with customers and assist users in solving complex problems. The emergence of generative AI has further expanded these possibilities by allowing users with limited technical expertise to interact with sophisticated technological systems through natural language.

The increasing relevance of AI has profound implications for entrepreneurship. Entrepreneurship is fundamentally concerned with identifying opportunities, mobilising resources, developing innovative solutions and creating value. AI can potentially strengthen each of these activities. A young entrepreneur can use AI to investigate customer preferences, generate business

ideas, prepare marketing content, analyse competitors, communicate with customers, develop business plans and explore new markets. Consequently, AI can reduce some of the informational, managerial and creative barriers that traditionally constrain small and emerging enterprises.

This development is particularly significant in Nigeria. Youths constitute an important part of the country's human-capital base and are increasingly involved in trading, agriculture, fashion, creative industries, education, technology, transportation, hospitality, digital marketing and other forms of entrepreneurship. The growth of digital platforms has expanded the possibilities for young people to establish businesses without necessarily requiring extensive physical infrastructure. AI potentially represents another stage in this transformation.

Nigeria has also begun to recognise the strategic importance of AI. The country's National Artificial Intelligence Strategy identifies AI as a tool for promoting sustainable development, innovation, national productivity and human well-being. It also emphasises the development of an AI ecosystem capable of supporting research, innovation, entrepreneurship and economic transformation.

The institutional environment is gradually evolving in response. The National Centre for Artificial Intelligence and Robotics identifies innovation, collaboration, inclusiveness and entrepreneurship among its strategic priorities and emphasises the commercialisation and adoption of emerging technologies. The Federal Ministry of Communications, Innovation and Digital Economy has also supported AI-powered startups through initiatives designed to provide funding, cloud resources, mentorship and access to technology. In 2024, the Ministry and Google announced an AI Fund that selected Nigerian startups for financial and technical support.

Recent empirical research strengthens the argument that AI can contribute to entrepreneurship and business development. Nafizah, Roper and Mole (2024), using data from more than 6,000 micro-businesses, found strong positive effects of AI and machine-learning adoption on innovation outcomes and innovation processes. In Nigeria, Itai, Okorie and Ufua (2024) found a positive relationship between AI innovation indicators and SME growth. More recent evidence from Nigeria also indicates that AI knowledge and technological exposure can enhance strategic thinking and cognitive adaptability among entrepreneurs. Odugbesan, Tafamel and Akrawah (2026) surveyed 376 entrepreneurs in Nigeria's Computer Village and found that both technological exposure and AI knowledge significantly enhanced strategic thinking and cognitive adaptability.

Similarly, recent research among Gen-Z-owned MSMEs in Nigeria found that AI integration, innovation culture and entrepreneurial orientation influenced technology adoption, while technology adoption was associated with improved sales, customer engagement and business growth. These findings demonstrate that AI is increasingly relevant to the entrepreneurial ecosystem within which Nigerian youths operate.

However, the benefits of AI should not be assumed to occur automatically. The existence of AI tools does not necessarily mean that young entrepreneurs possess the knowledge, infrastructure, resources or judgement required to use them effectively. Issues relating to digital literacy, cost, electricity, internet connectivity, data privacy, cybersecurity, misinformation and overdependence on automated systems may limit the benefits of AI.

Against this background, this paper examines how youths in Imo State can leverage AI for innovation and entrepreneurial growth. The paper is an opinion/conceptual paper informed by recent empirical and policy literature. It does not claim to present primary survey data from youths in Imo State. Rather, it uses available evidence to develop a context-specific argument about the opportunities, challenges and policy actions required to promote responsible AI-enabled youth entrepreneurship in the state.

Concept of Artificial Intelligence

Artificial Intelligence refers broadly to computer-based systems capable of performing tasks associated with human intelligence. Such tasks may include learning from information, recognising patterns, generating content, understanding language, making predictions and supporting decisions. AI is not a single technology; rather, it represents a broad collection of computational techniques and applications.

Contemporary AI includes machine learning, natural language processing, computer vision, predictive analytics, recommendation systems, generative AI and intelligent automation. Generative AI is particularly relevant to small businesses because it can generate text, images, ideas, summaries, marketing materials, business proposals and other forms of content with relatively little technical expertise.

For entrepreneurs, the practical significance of AI lies less in the technology itself than in what the technology enables them to accomplish. AI may help an entrepreneur understand customers,

reduce repetitive administrative work, identify trends, improve communication and make more informed decisions. It may also make sophisticated business-support functions more accessible to individuals who cannot afford to employ specialists.

The National Artificial Intelligence Strategy of Nigeria recognises the transformative potential of AI for innovation, productivity and socio-economic development. The strategy seeks to provide a national framework through which Nigeria can harness AI while addressing infrastructure, skills, governance and other barriers to adoption.

Therefore, AI should be regarded not merely as a technological innovation but as a potential entrepreneurial resource. Its usefulness to youth entrepreneurs will depend on their capacity to combine AI with creativity, business knowledge, local market understanding and human judgement.

Youth Entrepreneurship in Nigeria and Imo State

Youth entrepreneurship refers broadly to the participation of young people in the identification, creation, ownership and management of economic ventures. Youth entrepreneurs may establish businesses out of opportunity, necessity or a combination of both. Their enterprises may range from informal micro-businesses to technology-based startups and rapidly growing small and medium-sized enterprises.

In Nigeria, youth entrepreneurship has become increasingly important because of the need to create employment opportunities and broaden economic participation. Digital technologies have also altered the traditional meaning of entrepreneurship. Young people can now market products through social media, provide digital services to customers in different locations and participate in online marketplaces.

Imo State provides a potentially fertile environment for youth entrepreneurship because of its large student and young-professional population, commercial activities, educational institutions and growing engagement with digital technologies. Youths participate in businesses including fashion, agriculture, food processing, education, transportation, beauty and personal-care services, retailing, hospitality, digital marketing, entertainment and technology-enabled services.

Nevertheless, many youth-owned enterprises operate under considerable constraints. Limited capital, inadequate managerial skills, unstable electricity supply, insufficient market information, limited technological capabilities and restricted access to formal business support can affect enterprise survival and growth. These challenges make the potential role of AI particularly important.

AI cannot eliminate all the structural constraints confronting young entrepreneurs. However, it can potentially reduce some information, communication, marketing and administrative barriers. For example, a young entrepreneur who cannot afford a professional marketing consultant may use AI-assisted tools to develop promotional content. A small retailer can use digital tools to analyse customer preferences. A young farmer or agro-entrepreneur can use AI-supported information services to explore market trends and business opportunities.

Thus, the relevant question for Imo State is not whether young people should replace human entrepreneurship with AI. Rather, it is how young entrepreneurs can combine human creativity, local knowledge and entrepreneurial judgement with AI capabilities to create greater value.

Artificial Intelligence as an Enabler of Innovation

Innovation involves the introduction and implementation of new or significantly improved products, services, processes or business methods. It is central to entrepreneurial competitiveness because businesses that continually adapt to customer needs and changing market conditions are more likely to remain relevant.

AI can contribute to innovation in several ways.

First, AI can facilitate idea generation. Entrepreneurs can use generative AI to explore potential products and services, identify possible customer problems and develop alternative solutions. Although AI-generated ideas require human evaluation, the technology can expand the number of possibilities considered by an entrepreneur.

Second, AI can facilitate market intelligence. Entrepreneurs can use AI-enabled systems to organise and analyse large quantities of information relating to customer preferences, competitors and market trends. Better access to information may improve opportunity recognition.

Third, AI can facilitate product and service development. Entrepreneurs can use AI tools to create prototypes, develop promotional materials, improve product descriptions, design customer experiences and obtain feedback on possible business concepts.

Fourth, AI can facilitate process innovation. Routine activities such as responding to common customer enquiries, organising information, scheduling activities and preparing standard documents

can increasingly be automated. This allows entrepreneurs to devote more time to strategic and creative activities.

Empirical evidence supports the relationship between AI adoption and innovation. Nafizah et al. (2024) found strong positive effects of AI and machine-learning adoption on innovation outcomes and innovation processes among more than 6,000 micro-businesses. This is particularly relevant to youth entrepreneurship because many youth-owned businesses begin as micro-enterprises. AI can therefore be conceptualised as an innovation accelerator. However, the technology should complement rather than replace human creativity. An entrepreneur's understanding of local culture, customer behaviour, values and needs remains essential.

How Youths in Imo State Can Leverage AI for Entrepreneurial Growth

❖ AI for Opportunity Recognition

One of the most important entrepreneurial functions is the ability to recognise opportunities. An opportunity may arise from an unmet customer need, an inefficient existing process, an emerging market or a change in consumer behaviour.

AI can support opportunity recognition by helping entrepreneurs analyse market information, customer reviews, online discussions and other available information. A young entrepreneur can use AI-assisted research to explore questions such as:

What products are increasingly demanded by consumers?
What problems do customers frequently complain about?
What services are difficult to access?
What competitors are offering?
What market segments appear underserved?

For youths in Imo State, such capabilities could help identify opportunities connected with agriculture, education, fashion, tourism, food processing, logistics, healthcare support services, creative industries and digital services. The Nigerian evidence provided by Odugbesan et al. (2026) is particularly relevant. Their study of 376 entrepreneurs found that AI knowledge and technological exposure significantly enhanced strategic thinking and cognitive adaptability. Strategic thinking also played an important mediating role in translating technological engagement into adaptive entrepreneurial capabilities.

This suggests that AI literacy can potentially improve not only what entrepreneurs do but also how they think about business opportunities.

❖ AI for Product and Service Innovation

Youth entrepreneurs can use AI to improve existing products and develop new services. For example, a fashion entrepreneur could use AI-assisted design tools to explore design concepts and customer preferences. A food entrepreneur could analyse customer feedback to improve product offerings. An education entrepreneur could use AI to develop personalised learning resources.

In agriculture, AI can support activities such as market information, crop-related decision-making and demand forecasting where suitable systems and reliable data are available. The objective is not to make the entrepreneur dependent on AI but to increase the entrepreneur's ability to experiment and innovate.

❖ AI for Digital Marketing

Marketing is a major challenge for many small businesses because professional advertising services may be expensive. AI can reduce some of these barriers by assisting entrepreneurs in developing social-media content, promotional messages, product descriptions, customer profiles and campaign ideas.

A young entrepreneur in Owerri, for example, could use AI-assisted tools to generate alternative promotional messages for different customer groups, develop content calendars and analyse engagement patterns. The entrepreneur would still need to ensure that the content reflects local culture, brand identity and ethical standards.

The growth of digital entrepreneurship makes this especially relevant. Recent research among Gen-Z-owned MSMEs in Nigeria found that AI integration and innovation culture significantly influenced technology adoption, while adoption of contemporary social commerce was associated with improved sales, customer engagement and business growth.

❖ AI for Customer Relationship Management

Customer retention is essential to entrepreneurial growth. AI-enabled chatbots and automated communication systems can assist businesses in responding to frequently asked questions, providing product information and maintaining communication with customers. For a small business with limited staff, automation can make customer communication more efficient. However, businesses should avoid allowing automation to eliminate human interaction completely. Customers may require empathy, negotiation and personalised assistance that automated systems cannot adequately provide.

❖ AI for Business Planning and Decision-Making

Young entrepreneurs often make business decisions with limited information. AI can support planning by helping entrepreneurs compare alternatives, organise information and identify possible risks.

For example, an entrepreneur planning to open a small food-processing business could use AI as a supplementary tool to analyse potential customer segments, develop a preliminary business model, identify possible competitors and generate questions for further market research. AI-generated recommendations should not be treated as unquestionable facts. Entrepreneurs must verify important information and combine AI suggestions with local market research and professional advice.

❖ AI for Productivity and Cost Reduction

AI-enabled automation can reduce the amount of time spent on repetitive activities. A small business owner may use AI to organise documents, generate routine reports, draft customer communications or assist with data analysis.

Recent Nigerian evidence demonstrates the potential of AI for business performance. Audu, Adejoh and Giehon (2026), in a study of SMEs in the Federal Capital Territory, reported significant positive relationships between AI applications—including predictive analytics, automated chatbots, personalised marketing and process automation—and SME performance. Although findings from Abuja cannot automatically be generalised to Imo State, they provide useful evidence that AI applications can contribute to business performance in a Nigerian environment.

❖ AI for Accessing Wider Markets

One of the greatest opportunities presented by digital entrepreneurship is the possibility of reaching customers beyond the entrepreneur's immediate physical location. AI can support translation, content adaptation, customer communication and digital marketing, thereby helping young businesses reach customers across Nigeria and potentially internationally. For youths in Imo State, this could be particularly valuable for businesses involving fashion, crafts, food products, digital services, creative content and professional services.

Artificial Intelligence and Entrepreneurial Growth

Entrepreneurial growth can be reflected in increased sales, customer numbers, market reach, profitability, productivity, employment and business sustainability. AI can contribute to these dimensions indirectly and directly. Better marketing may increase customer reach. Improved customer analysis may increase customer retention. Automation may reduce operating costs. Better information may improve business decisions. Product innovation may create new revenue streams.

Empirical evidence from Nigeria supports this relationship. Itai et al. (2024) examined AI capabilities and SME growth in Nigeria and reported that AI innovation indicators had positive relationships with SME growth. A 2026 study of Nigerian SMEs similarly examined AI adoption as a mechanism through which organisational capabilities could contribute to sustainable entrepreneurship. The researchers found that AI adoption was important in explaining the relationship between strategic and adaptive organisational capabilities and sustainable entrepreneurship.

These findings suggest that AI should not be considered merely an operational tool. It can become part of the strategic capability of a business. For young entrepreneurs, this distinction is important. The objective should not be to use AI simply because it is fashionable. Instead, AI should be adopted where it solves a genuine business problem or creates measurable value.

Challenges to AI Adoption among Youths in Imo State

Despite the opportunities, several challenges could restrict the effective adoption of AI. They are:

- **Digital and AI Skills Gap:** Access to an AI tool does not guarantee effective use. Entrepreneurs need to understand how to formulate useful prompts, evaluate outputs, verify

information and integrate AI into business processes. A young entrepreneur may have access to generative AI but still lack the entrepreneurial knowledge required to convert AI-generated ideas into viable businesses. Recent Nigerian research supports the importance of AI knowledge. Odugbesan et al. (2026) found that AI knowledge significantly enhanced strategic thinking and cognitive adaptability among entrepreneurs.

- **Internet Connectivity and Electricity**
  AI services generally depend on reliable digital connectivity. Poor internet access, expensive data and unstable electricity can therefore restrict usage. These infrastructural challenges remain particularly important for entrepreneurs operating outside major urban centres. AI entrepreneurship policies must consequently be accompanied by investments in digital infrastructure.

- **Access to Finance**
  Some AI tools are freely accessible, but more advanced services may require subscription fees, specialised hardware or reliable cloud infrastructure. Young entrepreneurs who already struggle with access to finance may find it difficult to invest in advanced digital technologies. This makes youth-focused grants, innovation funds and affordable digital financing important components of an AI entrepreneurship strategy.

- **Data Privacy and Cybersecurity**
  AI adoption creates concerns about the protection of customer and business information. Entrepreneurs who enter confidential customer information into inappropriate AI platforms may expose their businesses and customers to privacy risks. AI literacy must therefore include data protection and cybersecurity.

- **Accuracy and Reliability of AI Outputs**
  AI systems can generate inaccurate or misleading information. Entrepreneurs who blindly rely on AI-generated information may make poor business decisions.
  Human verification is therefore essential. AI should serve as an assistant rather than the final authority on important business decisions.

- **Ethical and Intellectual Property Concerns**
  AI-generated content raises questions about copyright, originality, attribution and ownership. Young entrepreneurs need adequate awareness of these issues to avoid legal and reputational problems.

- **Risk of Overdependence**
  AI can improve productivity, but excessive dependence may weaken human creativity and critical thinking. Entrepreneurial education should therefore encourage human-AI collaboration rather than complete substitution of human judgement.

Theoretical Perspective

Resource-Based View

The Resource-Based View (RBV) provides a useful theoretical lens for understanding AI-enabled entrepreneurship. The theory suggests that organisations can achieve competitive advantage by developing and effectively deploying valuable resources and capabilities. From this perspective, AI tools alone may not provide a sustainable competitive advantage because many entrepreneurs can access similar technologies. The competitive advantage may instead arise from the entrepreneur's ability to combine AI with unique knowledge, creativity, local market understanding, customer relationships and entrepreneurial judgement.

For youths in Imo State, AI literacy can therefore be considered a strategic capability. A young entrepreneur who knows how to identify appropriate AI applications, formulate useful queries, evaluate outputs and integrate the results into business activities may have an advantage over another entrepreneur who merely has access to the same technology.

Recent Nigerian research provides support for this perspective. Obasi, Kuye and Alaneme (2026) examined AI adoption among Nigerian SMEs using the Resource-Based View and Dynamic Capabilities Theory and investigated the role of AI adoption in sustainable entrepreneurship.

Dynamic Capabilities Perspective

The Dynamic Capabilities perspective also provides a useful explanation. Entrepreneurial success in rapidly changing environments depends on the ability to sense opportunities, seize them and reconfigure resources. AI can strengthen these processes. It can help entrepreneurs sense market changes, generate alternatives and make faster decisions. However, entrepreneurs still need the capacity to interpret information and reconfigure their businesses.

The combination of RBV and Dynamic Capabilities Theory therefore suggests that the value of AI depends on both possession of technological resources and the ability to deploy them strategically.

Discussion

The evidence reviewed in this paper supports the argument that AI has considerable potential to strengthen youth entrepreneurship. However, AI should not be presented as a magic solution to unemployment or business failure. The central argument is that AI can amplify entrepreneurial capabilities. It can help an entrepreneur work faster, process more information, experiment with ideas and reach more customers. However, it cannot replace the need for entrepreneurial judgement, persistence, creativity, ethics and knowledge of the local market.

The experience of Nigeria's entrepreneurs provides useful evidence. Odugbesan et al. (2026) demonstrated that AI knowledge and technological exposure can enhance strategic thinking and cognitive adaptability among entrepreneurs. This finding is particularly significant for youths because entrepreneurship requires continuous adaptation to changing markets.

Similarly, evidence from micro-businesses shows that AI adoption can improve innovation processes and outcomes. Evidence from Nigerian SMEs also points towards positive relationships between AI capabilities and business performance.

The implication is that Imo State should not approach AI solely as an ICT issue. It should be treated as an entrepreneurship-development issue. This requires collaboration among educational institutions, government agencies, technology companies, financial institutions, entrepreneurship-development organisations and young entrepreneurs.

Tertiary institutions in Imo State can play a particularly important role. Entrepreneurship education should move beyond teaching students how to write traditional business plans. Students should learn how to identify problems, use AI responsibly to investigate opportunities, validate business ideas, create digital products, market services and analyse business information. Such an approach would be consistent with emerging Nigerian initiatives that seek to connect youth innovation, technology and enterprise development. The Federal Ministry of Innovation, Science and Technology's Youths and Students in Innovation initiative, for example, explicitly seeks to bridge the gap between creative research and market-ready enterprises by providing youth with technology and entrepreneurial competencies.

The implication for Imo State is that young entrepreneurs should not simply be trained as users of AI. They should be encouraged to become creators of AI-enabled solutions to local problems. For instance, youths could develop AI-supported solutions for agricultural market information, educational support, local tourism, small-business bookkeeping, logistics, customer service, healthcare information and creative industries.

This approach could transform AI from a consumption technology into a production and innovation technology.

Policy and Practical Implications

The findings and arguments advanced in this paper have several implications.

- Government: Government should develop youth-focused AI entrepreneurship programmes that provide training, mentorship, access to technology and financing. State-level initiatives should complement the national AI strategy by translating national objectives into locally relevant programmes.
- Tertiary Institutions: Universities, polytechnics and colleges should integrate practical AI applications into entrepreneurship and business education. Students should learn how to use AI for opportunity recognition, business modelling, innovation, marketing and decision-making.
- Financial Institutions: Banks, microfinance institutions and development-finance organisations should consider specialised financing schemes for youth-owned technology-enabled enterprises.
- Technology Companies: Technology firms can contribute through training, cloud credits, mentorship, innovation competitions and partnerships with educational institutions.

- Youth Entrepreneurs: Young entrepreneurs should approach AI as a strategic tool rather than a substitute for entrepreneurial thinking. They should continuously develop AI literacy while maintaining critical thinking, ethical awareness and knowledge of their customers.

Conclusion

Artificial Intelligence is rapidly changing the entrepreneurial landscape. Its capacity to analyse information, generate ideas, automate routine activities, support decision-making and improve customer engagement creates significant opportunities for young entrepreneurs. For youths in Imo State, AI presents an opportunity to overcome some traditional barriers to entrepreneurship by providing relatively affordable access to information, creativity, marketing and analytical capabilities. It can support opportunity recognition, product and service innovation, digital marketing, customer management, productivity and market expansion.

Recent empirical evidence provides grounds for optimism. Studies involving Nigerian entrepreneurs and SMEs indicate that AI knowledge, technological exposure and AI adoption can contribute to strategic thinking, cognitive adaptability, enterprise performance and sustainable entrepreneurship. International evidence also demonstrates that AI adoption can enhance innovation among micro-businesses.

Nevertheless, technology alone cannot guarantee entrepreneurial success. The ability of youths to benefit from AI will depend on their digital skills, entrepreneurial competencies, access to finance, internet connectivity, electricity, institutional support and understanding of ethical and responsible AI use.

The central proposition of this paper is therefore that Imo State should move beyond simply encouraging youths to use AI and begin deliberately building an AI-enabled youth entrepreneurship ecosystem. Such an ecosystem should combine technology, entrepreneurship education, mentorship, finance, infrastructure and responsible innovation. If properly implemented, AI could help young people in Imo State move beyond small-scale survival entrepreneurship towards innovative, productive and scalable enterprises capable of creating employment and contributing to regional economic development. The opportunity is significant, but it requires coordinated action from government, educational institutions, the private sector and the youths themselves.

Recommendations

Based on the arguments presented, the following recommendations are proposed:

1. Establish AI-enabled youth entrepreneurship hubs in Imo State: The state should encourage the establishment of innovation hubs where young entrepreneurs can access AI tools, internet facilities, mentorship, training and business incubation services.

2. Integrate practical AI literacy into entrepreneurship education: Business Education, Office Technology and Management, Entrepreneurship, Computer Science and related programmes should include practical AI applications in their curricula.

3. Create AI-focused youth innovation grants: Government and private organisations should establish competitive grants for young entrepreneurs developing AI-enabled solutions to local economic and social problems.

4. Improve digital infrastructure: Affordable broadband internet and reliable electricity are necessary conditions for meaningful AI adoption. AI entrepreneurship programmes will have limited impact if young entrepreneurs cannot reliably access digital infrastructure.

5. Promote human-AI collaboration: Training should emphasise that AI is an assistant rather than an unquestionable authority. Young entrepreneurs should learn to verify AI-generated information and apply human judgement.

6. Provide ethical AI training: Entrepreneurs should be trained in data privacy, cybersecurity, intellectual property, responsible AI use and the risks associated with inaccurate AI outputs.

7. Encourage local AI innovation: Young people should be encouraged to develop AI solutions addressing problems specific to Imo State and the wider Southeast region. This could include agriculture, education, commerce, transportation, tourism, creative industries and small-business management.

8. Strengthen partnerships: Government, tertiary institutions, technology companies, financial institutions and entrepreneurship organisations should collaborate in developing sustainable youth AI-entrepreneurship ecosystems.
9. Promote women's participation in AI entrepreneurship: Special attention should be given to young women entrepreneurs to ensure that the emerging AI economy does not reproduce existing gender inequalities in access to technology and finance.

10. Encourage continuous research: Researchers should conduct future empirical studies involving young entrepreneurs in Imo State to determine the actual level of AI adoption, the factors influencing adoption and the relationship between AI utilisation, innovation and business growth.

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DIGITAL TRANSFORMATION AS A CATALYST FOR ENHANCING BUSINESS EDUCATION IN NIGERIAN TERTIARY EDUCATION: CHALLENGES, OPPORTUNITIES, AND OUTCOMES

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Abstract
Digital transformation is increasingly reshaping higher education by changing how teaching, learning, assessment, communication, and entrepreneurial skills are developed. It is a significant driver of innovation, academic excellence, and institutional competitiveness across higher education systems worldwide. Digital advancements reshaping business education in Nigeria include e-learning platforms, cloud computing, artificial intelligence (AI), virtual collaboration tools, learning management systems (LMS), and digital entrepreneurship resources. The study investigated the potential, challenges, and implications of technology adoption and the impact of digital transformation on business education in Nigeria. The study indicates that digital transformation enhances teaching effectiveness, fosters students' entrepreneurial skills, encourages collaborative learning, and contributes to the development of digital competencies. However, challenges remain, including poor infrastructure, low digital literacy, unreliable power supply, limited internet access, and limited funding. The report calls on governments to modernize curricula, provide ongoing digital training for educators, increase investment in educational technology infrastructure, and promote strategic partnerships between academia and industry. The study contributes to the growing discourse on digital transformation by highlighting the need to align technology, human capacity, curriculum, governance, and institutional readiness for sustainable business education transformation in Nigeria.

Keywords: Digital Transformation, Business Education, Higher Education, ICT integration, LMS

Introduction
The digital world is increasingly penetrating the education and skills domain, with technology gradually being used to deliver education, knowledge, and skills in new and innovative ways, which are themselves affected by the current climate of economic uncertainty, as well as by political shifts (Nimfel, 2022). Broadly, digital technologies include the use of personal computers, digital television, radio, mobile phones, robots, etc. The term is used to describe the use of digital resources to effectively find, analyze, create, communicate, and use information in a digital context (Nimfel, 2022); (Yuwono, Imam Maulidizen, Ahmad Hariyadi, Ahmad Reza Iqbal, 2026).

Business education involves teaching students the fundamentals, theories, and processes of business. Education at this stage occurs at several levels, including secondary education and higher education, with the greatest activity occurring in the latter. Business education typically prepares students for an occupation in business or a business-related field, or a teaching career in academics (Nimfel, 2022). Digital transformation is reshaping business education in tertiary institutions by expanding access to digital resources, enabling blended learning, and supporting more flexible instructional delivery. In the Nigerian context, these changes are especially relevant because

institutions must respond to infrastructure constraints, uneven digital literacy, and evolving labor-market expectations. (Ama, 2024).

Digital transformation has moved beyond the simple adoption of computers, internet connectivity, or electronic learning platforms. In contemporary higher education, it increasingly represents a broader institutional process through which digital technologies reshape teaching, learning, assessment, curriculum design, administration, student engagement, and the development of competencies required for participation in a technology-driven economy. The transition is particularly significant for business education because business graduates are expected to operate in workplaces increasingly characterized by artificial intelligence (AI), cloud computing, big data analytics, digital platforms, automation, and digitally mediated entrepreneurship. Recent research describes Education 4.0 as an experience-oriented model that combines emerging technologies with personalized, flexible, and problem-based learning, rather than relying predominantly on memorization and conventional classroom delivery (Mukul & Büyüközkan, 2023); (Usman & Oladunjoye, T. Ganiyu Mamman, 2024).

The relevance of digital transformation to Nigerian tertiary education is particularly pronounced because the quality of business education is closely associated with the capacity of institutions to prepare students for changing labour-market and entrepreneurial environments. Business education is no longer adequately defined by conventional competencies in accounting, office administration, marketing, management, or entrepreneurship. Graduates increasingly require digital literacy, data interpretation, technology-mediated communication, innovation capability, problem-solving, adaptability, and the ability to work with AI-supported business systems. Consequently, transforming business education requires more than purchasing digital equipment; it requires alignment among technology, curriculum, lecturers, students, institutional governance and industry expectations.

Evidence from Nigeria increasingly demonstrates both the potential and the limitations of this transition. For example, (Edokpolor et al., 2026) Empirically examined vocational business students in Nigerian universities and found significant positive relationships between AI-driven technological application, study engagement, and entrepreneurial career intentions. Their analysis further showed that study engagement mediated the relationship between AI technology and entrepreneurial career intentions. This is particularly relevant to business education because it suggests that the educational value of digital technology may not arise simply from students' access to technology; rather, technology can influence outcomes through the extent to which students become cognitively and motivationally engaged with learning (Loretto et al., 2026).

The same study identified an important contextual gap. Although AI-enabled instructional technologies have attracted increasing attention, empirical evidence concerning their operation within vocational business education in developing higher education systems remains relatively limited (Edokpolor et al., 2026). This observation provides an important basis for the present study, which extends the discussion beyond AI alone to consider digital transformation as a multidimensional phenomenon involving technological infrastructure, digital competence, pedagogical integration, curriculum transformation and institutional support.

The evidence concerning Nigerian tertiary institutions also suggests that digital transformation cannot be separated from institutional capacity (Ogbonna et al., 2025) Using data from 5,052 respondents across universities, Polytechnics, and Colleges of Education in Southeast Nigeria, the study demonstrated empirically that technology availability, utilization, and maintenance were significant predictors of user satisfaction. Availability, utilization, and maintenance respectively produced positive effects, while together explaining 28.5% of the variance in satisfaction. The study further reported institutional differences, indicating that the factors most strongly associated with satisfaction varied across universities, polytechnics, and colleges of education (Ogbonna et al., 2025). These findings challenge the assumption that a single digital-transformation strategy can be uniformly applied across Nigerian tertiary institutions.

The institutional dimension is reinforced by recent research on AI-driven transformation in Nigerian higher education. (Loretto et al., 2026) Identified inadequate digital literacy, weak governance implementation, limited AI readiness, and infrastructural deficits as major constraints. Their stakeholder study found that 17 of 21 participants emphasized digital literacy and staff development as fundamental to successful digital transformation, while approximately two-thirds identified leadership and governance commitment as critical to sustainability. Infrastructure and ethical concerns were also prominent: 19 of the 21 participants identified unstable electricity, inadequate internet connectivity, and insufficient funding as major barriers, while privacy, academic integrity, and equitable access were identified as important ethical concerns (Loretto et al., 2026); (Edokpolor et al., 2026).

These Nigerian findings are consistent with the wider international literature. A 2024 empirical study involving 626 lecturers found that the major dimensions of lecturers' digital competence—including

professional engagement, digital resources, teaching and learning, assessment, learner empowerment, and development of students' digital competence—were positively associated with student learning value. This finding is important because it places lecturers, rather than technology alone, at the center of educational transformation. Digital platforms may provide capabilities, but the educational benefits depend substantially on whether lecturers can integrate them meaningfully into curriculum and pedagogy (Dang et al., 2024).

Similarly, a large-scale systematic review of digital transformation initiatives in higher education found that transformation encompasses teaching, learning, administration, user experience, and social inclusion rather than technology adoption alone (Fernández et al., 2023). Another Scopus-based review of 408 publications identified three broad dimensions of higher-education digital transformation: digital technologies for teaching, learning, assessment, and administration; user experience; and social inclusiveness (Joshi et al., 2024). These perspectives are particularly useful for Nigerian business education because they indicate that transformation should ultimately be assessed through educational and institutional outcomes rather than the quantity of technologies acquired (Joshi et al., 2024).

The emergence of generative AI has further intensified the need to reconsider how business education is delivered and assessed. Recent evidence from African higher education indicates a significant disconnect between students' use of generative AI and educators' preparedness to manage and integrate these technologies. The literature increasingly favours assessment redesign, critical reflection, transparent AI use, and process-oriented learning rather than relying exclusively on prohibition or AI-detection mechanisms (Antwi-Boampong et al., 2026). A broader 2026 review similarly concludes that the educational value of generative AI depends strongly on the surrounding pedagogy, assessment design and verification practices rather than on the technology itself (Antwi-Boampong et al., 2026); (Nimfel, 2022).

The Nigerian context presents additional structural challenges. Earlier Nigerian research identified poor technological infrastructure, limited access to modern devices, inadequate mobile-learning pedagogical skills among lecturers, negative attitudes, and weak institutional policy as barriers to sustainable digital education (Agidani, 2021). More recent Nigerian scholarship similarly emphasizes the need for infrastructure investment, lecturer development, curriculum reform, collaboration, research, and inclusion to realize the benefits of Industry 4.0 in education (Adeoye et al., 2023).

The business-education curriculum itself therefore requires reconsideration. Recent research on curriculum transformation argues that AI, big-data analytics, cloud computing and digital platforms are changing industrial competency requirements and that universities face challenges involving technological infrastructure, faculty readiness, curriculum relevance and industry alignment. At the same time, digital transformation creates opportunities for interdisciplinary learning, experiential education, global collaboration, and technology-driven innovation. These issues are directly applicable to Nigerian business education, where curriculum content must increasingly reflect the realities of digitally enabled enterprises and entrepreneurial ecosystems (Yuwono, Imam Maulidizen, Ahmad Hariyadi, Ahmad Reza Iqbal, 2026), (Lee, 2022).

1.1 Problem Statement

Despite the potential of digital transformation to enhance teaching and learning, the shift from conventional business education to technology-enabled business education in Nigerian tertiary institutions remains inconsistent. This transition is often hindered by factors such as unreliable power supply, limited connectivity, high deployment costs, and insufficient staff training. These obstacles can diminish the effectiveness of technology-enhanced business education (Edokpolor et al., 2026); (Ogbonna et al., 2025).

1.2 Aim and objectives of the Study

Guided by the overarching goal of understanding the impact of digital transformation in business education, this study focuses on Nigerian tertiary institutions. The specific objectives are to:

i. examine the influence of digital infrastructure and lecturers' digital competence on the delivery of Business Education in Nigerian Tertiary Institutions.
ii. assess the effect of digital transformation on students' engagement, learning outcomes, and digital competencies in Business Education.
iii. examine the influence of institutional readiness and governance support on the effective implementation of digital transformation in Business Education.

Review of Related Literature and Conceptual and Analytical Framework

The literature on digital transformation in business education has expanded significantly over the past decade, reflecting growing scholarly and policy interest in how digital

technologies reshape institutional processes and outcomes. Existing research can be broadly organized into four (4) interrelated dimensions: (a) institutional readiness, (b) technology-driven transformation, (c) governance and public value outcomes and (d) digital competencies and human capabilities, Despite this expansion, the literature remains fragmented, with limited integration across these dimensions and insufficient attention to how governance mechanisms mediate the relationship between digital transformation and business education (Nwaigwe et al., 2026).

2.1 Business Education

Business Education is a broad and comprehensive field of study whose instructional programme is endowed with the capacity of providing required vocational skills, aptitude, and knowledge to effectively and efficiently manage personal businesses and function in the economic system as a whole. A remarkable attribute of the Business Education programme is that its graduates can perform and function independently as employers of labour and as entrepreneurs, Okoro 2013 cited in (Ore & Hassan, 2023). Business education programs cover a wide range of subjects, including business management, office occupations, economics, and entrepreneurship. These programs are designed to develop the basic skills of learners that can be applied in their personal lives and future careers. The overarching goals and objectives of business education are driven by the needs of industry, commerce, and society as a whole Otum, 2018, cited in (Ufondu et al., 2023).

Business education is a specialized field of education that focuses on imparting knowledge and skills related to the business industry. It encompasses various teaching methods and approaches aimed at equipping students with a solid understanding of fundamental business practices. The primary objective Of business education is to provide learners with the necessary skills, knowledge, attitudes, and competencies required for employment, career advancement, and self- reliance (Ufondu et al., 2023). The philosophy of the Business Education curriculum, as stated in Aquah (2014), cited in (Ore & Hassan, 2023) includes;

i) To equip the student with the necessary saleable skills that will enable them to acquire, sustain, and grow in their jobs and be self-employed, thereby creating jobs for others
ii) To prepare Business Education students for advanced training in Business Education
iii) To prepare students for higher studies in Business Education
iv) To gain the basic knowledge and skills of Business Education
v) To possess the basic skills required in an office occupation
vi) To relate skills and knowledge acquired during the programme to national development.
vii) To provide students with the needed pedagogical skills for teaching business subjects.
viii) To provide students with basic skills and orientation in preparation for the world of work for those who may not further their educational training.

2.2 Digital Transformation

Digital transformation has emerged as a defining imperative in higher education world- wide, driven by rapid advances in information and communication technologies (ICT) (Aposika, 2026). The COVID-19 pandemic accelerated the pace of digital transformation, demonstrating both the potential and the limitations of technology-enabled education. Universities worldwide rapidly transitioned to online and blended learning models, highlighting the importance of digital infrastructure, faculty preparedness, and student digital competencies. While many institutions successfully adopted innovative teaching practices, the transition also exposed persistent inequalities related to access to technology, internet connectivity, digital literacy, and institutional resources (Vasuki, M., Mishra, A. K., Dinesh Kumar, A., Mishra, S., Celestin, M., Zulu, 2026). These disparities continue to influence educational quality and equity, particularly in developing countries (Lohithaksha, 2026); (Ufondu et al., 2023).

According to OECD (2023), the emergence of technologies such as cloud computing, Artificial Intelligence (AI), Big Data Analytics, Machine Learning, Learning Management Systems (LMS), Virtual Reality (VR), Augmented Reality (AR), and the Internet of Things (IoT) has significantly expanded educational opportunities across all levels of learning. These technologies facilitate learner-centred instruction by enabling personalized learning experiences, flexible access to educational resources, real-time communication, collaborative knowledge construction, and data-driven decision-making (Sanni, 2026); (Nhleko et al., 2024); (Hardiyanti et al., 2026).

Digital Transformation refers to the process of using digital technologies to transform and improve business processes, operations, and services by leveraging digital tools and platforms (Eche, Patrick Inalegwu Isaiah, Agama Egiri Emmanuel, 2024); (Radicic, Dragana Petkovic, 2023). Digital

transformation refers to the process of integrating digital technologies into all aspects of an organization's operations, fundamentally changing how it functions and delivers value to its stakeholders. This transformation goes beyond merely adopting new technologies; it involves rethinking and redesigning workflows, culture, and customer interactions to leverage the full potential of digital advancements (Ibironke & Jayeola, 2025); (Reis & Melão, 2023); .

The digital transformation comprises many modern technologies, such as AI, IoT, Augmented Reality (AR), Virtual Reality (VR), and Blockchain. Software and platforms have been instrumental in propelling the digital transformation over the past five years. AI, as a research focus and a nascent professional domain in recent times, is increasingly playing a pivotal role in this transformation (Hu et al., 2025). Generative Artificial Intelligence (GenAI) is rapidly becoming part of everyday practice in higher education. In this review, GenAI refers to large language model tools that generate text or code in response to prompts.(Hawi & Samaha, 2026); (Antwi-Boampong et al., 2026).

2.3 Information and Communication Technology (ICT)

The concept of Information and Communications Technology (ICT) infrastructure adoption characterizes as the equipment and software required to implement organizational operation systems that incorporate networks for communications services, as well as support applications, digital content, and e-learning in the area of software, and related services for an effective organization's running (Omowunmi et al., 2024). According to Arifin et al (2016) cited in (Omowunmi et al., 2024) using IT can enhance output by 81%, reduce labour costs by 40%, improve company-wide efficiency and productivity, and increase profitability (Eche, Patrick Inalegwu Isaiah, Agama Egiri Emmanuel, 2024).

2.4 Digital Transformation in Education

Technological integration is a practical application of technology into the art of teaching, teaching models, teaching concepts, teaching patterns, and application environments by using modern technology (Ibironke & Jayeola, 2025).

Digital transformation in education involves integrating digital technologies into all aspects of the educational process, fundamentally altering how educators teach and students learn. Digital transformation in education also focuses on creating a more interconnected and dynamic ecosystem where technology enhances every aspect of the learning experience by bringing together people, processes, and data to enhance the learning environment for students, educators, parents, and other stakeholders in a world currently overtaken by technology (Ibironke & Jayeola, 2025).

2.5 Digital Transformation in Higher Education

Higher Education Institutions (HEIs) are critical to national development, providing the skilled human capital necessary for economic growth, governance, and technological innovation (Fernández et al., 2023). Digitalization, AI, and machine learning hold transformative potential for strengthening institutional capacity in Africa (Loretto et al., 2026); (Zhukabayeva et al., 2025).

Digital transformation has emerged as a defining feature of higher education in the twenty-first century, reshaping institutional practices, teaching methodologies, research processes, and student learning experiences. Unlike simple technology adoption, digital transformation represents a comprehensive and strategic integration of digital technologies into all aspects of higher education. It involves rethinking educational policies, curriculum design, assessment methods, administrative processes, and institutional culture to meet the demands of an increasingly digital and interconnected world (Lohithaksha, 2026); (Mukul & Büyüközkan, 2023).

The digital transformation of higher education is occurring rapidly around the globe, leaving an indelible mark on improving the quality of education, expanding the accessibility of educational resources, and realizing innovation and reform in teaching and research (Hu et al., 2025); (Sanni, 2026). Digital transformation in higher education extends beyond the introduction of computers, learning management systems, online platforms, or artificial intelligence. It represents a broader institutional change in which digital technologies are integrated into teaching, learning, assessment, administration, communication, curriculum development, and decision-making (Carmo & Lacerda, Daniel Pacheco Klingenberg, Cristina Orsolin Piran, 2025); (Hu et al., 2025).

Similarly, (Fernández et al., 2023), argue that higher education digital transformation involves organizational and strategic change affecting information, processes, people, and institutional structures. Their multivocal review identified 184 digital transformation initiatives across 39 universities, with improving the quality and competitiveness of education emerging as a major focus (Nwaigwe et al., 2026).

This suggests that successful transformation requires institutions to integrate technology with organizational strategy rather than implement isolated technological projects (Lohithaksha, 2026).

2.6 Digital Transformation and Business Education

Business Education is particularly relevant to digital transformation because its graduates are expected to function within technology-intensive workplaces characterised by digital communication, electronic commerce, data-driven decision-making, cloud applications, artificial intelligence, digital accounting, virtual collaboration, and entrepreneurial technologies (Yuwono, Imam Maulidizen, Ahmad Hariyadi, Ahmad Reza Iqbal, 2026).

The transformation of Business Education consequently requires more than transferring conventional teaching activities to online platforms. It requires curriculum and pedagogical changes that expose students to technologies and work practices relevant to contemporary business environments. The literature on Education 4.0 indicates that technology-enabled education increasingly emphasises experiential learning, personalisation, collaboration, and the development of competencies required by digitally transformed workplaces (Mukul & Büyüközkan, 2023).

This perspective is supported by recent evidence involving Nigerian vocational business students. (Edokpolor et al., 2026) Empirically examined AI-driven technology, study engagement, and entrepreneurial career intentions among vocational business students in Nigerian universities. Their findings indicate that perceived use of AI-driven technology was positively associated with study engagement and entrepreneurial career intentions, while engagement also played a mediating role in the relationship between technology use and entrepreneurial intentions.

Digital transformation in science education involves the use of digital technologies to enhance scientific understanding and learning experiences. This transformation includes:

a) Online learning platforms and digital classrooms
b) Virtual laboratories and simulation software
c) Artificial intelligence–based tutoring systems
d) Digital assessment and evaluation tools
e) Collaborative online learning environments

The integration of these technologies allows students to visualize complex scientific concepts, conduct virtual experiments, and access global research resources (Shukla, 2026).

Table 1: Key Dimensions of Digital Transformation in Business Education

Dimension	Major Components	Expected Contribution
Digital infrastructure	Internet, electricity, devices, networks	Enables technology access
Digital technologies	AI, cloud computing, LMS, analytics	Supports innovative teaching and learning
Lecturer competence	Digital teaching, assessment, and resource management	Improves technology integration
Curriculum transformation	Digital business skills, AI, analytics, e-commerce	Improves labour-market relevance
Institutional readiness	Leadership, funding, support, and organizational capacity	Supports sustainability
Digital governance	Policies, accountability, ethics, and data protection	Promotes responsible transformation
Student engagement	Interaction, collaboration, and personalized learning	Improves learning experience
Entrepreneurship	Digital platforms, innovation, and technology-enabled business	Strengthens entrepreneurial capability

2.7 Lecturers' Digital Competence

Infrastructure alone cannot guarantee effective digital transformation. Lecturers must possess the competence to select, use, integrate, evaluate, and adapt digital technologies to pedagogical objectives.

Dang et al., using empirical evidence from 626 lecturers, found that all six dimensions of the DigCompEdu framework—professional engagement, digital resources, teaching and learning, assessment, empowering learners, and facilitating learners' digital competence—were positively related to student learning value (Dang et al., 2024).

This evidence supports the argument that lecturers' digital competence should be treated as a central component of digital transformation rather than as a supplementary professional skill. A lecturer may have access to sophisticated technologies but still produce limited educational value if the technologies are poorly integrated into teaching and assessment (Nwaigwe et al., 2026); (Owo, 2025).

2.8 Digital Transformation, Student Engagement and Learning Outcomes

One of the principal justifications for digital transformation is its potential to improve students' educational experiences and outcomes. Digital platforms can provide flexible access to learning materials, facilitate interaction, support collaborative activities, enable rapid feedback, and create opportunities for personalised learning (Edokpolor et al., 2026); (Chen & Cheung, 2025).

Recent evidence concerning generative AI strengthens this argument. Chen and Cheung's systematic review and meta-analysis synthesized 57 studies and 97 effect estimates and reported an overall large positive effect of generative AI on university students' learning outcomes. Positive effects were reported for academic achievement, affective-motivational outcomes, higher-order thinking, and language skills, although the effect on metacognition was not statistically significant (Chen & Cheung, 2025); (Xia et al., 2025).

Table 2: Digital Transformation Outcomes

Outcome Area	Expected Effect
Teaching effectiveness	More flexible and technology-supported instruction
Student engagement	Greater interaction and participation
Digital competence	Improved ability to use digital technologies
Learning experience	More personalized and collaborative learning
Entrepreneurship	Stronger digital entrepreneurial capability
Employability	Better alignment with technology-driven workplaces
Accessibility	Wider access to learning resources
Institutional effectiveness	More digitally enabled academic and administrative processes

2.9 Institutional Readiness and Governance Support

Institutional readiness provides the organisational conditions necessary for translating digital resources and human capabilities into sustainable transformation. It encompasses infrastructure, leadership commitment, strategic vision, organisational culture, funding, technical support, governance structures, and institutional capacity. A critical but underdeveloped dimension in the literature is digital governance, which mediates how digital transformation unfolds within higher education institutions. Digital transformation processes span academic, administrative, and governance domains, including teaching and learning systems, administrative platforms, and decision-support tools (Eche, Patrick Inalegwu Isaiah, Agama Egiri Emmanuel, 2024); (Khan et al., 2026).

Governance alignment involves ensuring that digital initiatives are connected to institutional missions, policies, accountability mechanisms, participation, and transparency. The review found governance alignment in 29 of the 47 studies and argues that digital transformation outcomes depend on alignment among competencies, institutional readiness, and governance. This is particularly relevant to Nigerian tertiary institutions, where fragmented digital initiatives, resource constraints, infrastructure deficiencies, and institutional capacity limitations can prevent technology investments from producing sustainable educational outcomes (Nwaigwe et al., 2026); (Yuwono, Imam Maulidizen, Ahmad Hariyadi, Ahmad Reza Iqbal, 2026).

2.10 Curriculum Reengineering

Curriculum reengineering is the cornerstone of any educational reform aimed at bridging the skill gap. The existing business education curriculum in many African universities is often overloaded with theoretical content and outdated management models that fail to address new technological and entrepreneurial realities (Odigili, Chuks Bishop Omorojie, 2025). A repositioned business education curriculum must therefore be competency-based, interdisciplinary, and industry-responsive.

2.11 Opportunities of Digital Transformation in Business Education

Despite these challenges, digital transformation creates substantial opportunities for Business Education (Sanni, 2026); (Edokpolor et al., 2026).

i) **Improved Accessibility**: Digital learning platforms allow students from remote areas to access educational resources and participate in online classes (Shukla, 2026).
ii) **Personalized Learning**: Adaptive learning systems analyze student performance and provide customized educational content (Shukla, 2026).

iii) **Enhanced Visualization of Scientific Concepts**: Digital simulations help students understand complex scientific processes such as molecular interactions and chemical reactions.
iv) **Collaborative Learning**: Online platforms enable collaboration between students and researchers across the world.
v) **Flexible Learning Environment**: Digital tools allow students to learn anytime and anywhere, increasing flexibility and convenience.

Research shows that digital learning environments significantly improve student engagement, performance, and accessibility (Shukla, 2026).

2.12 Challenges of Digital Transformation in Business Education

While digital transformation has revolutionized business education by expanding access and enhancing learning experiences, it has also introduced significant challenges and ethical concerns (Ibironke & Jayeola, 2025). These issues require careful attention to ensure that technological innovation contributes to equitable, inclusive, and sustainable educational development (Lohithaksha, 2026). The literature identifies several interconnected barriers to digital transformation in Nigeria (Adeoye et al., 2023); (Ibironke & Jayeola, 2025);

i) **Digital Divide**: One of the major challenges is unequal access to technology and internet connectivity, particularly in rural or economically disadvantaged regions (Nwaigwe et al., 2026); (Owo, 2025).
ii) **Lack of Teacher Training**: Many educators lack sufficient digital skills required for integrating technology into teaching.
iii) **Infrastructure Limitations**: Limited technological infrastructure in educational institutions can hinder effective digital learning (Adeoye et al., 2023), (Yuwono, Imam Maulidizen, Ahmad Hariyadi, Ahmad Reza Iqbal, 2026); (Sanni, 2026).
iv) **Data Privacy and Security**: The use of digital platforms raises concerns regarding the protection of personal and academic data (Adeoye et al., 2023).
v) **Resistance to Change**: Some educators and institutions may resist adopting new technologies due to unfamiliarity or lack of institutional support (Shukla, 2026).
vi) **Lack of funding**: Limited budgets and funding constraints make investing in the necessary technology and training required for a smooth transition to Industry 4.0 in education challenging. Finding sustainable funding models and partnerships is essential to overcome this challenge (Adeoye et al., 2023).
vii) **Lack of Comprehensive Curriculum**: A significant challenge is the need for a comprehensive digital business education curriculum that aligns with the demands of Industry 4.0 (Adeoye et al., 2023).
viii) **Institutional and governance limitations:** Digital transformation requires strategic coordination. Fragmented initiatives, weak institutional readiness, inadequate funding, and poorly aligned governance mechanisms can limit the sustainability of transformation efforts. The 2026 evidence synthesis specifically concludes that infrastructure-only approaches are insufficient when governance and organisational culture are poorly aligned (Nwaigwe et al., 2026); (Shukla, 2026).

Research Gap

The study identifies a significant gap in understanding how various factors—
including technological infrastructure, lecturers' digital competence, curriculum transformation, student engagement, institutional readiness, and governance—
interact to influence digital transformation within Nigerian tertiary institutions for business education. A lthough previous studies have examined these elements in isolation, none have offered a holistic view of their combined impact on achieving sustainable educational, entrepreneurial, and institutional outc omes. The manuscript emphasises that successful digital transformation goes beyond merely adoptin g technologies; it requires a cohesive alignment among technology, curriculum, educators, students, g overnance, and industry standards (Odigili, Chuks Bishop Omorojie, 2025).

Future Prospects

The future of digital business education is likely to include:

a) AI-driven personalized learning environments
b) Fully virtual laboratories
c) Integration of big data and learning analytics
d) Global collaborative research platforms

These developments will further transform the teaching and learning of business education (Yuwono, Imam Maulidizen, Ahmad Hariyadi, Ahmad Reza Iqbal, 2026); (Reis & Melão, 2023).

Recommendations

Five (5) suggestions for improving digital transformation in Nigerian tertiary institutions are as follows:

i) To overcome current access hurdles, strengthen ICT infrastructure and digital access by ensuring dependable internet, electricity, and digital resources.

ii) Provide lecturers with ongoing training in digital skills: Develop professional development initiatives that emphasise incorporating cutting-edge digital capabilities like artificial intelligence and data analytics into instructional strategies.

iii) Update the Business Education curriculum on a regular basis to incorporate skills that are pertinent to digital workplaces, such as digital entrepreneurship and artificial intelligence.

iv) Create rules that match digital activities with institutional goals, including data protection and ethical AI use, in order to strengthen institutional digital-governance frameworks.

v) Encourage sustainable investment and partnerships: Encourage cooperation between institutions, businesses, and the government to improve digital resources and training capacities.

Conclusion

Digital transformation in Nigerian education holds immense potential to improve learning outcomes, increase accessibility, and prepare students for the future. A successful digital transformation agenda in Nigerian tertiary business education requires coordinated investment in infrastructure, faculty capacity building, curriculum redesign, and institutional policy support (Shukla, 2026).

To overcome these challenges and advance digital transformation in Nigerian education, several actions are necessary. First, there is a need to strengthen educational infrastructure through investments in reliable electricity, internet services, and digital devices, especially in rural communities, to create a conducive environment for technology integration (Ibironke & Jayeola, 2025).

Finally, the role of leadership in driving technological integration in education cannot be overstated. Effective leaders provide a clear vision, secure necessary resources, offer ongoing professional development, build collaborative cultures, and continuously monitor and evaluate progress. Hence, the commitment and actions of educational leaders are pivotal in transforming educational environments and achieving the full potential of technological integration (Ibironke & Jayeola, 2025).

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DIGITAL COMPETENCE AND TECHNO-PRENEURSHIP INSTRUCTIONAL PRACTICES AMONG BUSINESS EDUCATION LECTURERS IN TERTIARY INSTITUTIONS

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Abstract
Digital transformation has increased the need for Business Education lecturers to possess competencies for integrating emerging technologies into entrepreneurship instruction. This study examined the relationship between digital competence and techno-preneurship instructional practices among Business Education lecturers in tertiary institutions. Specifically, the study determined the relationships between digital content-creation competence, digital communication competence and techno-preneurship instructional practices. Two research questions and two null hypotheses guided the study. A correlational research design was adopted. The population comprised 161 Business Education lecturers from Federal College of Education (Technical), Omoku (79), Nnamdi Azikiwe University, Awka (39), and Alvan Ikoku Federal University of Education, Owerri (43). The entire population was studied using a census approach. Data were collected using a structured questionnaire titled Digital Competence and Techno-preneurship Instructional Practices Questionnaire (DCTIPQ), validated by three experts. Pearson Product Moment Correlation was used to answer the research questions and test the hypotheses at the .05 level of significance. Findings revealed a strong positive relationship between digital content-creation competence and techno-preneurship instructional practices (r = .766, p < .01) and a moderate positive relationship between digital communication competence and techno-preneurship instructional practices (r = .496, p < .01). Both relationships were statistically significant. The study concluded that digital competence is significantly associated with techno-preneurship instructional practices and recommended continuous digital capacity development for Business Education lecturers.
Keywords: Business Education, digital competence, digital content creation, techno-preneurship

Introduction
Digital transformation is changing the nature of business, entrepreneurship and education. Digital technologies increasingly influence how enterprises identify opportunities, communicate with customers, develop products, market services and organize business processes. Nambisan (2017) observed that digital technologies have transformed entrepreneurial processes and outcomes, thereby creating new possibilities for digital entrepreneurship. Consequently, entrepreneurship education can no longer be effectively separated from the digital technologies shaping contemporary business environments. Ratten and Usmanij (2021) similarly noted that digitalization is changing entrepreneurship and how entrepreneurship education is approached.

These developments have important implications for Business Education. Business Education prepares individuals with knowledge, competencies and attitudes required for employment, entrepreneurship and participation in the business environment. As workplaces and entrepreneurial activities become increasingly digital, lecturers responsible for preparing students require competencies that enable them to incorporate appropriate technologies into instructional activities. Enang (2023) emphasized that digital entrepreneurial skills and competencies are necessary for Business Education students to remain relevant and competitive in the digital era. Such competencies are unlikely to be effectively developed where lecturers themselves lack appropriate digital capabilities.

Digital competence extends beyond basic ability to operate computers. Vuorikari et al. (2022) conceptualized digital competence through areas including information and data literacy, communication and collaboration, digital content creation, safety and problem-solving. For educators specifically, Redecker (2017) identified professional engagement, digital resources, teaching and learning, assessment, empowering learners and facilitating learners' digital competence as major dimensions of educators' digital competence. These frameworks indicate that educators need the capacity not merely to access technologies but to create resources, communicate, collaborate and integrate technologies purposefully into instruction.

Digital competence is particularly relevant to Business Education lecturers because of the practical and occupational orientation of the programme. Timya (2022) found that lecturers required digital technology skills to a high extent for teaching and learning Business Education courses in tertiary institutions in Plateau State. Similarly, Ayemhenre et al. (2023) found that digital skills were highly required by Business educators for enhancing and evaluating classroom instructional delivery in Colleges of Education in Delta State. These findings demonstrate that effective Business Education instructional delivery increasingly requires lecturers who are digitally competent.

Nevertheless, evidence suggests variations in the digital competencies actually possessed by Business Education lecturers. Okoli and Okolo (2024) found that although lecturers demonstrated high competence in some basic digital activities, competencies involving platforms such as Zoom, Google Classroom and Microsoft Teams were acquired at lower levels. The authors concluded that lecturers had not acquired the full range of digital skills needed for effective Business Education curriculum implementation. Shaibu et al. (2024) likewise emphasized the need for Business Education lecturers to possess relevant digital skills for effective instructional delivery in tertiary institutions in Imo State.

In this study, digital competence is operationalized through digital content-creation competence and digital communication competence. Digital content-creation competence refers to lecturers' capacity to create, modify, organize and appropriately use digital instructional materials. It can involve producing presentations, multimedia materials, digital documents and other resources relevant to entrepreneurial learning. Redecker (2017) specifically identifies selecting, creating, modifying, managing and sharing digital resources as important components of educators' digital competence. Digital content creation can therefore enable lecturers to translate entrepreneurial concepts into engaging technology-supported learning experiences.

Digital communication competence concerns lecturers' ability to use digital technologies for communication, collaboration and information exchange in instructional settings. This includes appropriate use of online communication and collaborative technologies for interaction with learners and sharing instructional resources. Vuorikari et al. (2022) identify communication and collaboration as a core area of digital competence. Ejeka et al. (2023) similarly established that acquisition of digital literacy skills is essential to the continued relevance of Business educators in tertiary institutions.

The dependent variable, techno-preneurship instructional practices, refers to instructional activities through which lecturers integrate technology and entrepreneurial learning to prepare students for technology-enabled enterprise creation and operation. Techno-preneurship combines technological capabilities with entrepreneurial thinking and action. Digital technologies have expanded the mechanisms through which entrepreneurial opportunities are discovered, developed and exploited (Nambisan, 2017). Therefore, techno-preneurship instruction should expose students to practical applications of technology in opportunity identification, digital marketing, online business operations, communication and innovation.

The need for such instructional practices is reinforced by changes in entrepreneurship education. Chen et al. (2021), in their systematic review of online and blended entrepreneurship education, demonstrated that various educational technologies are increasingly being applied in entrepreneurship education. Ratten and Jones (2021) also argued that entrepreneurship and management education need to respond to digital transformation. Thus, lecturers' capacity to use digital technologies may be particularly important to how effectively techno-preneurial concepts and practices are incorporated into Business Education.

Within Nigerian Business Education, empirical evidence also points to the connection between digital resources, instructional delivery and entrepreneurial preparation. Ogwunte et al. (2023) found inadequate availability and utilization of digital resources for entrepreneurship skills acquisition in universities in Rivers State. Ordu and Onyemekara (2023) reported a positive relationship between institution-community partnership for digital resource development and self-employability skills among Business Education students. Ukata and Nmehielle (2023) further examined cooperative instructional delivery and delivery of digital skills for decent employment in tertiary institutions in Rivers State. Collectively, these studies underscore the importance of digital capacity in preparing learners for contemporary employment and entrepreneurial activities.

Despite the growing literature, existing studies have largely concentrated on digital skills required or acquired by lecturers, availability of digital resources, curriculum implementation and employability. Limited attention has been given specifically to whether digital content-creation competence and digital communication competence are related to lecturers' techno-preneurship instructional practices. This study addresses this gap by examining the relationship between digital competence and techno-preneurship instructional practices among Business Education lecturers in selected tertiary institutions.

Statement of the Problem

Business Education lecturers are expected to prepare students for entrepreneurship in a business environment increasingly driven by digital technologies. This responsibility requires lecturers to possess digital competencies and translate them into instructional practices that expose learners to technology-enabled entrepreneurial activities. However, evidence indicates that lecturers do not possess all required digital competencies at comparable levels. Okoli and Okolo (2024) found deficiencies in some core digital skills required for effective Business Education curriculum implementation, while Ejeka et al. (2023) identified constraints affecting digital literacy acquisition among Business educators.

Furthermore, Ogwunte et al. (2023) reported inadequate availability and utilization of digital resources for entrepreneurship skills acquisition in Business Education. Although previous studies establish the importance of digital skills and resources, they do not sufficiently explain whether lecturers' digital content-creation and communication competencies are associated with their techno-preneurship instructional practices. This unresolved relationship constitutes the problem investigated in the study.

Purpose of the Study

The study determined the relationship between digital competence and techno-preneurship instructional practices among Business Education lecturers in tertiary institutions. Specifically, the study sought to:

1. determine the relationship between digital content-creation competence and techno-preneurship instructional practices; and
2. determine the relationship between digital communication competence and techno-preneurship instructional practices among Business Education lecturers.

Research Questions

1. What relationship exists between digital content-creation competence and techno-preneurship instructional practices among Business Education lecturers?
2. What relationship exists between digital communication competence and techno-preneurship instructional practices among Business Education lecturers?

Hypotheses

H_{01}: There is no significant relationship between digital content-creation competence and techno-preneurship instructional practices among Business Education lecturers.
H_{02}: There is no significant relationship between digital communication competence and techno-preneurship instructional practices among Business Education lecturers.

Methodology

The study adopted a correlational research design. The design was considered appropriate because the study determined the relationships between digital competence and techno-preneurship instructional practices without manipulating the variables. The study covered three tertiary institutions offering Business Education in Nigeria. The population comprised 161 Business Education lecturers, consisting of 79 lecturers from Federal College of Education (Technical), Omoku, 39 from Nnamdi Azikiwe University, Awka, and 43 from Alvan Ikoku Federal University of Education, Owerri. Since the population was manageable, a census approach was adopted; therefore, all 161 lecturers constituted the respondents. Data were collected using a researcher-developed instrument titled Digital Competence and Techno-preneurship Instructional Practices Questionnaire (DCTIPQ). The instrument contained items covering digital content-creation competence, digital communication competence and techno-preneurship instructional practices and was structured on a four-point response scale. The instrument was subjected to face and content validation by three experts: two in Business Education and one in Measurement and Evaluation. A trial test was conducted among Business Education lecturers from University of Port Harcourt, and Cronbach alpha was used to determine the instrument's internal consistency. It was determined that the instrument has an overall dependability index of .86. The researchers, assisted by research assistants, administered the instrument to the respondents. It was successful retrieved which Pearson Product Moment Correlation (PPMC) was used to answer the research questions and test the null hypotheses at the .05 level of significance. A null hypothesis was rejected where $p < .05$ and retained where $p \geq .05$.

Results

Research Question 1
What relationship exists between digital content-creation competence and techno-preneurship instructional practices among Business Education lecturers?

Table 1: Pearson Correlation between Digital Content-Creation Competence and Techno-preneurship Instructional Practices

Variables	N	Pearson *r*	Relationship
Digital content-creation competence and techno-preneurship instructional practices	161	.766	Strong Positive

Table 1 shows a Pearson correlation coefficient of .766 between digital content-creation competence and techno-preneurship instructional practices. The coefficient indicates a strong positive relationship, suggesting that greater digital content-creation competence is associated with greater engagement in techno-preneurship instructional practices among Business Education lecturers.

Research Question 2
What relationship exists between digital communication competence and techno-preneurship instructional practices among Business Education lecturers?

Table 2: Pearson Correlation between Digital Communication Competence and Techno-preneurship Instructional Practices

Variables	N	Pearson *r*	Relationship
Digital communication competence and techno-preneurship instructional practices	161	.496	Moderate Positive

Table 2 shows a Pearson correlation coefficient of .496 between digital communication competence and techno-preneurship instructional practices. The coefficient indicates a moderate positive relationship, suggesting that greater digital communication competence is associated with greater engagement in techno-preneurship instructional practices.

Test of Hypotheses

H_{01}: There is no significant relationship between digital content-creation competence and techno-preneurship instructional practices among Business Education lecturers.

Table 3: Pearson Correlation between Digital Content-Creation Competence and Techno-preneurship Instructional Practices

Variables	N	Pearson *r*	Sig. (2-tailed)	Alpha	Decision
Digital content-creation competence and techno-preneurship instructional practices	161	.766	< .01	.05	Rejected

Table 3 shows a Pearson correlation coefficient of .766 with a probability value of $p < .01$. Since the probability value is less than the .05 level of significance, H_{01} was rejected. Therefore, there is a significant strong positive relationship between digital content-creation competence and techno-preneurship instructional practices among Business Education lecturers.

H_{02}: There is no significant relationship between digital communication competence and techno-preneurship instructional practices among Business Education lecturers.

Table 4: Pearson Correlation between Digital Communication Competence and Techno-preneurship Instructional Practices

Variables	N	Pearson *r*	Sig. (2-tailed)	Alpha	Decision
Digital communication competence and techno-preneurship instructional practices	161	.496	< .01	.05	Rejected

Table 4 shows a Pearson correlation coefficient of .496 with a probability value of $p < .01$. Since the probability value is less than the .05 level of significance, H_{02} was rejected. Therefore, there is a significant moderate positive relationship between digital communication competence and techno-preneurship instructional practices among Business Education lecturers.

Discussion of Findings

The first finding revealed a significant strong positive relationship between digital content-creation competence and techno-preneurship instructional practices. This indicates that lecturers who are more competent in creating and modifying digital instructional resources tend to engage more extensively in techno-preneurship instructional practices. The finding supports Redecker (2017), who identified creating and modifying digital resources as a major component of educators' digital competence. It also agrees with Timya (2022), who found that digital technology skills were highly required for teaching and learning Business Education courses. Similarly, Shaibu et al. (2024) established the importance of relevant digital skills for effective instructional delivery among Business Education lecturers.

The second finding established a significant moderate positive relationship between digital communication competence and techno-preneurship instructional practices. The finding implies that lecturers' capacity to communicate and collaborate through digital technologies is associated with their techno-preneurship instructional practices. This finding supports Vuorikari et al. (2022), who identified digital communication and collaboration as central components of digital competence. It also corroborates Ayemhenre et al. (2023), who found digital skills highly required for effective instructional delivery, and Enang (2023), who emphasized the importance of digital entrepreneurial competencies for preparing Business Education students for the digital era.

Conclusion

The study concluded that digital competence is significantly associated with techno-preneurship instructional practices among Business Education lecturers in tertiary institutions. Digital content-creation competence had a significant strong positive relationship with techno-preneurship instructional practices, while digital communication competence had a significant moderate positive relationship. The findings demonstrate the relevance of lecturers' digital competencies to technology-oriented entrepreneurship instruction in contemporary Business Education.

Recommendations

Based on the findings:

1. Tertiary institutions should provide regular practical training that strengthens Business Education lecturers' competence in creating and adapting digital instructional content for techno-preneurship education.
2. Business Education departments should strengthen lecturers' digital communication competence through continuous exposure to collaborative platforms and communication technologies relevant to technology-driven entrepreneurship instruction.

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DIGITAL SKILLS ACQUISITION AND TECHNO-PRENEURIAL INTENTIONS AMONG FINAL-YEAR UNDERGRADUATE BUSINESS EDUCATION STUDENTS IN RIVERS STATE

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Abstract
The increasing digitalization of business activities has made digital competencies essential for graduates seeking to participate in technology-driven entrepreneurship. This study examined the relationship between digital skills acquisition and techno-preneurial intentions among final-year undergraduate Business Education students in Rivers State. Specifically, the study determined the relationships between ICT competence, digital literacy and techno-preneurial intentions. Two research questions and two null hypotheses guided the study. A correlational research design was adopted. The population comprised 750 final-year undergraduate Business Education students from four tertiary institutions in Rivers State. A sample of 254 students was determined using the Krejcie and Morgan sampling table and proportionately selected from the institutions. Of the 254 copies of the questionnaire administered, 210 were properly completed and returned, representing an 82.7% response rate. Data were collected using the Digital Skills Acquisition and Techno-preneurial Intention Questionnaire (DSATIQ). The instrument was validated by three experts, while Cronbach alpha yielded an overall reliability coefficient of .82. Pearson Product Moment Correlation was used to answer the research questions and test the hypotheses at .05 level of significance. Findings revealed significant positive relationships between ICT competence and techno-preneurial intentions (r = .63, p < .001), and between digital literacy and techno-preneurial intentions (r = .59, p = .001). The study concluded that digital skills acquisition is positively associated with students' readiness for technology-driven entrepreneurship. It was recommended that Business Education programmes intensify practical ICT and digital literacy activities.
Keywords: Business Education, digital literacy, digital skills acquisition, ICT competence, techno-preneurial intention

Introduction
The rapid advancement of digital technologies has transformed the nature of business, employment and entrepreneurship. Contemporary businesses increasingly depend on digital platforms, mobile technologies, online communication, electronic transactions and data-driven processes to create and deliver value. Consequently, graduates entering the labour market require competencies that extend beyond conventional business knowledge to include the ability to use digital technologies effectively. Van Laar et al. (2020) identified technical, information, communication, collaboration, critical-thinking, creativity and problem-solving skills as important dimensions of contemporary digital competence. Similarly, Vuorikari et al. (2022) explained that digital competence encompasses the confident, critical and responsible use of digital technologies for learning, work and participation in society.

Digital skills acquisition refers to the development of knowledge, abilities and attitudes required to use digital technologies to perform tasks, communicate, solve problems and create value. In Business Education, digital skills are particularly important because the programme is expected to equip students with practical competencies for employment, entrepreneurship and self-reliance. As businesses become increasingly technology-driven, Business Education graduates require relevant digital

capabilities to identify opportunities and participate productively in the digital economy (Nwaokokorom, 2025).

Within Nigerian Business Education, the importance of digital entrepreneurial competencies has received increasing attention. Enang (2023) emphasized that Business Education students require digital entrepreneurial skills and competencies to remain relevant and competitive in the digital era. The author further stressed the need to integrate such competencies into Business Education programmes. This position suggests that developing digital competencies should form an important component of contemporary entrepreneurial preparation in Business Education.

Digital skills acquisition in the present study is considered from two dimensions: ICT competence and digital literacy. ICT competence refers to the ability to use information and communication technologies such as computers, software applications, internet facilities and digital communication tools effectively. Such competence enables students to prepare business documents, search for market information, communicate business ideas, conduct online transactions and use digital platforms to support business operations. Van Laar et al. (2020) observed that ICT proficiency has become increasingly important in technology-mediated workplaces.

ICT competence is equally important to entrepreneurial activities. Digital technologies have changed entrepreneurial processes by enabling entrepreneurs to identify opportunities, develop products and services, communicate with customers and organize business activities in new ways. Nambisan (2017) explained that digital technologies have transformed entrepreneurial processes and outcomes, creating new possibilities for digital entrepreneurship. Therefore, students who possess relevant ICT competencies may be better positioned to recognize and pursue technology-enabled entrepreneurial opportunities.

The second dimension, digital literacy, extends beyond the ability to operate computers and digital devices. It involves the ability to locate, evaluate, create and communicate information through digital technologies. Ng (2012) explained digital literacy in terms of technical, cognitive and socio-emotional dimensions. More recently, Vuorikari et al. (2022) identified information and data literacy, communication and collaboration, digital content creation, safety and problem-solving as major areas of digital competence. For prospective entrepreneurs, these abilities are relevant to searching for business information, evaluating online opportunities, creating promotional content, communicating with customers and adapting to emerging technologies.

Evidence from Business Education in Rivers State underscores the importance of digital resources and competencies. Ogwunte et al. (2023) found that digital resources were not adequately available for teaching entrepreneurship in Business Education in universities in Rivers State and concluded that the level of availability and utilization was inadequate for equipping students for entrepreneurial success after graduation. Similarly, Ordu and Onyemekara (2023) reported a positive relationship between institution-community partnership for digital resource development and self-employability skills development among Business Education students in tertiary institutions in Rivers State. These studies demonstrate the relevance of digital resources and skills to entrepreneurial preparation within the study environment.

Techno-preneurial intention represents an individual's willingness or readiness to pursue technology-driven entrepreneurial activities. It reflects an intention to establish or participate in ventures in which digital technologies contribute substantially to value creation, business processes, products or services. Entrepreneurial intention is important because intention provides a useful framework for understanding an individual's readiness to undertake entrepreneurial behaviour (Liñán & Fayolle, 2015). In the context of the present study, techno-preneurial intention therefore concerns students' readiness to identify and pursue entrepreneurial opportunities through digital technologies.

The relationship between digital skills and techno-preneurial intention is particularly relevant to final-year Business Education students. These students are approaching the transition from tertiary education to employment or self-employment and have received substantial exposure to Business Education, entrepreneurship and ICT-related courses. Their ability to translate acquired digital competencies into intentions to pursue technology-driven entrepreneurship is therefore important to the self-reliance objectives of Business Education.

Although existing literature recognizes the importance of digital competencies, available Rivers State studies have concentrated substantially on digital resource availability, utilization and self-employability skills. Less attention has been given specifically to whether ICT competence and digital literacy are related to techno-preneurial intentions among final-year undergraduate Business Education students across tertiary institutions in Rivers State. This study addresses this gap by determining the relationships between ICT competence, digital literacy and techno-preneurial intentions among final-year undergraduate Business Education students in Rivers State.

Statement of the Problem

Business Education is expected to prepare students for employment, entrepreneurship and self-reliance. However, the increasing digitalization of business means that graduates require ICT competence and digital literacy to identify and exploit technology-driven entrepreneurial opportunities. Enang (2023) emphasized that inadequate digital entrepreneurial competencies can reduce the effectiveness and competitiveness of Business Education students in contemporary business environments.

The situation is particularly concerning in Rivers State. Ogwunte et al. (2023) found that digital resources were not adequately available and utilized for entrepreneurship skills acquisition in Business Education in universities in the State. Although Ordu and Onyemekara (2023) established a positive relationship between digital resource development and self-employability skills, it remains unclear whether students' acquired ICT competence and digital literacy are associated specifically with their intentions to pursue technology-driven entrepreneurship. Therefore, the problem of this study is to determine the relationships between ICT competence, digital literacy and techno-preneurial intentions among final-year undergraduate Business Education students in Rivers State.

Purpose of the Study

The study examined the relationship between digital skills acquisition and techno-preneurial intentions among final-year undergraduate Business Education students in Rivers State. Specifically, the study sought to:

1. determine the relationship between ICT competence and techno-preneurial intentions among final-year undergraduate Business Education students; and
2. determine the relationship between digital literacy and techno-preneurial intentions among final-year undergraduate Business Education students.

Research Questions

The following research questions guided the study:

1. What relationship exists between ICT competence and techno-preneurial intentions among final-year undergraduate Business Education students?
2. What relationship exists between digital literacy and techno-preneurial intentions among final-year undergraduate Business Education students?

Hypotheses

The following null hypotheses were tested at .05 level of significance:

H_{01}: There is no significant relationship between ICT competence and techno-preneurial intentions among final-year undergraduate Business Education students.

H_{02}: There is no significant relationship between digital literacy and techno-preneurial intentions among final-year undergraduate Business Education students.

Methodology

The study adopted a correlational research design. The design was appropriate because the study determined the relationships among ICT competence, digital literacy and techno-preneurial intentions without manipulating the variables. The study was conducted in Rivers State, Nigeria. The population comprised 750 final-year undergraduate Business Education students from four tertiary institutions: University of Port Harcourt (34), Rivers State University (106), Federal College of Education (Technical), Omoku (170), and Ignatius Ajuru University of Education (440). Using the Krejcie and Morgan (1970) sample-size table, a sample of 254 students was selected. Proportionate stratified random sampling was adopted to ensure representation of the institutions, giving 12 students from UNIPORT, 36 from RSU, 58 from FCE(T), Omoku, and 148 from IAUE. Data were collected using a structured questionnaire titled Digital Skills Acquisition and Techno-preneurial Intention Questionnaire (DSATIQ). The instrument was structured on a four-point scale of Strongly Agree (4), Agree (3), Disagree (2) and Strongly Disagree (1). It was subjected to face and content validation by three experts: two in Business Education and one in Measurement and Evaluation. A trial test was conducted among Business Education students outside the study population. Cronbach alpha yielded coefficients of .82 for ICT competence, .79 for digital literacy and .85 for techno-preneurial intention, with an overall coefficient of .82. Of the 254 copies administered, 210 were properly completed and returned, representing an 82.7% response rate, and were used for analysis. Pearson Product Moment Correlation (PPMC) was used to answer the research questions and test the hypotheses. The null hypotheses were tested at .05 level of significance.

Results

Research Question 1

What relationship exists between ICT competence and techno-preneurial intentions among final-year undergraduate Business Education students?

Table 1: Pearson Correlation between ICT Competence and Techno-preneurial Intentions

Variables	N	Pearson *r*	Sig. (2-tailed)	Relationship
Digital literacy and techno-preneurial intentions	210	.63**	< .001	Strong Positive

****. Correlation is significant at the 0.01 level (2-tailed).**

Table 1 shows a Pearson correlation coefficient of .63 between ICT competence and techno-preneurial intentions. The coefficient indicates a strong positive relationship, implying that higher ICT competence is associated with stronger techno-preneurial intentions among final-year undergraduate Business Education students.

Research Question 2

What relationship exists between digital literacy and techno-preneurial intentions among final-year undergraduate Business Education students?

Table 2: Pearson Correlation between Digital Literacy and Techno-preneurial Intentions

Variables	N	Pearson *r*	Sig. (2-tailed)	Relationship
Digital literacy and techno-preneurial intentions	210	.59**	< .001	Moderate Positive

****. Correlation is significant at the 0.01 level (2-tailed).**

Table 2 reveals a Pearson correlation coefficient of .59 between digital literacy and techno-preneurial intentions. This represents a moderate positive relationship, indicating that higher digital literacy is associated with stronger techno-preneurial intentions among the students.

Test of Hypotheses

H_{01}: There is no significant relationship between ICT competence and techno-preneurial intentions among final-year undergraduate Business Education students.

Table 3: Pearson Correlation between ICT Competence and Techno-preneurial Intentions

Variables	N	*Pearson r*	Sign. (2-tailed)	Alpha	Decision
ICT competence and techno-preneurial intentions	210	.63	< .001	.05	Reject H_{01}

Table 3 shows a Pearson correlation coefficient of .63 with a probability value of $p < .001$ between ICT competence and techno-preneurial intentions. Since the probability value is less than the .05 level of significance, the null hypothesis was rejected. Therefore, there is a significant strong positive relationship between ICT competence and techno-preneurial intentions among final-year undergraduate Business Education students in Rivers State.

H_{02}: There is no significant relationship between digital literacy and techno-preneurial intentions among final-year undergraduate Business Education students.

Table 4: Pearson Correlation between Digital Literacy and Techno-preneurial Intentions

Variables	N	*Pearson r*	Sign. (2-tailed)	Alpha	Decision
Digital literacy and techno-preneurial intentions	210	.59	< .001	.05	Reject H_{02}

Table 4 shows a Pearson correlation coefficient of .59 with a probability value of $p = .001$ between digital literacy and techno-preneurial intentions. Since the probability value is less than the .05 level of significance, the null hypothesis was rejected. Therefore, there is a significant moderate positive relationship between digital literacy and techno-preneurial intentions among final-year undergraduate Business Education students in Rivers State.

Discussion of Findings

The first finding revealed a significant strong positive relationship between ICT competence and techno-preneurial intentions among final-year undergraduate Business Education students. This indicates that students with stronger competencies in the use of computers, software applications, internet facilities and other ICT tools tend to demonstrate stronger intentions to pursue technology-driven entrepreneurial activities. The finding supports Nambisan (2017), who established that digital technologies have transformed entrepreneurial processes and created new opportunities for entrepreneurial activities. It also corroborates Enang (2023), who emphasized the importance of digital entrepreneurial skills and competencies in preparing Business Education students to remain relevant in the digital era. The finding further supports Ordu and Onyemekara (2023), who reported a positive relationship between digital resource development and self-employability skills among Business Education students in Rivers State.

The second finding showed a significant moderate positive relationship between digital literacy and techno-preneurial intentions. This suggests that students capable of accessing, evaluating, creating and communicating digital information tend to demonstrate greater readiness to engage in technology-driven entrepreneurship. The finding is consistent with van Laar et al. (2020), who identified information, communication, creativity and problem-solving as important digital competencies for contemporary work environments. It also supports Vuorikari et al. (2022), who emphasized information and data literacy, digital content creation and problem-solving as important areas of digital competence. Thus, strengthening digital literacy may enhance students' preparedness to identify and exploit digital entrepreneurial opportunities.

Conclusion

The study concluded that digital skills acquisition is positively associated with techno-preneurial intentions among final-year undergraduate Business Education students in Rivers State. ICT competence had a significant strong positive relationship with techno-preneurial intentions, while digital literacy had a significant moderate positive relationship. Consequently, strengthening students' practical digital competencies is important for preparing Business Education graduates to identify and pursue technology-driven entrepreneurial opportunities in the contemporary digital economy.

Recommendations

Based on the findings, the following recommendations were made:

1. Business Education lecturers should intensify practical ICT-based learning activities involving relevant software, internet technologies and digital business platforms to strengthen students' readiness for technology-driven entrepreneurship.
2. Business Education departments should integrate practical digital literacy activities involving information evaluation, digital content creation, online communication and digital business applications into entrepreneurship courses to strengthen students' techno-preneurial intentions.

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ROLE OF TRADE FINANCE, FINANCIAL LITERACY AND SMES PERFORMANCE IN EMERGING ECONOMIES

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Abstract

The role of trade finance and financial literacy in enhancing SMEs performance in emerging economies is highly significant as these firms constitute the backbone of economic growth, employment creation, and poverty reduction. The main objective of this study is to examine the role of trade finance, financial literacy and SMEs performance in emerging economy, Nigeria. This study adopted cross-sectional research design and quantitative research method. The population of this study was 170,098 MSMEs and a sample size of 399 was obtained through Taro Yamane formula. A questionnaire was adapted and administered to 399 respondents of which 388 respondents filled the questionnaire and the response rate was (97%) which were used for data analysis. Purpose sampling technique was applied and the data collected were analyzed using Partial Least Square Structural Equation Modeling (PLS-SEM) with the aid of SmartPLS application software package v. 4.1.1.4. Trade finance had a significant effect on SMEs performance, trade finance had a significant effect on financial literacy, financial literacy had a significant effect on SMEs performance, financial literacy had a significant mediating effect on trade finance and SMEs performance. Policymakers and financial institutions should simplify requirements and reduce collateral constraints to enable more SMEs to access trade finance. Trade finance support should be complemented with structured financial literacy training to maximize the benefits of financing on performance. Governments, banks, and SME associations should collaborate to provide continuous workshops on budgeting, investment decisions, and risk management. Regulators should create incentives (tax rebates or lower interest rates) for SMEs that participate in financial literacy programs tied to trade finance.

Keywords: ***Trade Finance, Financial Literacy, SMEs Performance***

Introduction

Small and Medium Scale Enterprises (SMEs) play significant role in the economic growth in developed countries, developing and emerging economies. Governments all over the globe are paying deliberate and great attention to SMEs with special emphasis on their sustainability. This is because efforts expended on the establishment and development of large scale industries tends to contradict expectations and predictions as they have not succeeded in improving the socio-economic wellbeing of the people. Consequently, SMEs are now viewed and treated as agents of equitable economic development (Memba *et al.,* 2020). It is based on the contributions of SMEs to the economic development of Nigeria, that various political and military administrations have promoted several initiatives aimed at stimulating the growth and development of the SME sector in the country.

Improving the lives of people in emerging markets is the primary goal within business, and financing is the tool to reach this objective. Without financing, businesses cannot innovate, expand, or spread ideas and products. It is important to keep these SMEs alive because they are change-makers in the global

economy. Trade finance exists when one business extends some form of credit to a business partner during a trade which is determined by the payment schedule. This approach may provide a sustainable solution to a company which lies within a country with economic distress because trade will continue internationally when importers and exporters develop new payment terms. Trade finance plays a crucial role in supporting the growth SMEs by providing the necessary funding and financial tools to manage and expand trade activities. In Nigeria, where SMEs are pivotal to economic development, trade finance has significant implications for their growth and sustainability (Nwokoro & Chukwuma, 2023).

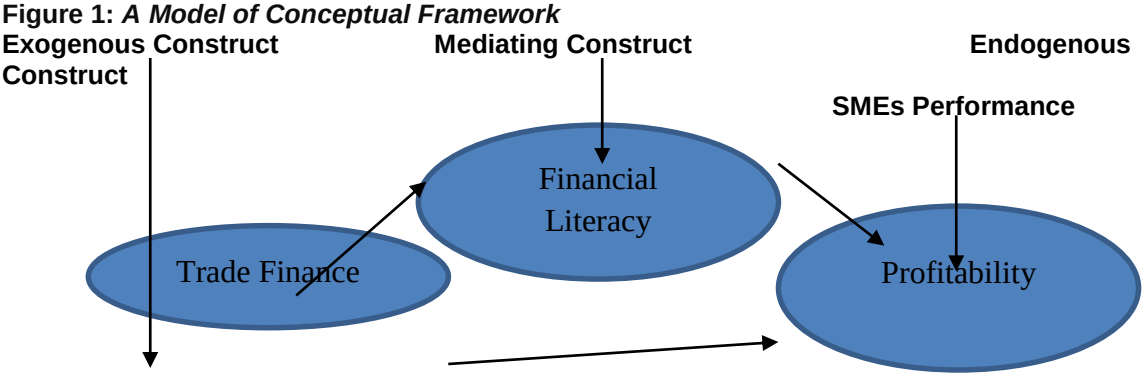
A growing body of evidence highlights financial literacy as a crucial factor influencing the ability of SMEs to effectively access and utilizes trade finance. Inadequate financial knowledge leads to poor creditworthiness, weak risk management, and limited capacity to negotiate favorable financing terms, thereby undermining SME performance (Okoye *et al.,* 2022). Recent studies show that SMEs with higher financial literacy exhibit up to 30% better financial management practices, positively mediating the relationship between trade finance and firm growth (Abubakar & Bala, 2023). Despite these insights, the interaction between trade finance, financial literacy, and SME performance in emerging economies remains underexplored. This gap justifies the need for empirical research to understand the intervening role of financial literacy in enhancing the performance impact of trade finance among SMEs.

Small and Medium-sized Enterprises (SMEs) are critical drivers of economic growth, contributing over 40% of GDP and accounting for more than 60% of employment in emerging economies (World Bank, 2020). However, despite their importance, SMEs continues to face significant financing gaps estimated at over USD 5.2 trillion annually, limiting their ability to compete globally and enhance performance (International Finance Corporation [IFC], 2021). Trade finance through instruments such as letters of credit, guarantees, and export credit plays a vital role in bridging this financing gap by supporting cross-border transactions and liquidity management. Yet, SMEs in emerging markets often lack adequate access to trade finance compared to larger firms, with less than 20% of SMEs successfully obtaining such facilities (Organisation for Economic Co-operation and Development [OECD], 2022).

Literature Review

Concept Framework

Figure 1: ***A Model of Conceptual Framework***



Source: Researcher's Conceptualization (2025).

SMEs Performance

Nenfort and Johnpaul (2022) defined SMEs performance is the ability to create acceptable outcomes and actions. Thus, it has to do with how efficient and effective a firm is in carrying out its activities. The performance of SMEs determines the firm's outcome such as profits, sustainability, growth, etc. When SMEs perform at its best, it has a lot of advantage to its stakeholders, that is, owners, customers, suppliers, society and even the government. SMEs performance is measured by profitability**,** which reflects a firm's ability to generate returns relative to its costs and investments. Profitability serves as a direct indicator of financial health and sustainability, as higher profit margins enable SMEs to reinvest in their operations, expand market presence, and enhance competitiveness. According to Aladejebi (2020), profitability is a vital measure of SME performance because it demonstrates both operational efficiency and long-term viability, particularly in resource-constrained environments common in emerging economies. SMEs performance refers to the ability of small and medium-sized enterprises

(SMEs) to achieve their business objectives through indicators such as profitability, growth, market share, innovation, customer satisfaction, and survival rate.

Financial Literacy

Financial literacy consists of various concepts, including financial product knowledge and awareness, financial institutions' understanding and financial skills, and financial planning and management abilities (Seraj *et al.,* 2022). Similarly, individuals with financial literacy can manage their money more effectively, make sound investment decisions, shift their behavior toward saving, and take advantage of newly available financial products and services (Alshebami & Aldhyani, 2022). Financial literacy is the knowledge, skills, and attitudes that enable individuals and businesses to make informed and effective decisions about the use and management of financial resources.

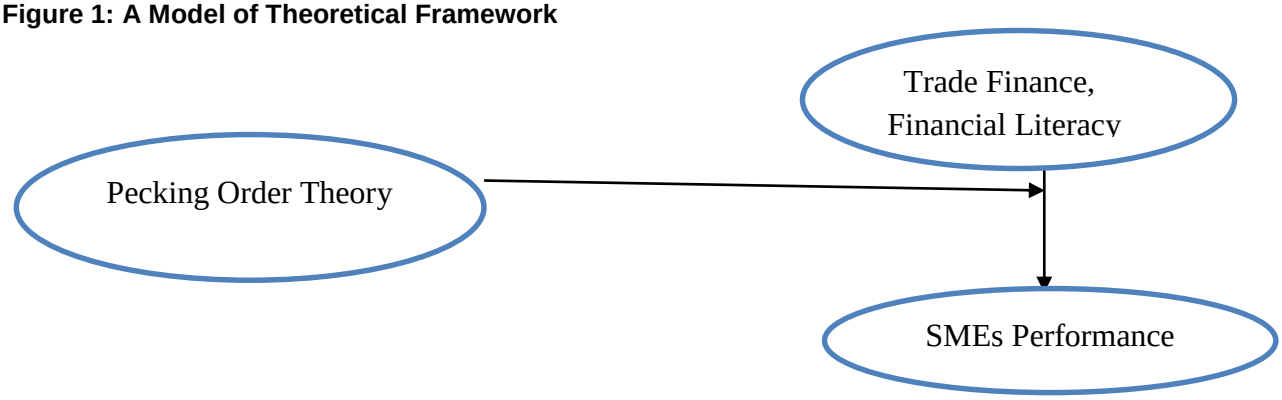
Trade Finance

Miller and Packer (2021) described trade finance as the financial services and products that help businesses manage the complexities of international trade. These include short term and long-term financing options, trade credit insurance, and other tools designed to mitigate risks and ensure the flow of goods and services between international buyers and sellers. The World Bank (2020) defined trade finance as a suite of financial products that facilitate trade transactions by bridging the gap between importers and exporters. This includes various types of credit and insurance instruments that provide the necessary funding and risk management tools to ensure the smooth flow of goods and services across borders. Trade finance is the provision of financial instruments, credit facilities, and banking services that enable businesses to engage in domestic and international trade by mitigating risks, ensuring payment security, and improving liquidity.

Theoretical Framework

This study is underpinned by and Pecking Order Theory.

Figure 1: A Model of Theoretical Framework



Source: Researcher's Theoretical Framework (2025)

This study is anchored on Pecking Order Theory. Pecking Order Theory, proposed by Stewart Myers and Nicolas Majluf in 1984, addresses corporate financing decisions and deals with small business operations. It sheds light on the benefits or incentives that influences small and medium scale enterprises (SMEs) capital structure decisions. This theory assumes that firms prefer the use of their internal sources of capital first before resorting to external sources (such as deposit money banks) in the event that the internal sources are inadequate. In other words, Pecking Order Theory states that firms prefer to finance their operations using internal funds first, followed by debt, and resort to issuing equity only as a last option. The theory emphasizes that firms prioritize their sources of financing based on the costs and risks associated with each. Trade finance provides SMEs with the financial resources to scale their operations. By securing funding for larger orders and investing in. The theory assumes that there is asymmetric information between firm managers and investors. Managers are assumed to have better information about the financial health of the firm and future prospects than external investors. This information imbalance affects the firm's financing decisions.

The Pecking Order Theory heavily relies on the notion of asymmetric information. However, this assumption might not always hold true, as firms may have mechanisms in place to reduce information asymmetry, such as transparent financial reporting and investor relations. The theory undervalues the potential benefits of equity financing, such as reducing financial risk and providing capital for growth without incurring debt obligations. Equity financing can be beneficial in certain situations, but the theory tends to focus more on its costs. In the context of SMEs and trade finance, the Pecking Order Theory provides theoretical explanation of how SMEs manage their financing needs and the impact of initiatives

to support SMEs in accessing trade finance. This includes improving the efficiency of trade finance institutions and increasing the capacity of SMEs to utilize available financial resources effectively.

Empirical Review

Trade Finance and SMEs Performance

Adesunkanmi and Rita (2024) examined trade finance and the growth of Small and Medium Enterprises (SMEs) in Nigeria. The study adopted a qualitative methodology and secondary data sources. The findings of the study showed that trade finance instruments enable SMEs to access working capital and manage cash flow more effectively which helps them to enter new markets, expand their operations, and increase their production capacity. Also, trade finance reduces barriers to international trade for SMEs by providing them with the capital required to participate in profitable cross-border transactions, by facilitating exports and imports, which are crucial for SMEs seeking to diversify their markets and increase their revenue streams. Lastly, the availability of trade finance improves SMEs' relationships with suppliers by enabling them to secure better credit terms and negotiate favorable conditions for improving their performance. Based on the findings, the study concluded that trade finance plays a vital role in promoting and sustaining the growth of small and medium enterprises (SMEs) in Nigeria. It was recommended among others that policymakers and financial institutions should continue to support and develop trade finance mechanisms to empower SMEs, promote economic development, and strengthen Nigeria's position in the global market.

Trade Finance and Financial Literacy

Witts (2024) examined trade financing at CRDB Bank, focusing on costs, awareness, and efficiency among Small and Midsize Enterprises (SME) customers. It evaluates the bank's provision of trade finance products like letters of credit, guarantees, insurance, lines of credit, factoring, and supplier credit, both locally and internationally. Using a case study approach and descriptive research design, the study sampled 130 individuals, with 108 complete responses. Quantitative methods, including questionnaires and data analysis via Excel, chi-square tests, and SPSS for ANOVA, were employed. The researcher sought to understand the challenges customers face in accessing Tanzania's trade finance products and services. The researcher evaluated the relationship between trade finance utilization and SME's performance indicators, such as profitability, export capacity, and market access. According to the study, improving trade finance instruments such as letters of credit, trade credit, and export financing can significantly enable SMEs to engage in international trade. SMEs, that used trade finance, also reported reduced operational and overhead costs, more accessible reach into global markets, and improved cash flow and growth rates. Interest rates, collateral requirements, and little financial literacy are reasons most SMEs lack access to finance. Recommendations are for CRDB Bank to promote training sessions to boost SMEs' understanding of trade finance products and their advantages and introduce more flexible collateral or risk-sharing arrangements. As an important enabler, CRDB Bank contributes toward the growing individual and international competency of Tanzanian SMEs through trade finance.

Financial Literacy and SMEs Performance

Frimpong *et al.* (2022) conducted a study on financial literacy, access to digital finance and performance of SMEs: Evidence from Central region of Ghana. The study employed the quantitative research approach. Using the purposive sampling technique, a total of 400 responses were gathered from SMEs in Cape Coast, Mankessim, Assin Fosu, Agona Swedru, and Kasoa. The study used self-administered questionnaires to collect data. Statistical Package for Social Science was used (SPSS) was employed to evaluate descriptive statistics. Results show that SMEs in the study areas use Mobile Money more than any other digital platform. Partial Least Square-Structural Equation Modeling (PLS-SEM) was used. It was found that financial literacy positively affects access to digital finance. Also, access to digital finance improved performance. Access to digital finance mediates the relationship between financial literacy and SME performance. Access to digital finance is as crucial as financial literacy for increasing performance. Therefore, using digital platforms to trade would boost business performance. Digital trading plat form providers should improve advertising and make their systems user-friendly.

Role of Financial Literacy between Trade Finance and SMEs Performance

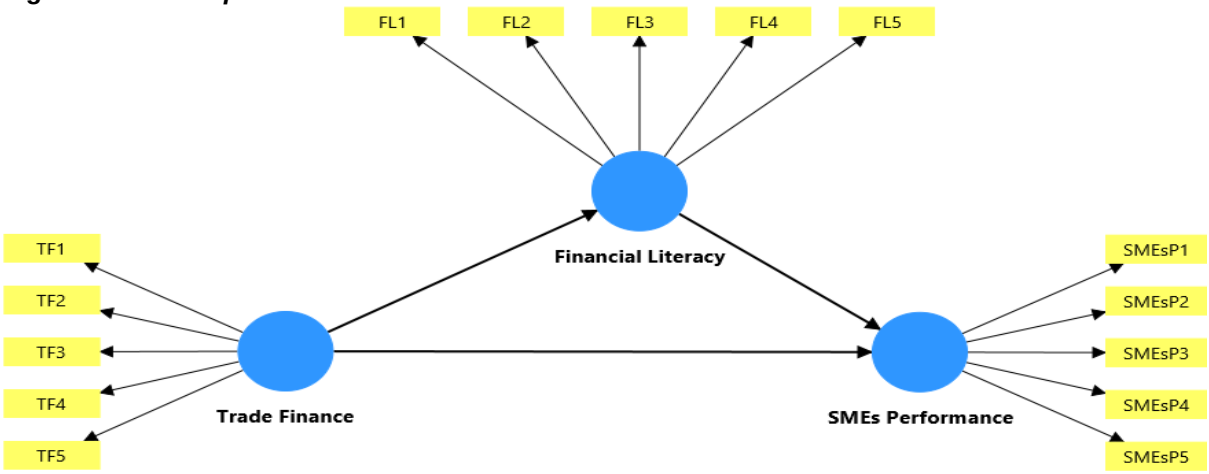
Lontchi *et al.* (2023) assessed the mediating effect of financial literacy on fintech and SMEs' performance during COVID-19 recovery in Cameroon. The study collects 381 survey data from SMEs in Yaoundé and Douala, the country's business hub, to determine how these financial technology innovations affect SMEs' business performance. Similarly, the PLS-SEM model was used to test the proposed hypotheses. The study results show that the relationship between fintech and financial literacy was positive and significant. The findings also reveal that fintech had a positive and significant effect on SMEs performance. In addition, the results further indicate that financial literacy positively and significantly mediates the relationship between fintech services and the performance of SMEs.

Therefore, the study concluded that financial literacy is an essential mechanism through which fintech services influence SMEs' operational and financial performance in Cameroon. The study provided a better understanding of how SMEs can improve their performance by leveraging fintech solutions through financial literacy.

Methodology

A cross-sectional research design was adopted. This study employed quantitative. The units of analysis are managers of the SMEs at the firm level. The population of this study was made up of 170,098 SMEs in Nigeria (NBS report, 2022). The sampling technique that was used in this study is purposive sampling technique. The sample for this study 399 which was determined using Taro Yamane (1987) formula, $n = N/1+Ne^2$, Where: n = The Sample size N = the population of the study e = level of significance (0.05)
n= 170,098/ 1+ 170,098 (0.05 x 0.05)
n=170,098 / 426.245
n= 399
Primary data was obtained directly from the respondents. The structured questionnaires are designed to address the purpose of this study. The variables for this study were measured using a five-point Likert-Scale viz: 1-Strongly Disagree (SD), 2-Disagree (D), 3-Neutral (N), 4-Agree (A), 5-Strongly Agree (SA). A five-point Likert-Scale provides a straightforward way for respondents to express their opinions, attitudes, or behaviours which can be easily analysed using Partial Least Square Structural Equation Model (PLS-SEM) statistical methods. Partial Least Square Structural Equation Model was used to analyse direct and indirect relationship. Partial Least Square Structural Equation Model is a non-parametric method that does not require that the data meet certain distributional assumptions and PLS-SEM is comprise of measurement and structural model. Partial Least Square Structural Equation Modeling (PLS-SEM) is made up of measurement model or outer model which show the relationship between constructs and their indicators such as construct reliability and validity such as composite reliability, convergent validity, discriminant validity using Fornell and Lacker Criterion and structural model described the relationship between latent variables in order to predict the expected outcome for hypothesis testing includes path coefficient using probability (p-value), coefficient of determination (R^2), Variance Inflation Factor (VIF), predictive relevance (Q^2) and model fit. This study makes used of SmartPLS application software package v. 4.1.1.2.

Figure 2: *Model Specification*



Source: *SmartPLS Output Version (v) 4.1.1.4*

A model specification in Figure 2 showing the direct relationship between the study variables. Where: TF = Trade Finance, FL = Financial Literacy and SMEsP = Small and Medium Scale Enterprise Performance. This study tested the research hypotheses by rejecting the null hypothesis (HO) when p-value < 0.05 significance level and failing to reject the null hypotheses (HO) when p-value > 0.05 significance level.

Data Analysis and Results

Table 1: Internal Consistency and Convergent Validity Report

Latent Constructs	Indicators	Factor Loadings	Composite reliability (rho_c)	Average variance extracted (AVE)
Financial Literacy	FL2	0.723	0.807	0.584
	FL3	0.821		
	FL5	0.745		
SMEs Performance	SMEsP1	0.725	0.861	0.608
	SMEsP2	0.787		
	SMEsP3	0.795		
	SMEsP5	0.810		
Trade Finance	TF1	0.877	0.898	0.688
	TF2	0.877		
	TF4	0.761		
	TF5	0.796		

Source: *SmartPLS v. 4.1.1.4 Output (2025)* **Key: FL–Financial Literacy; SMEsP-Small and Medium Enterprise Performance, TF- Trade Finance**

Criteria: FL, FL4, SMEsP4 and TF3 were deleted because they failed on factor loadings less than 0.708 (Hair *et al.,* 2020). The result of this study in Table 1 showed that Composite reliability (CR) was > 0.7 and AVE was > 0.5. According to Hair *et al.* (2020), the CR values should be at least 0.7, AVE should be greater than 0.5.

Table 2: Discriminant Validity using Fornell-Larcker criterion

Constructs	1	2	3
1. Financial Literacy	**0.764**		
2. SMEs Performance	0.552	**0.78**	
3. Trade Finance	0.548	0.455	**0.829**

Source: *SmartPLS v. 4.1.1.4 Output (2025)*

Discriminant validity was established among constructs at a point where the squared AVE in the diagonal in Table 2 is greater is higher than the correlation with other constructs.

Table 3: Coefficient of Determination (R^2)

Constructs	R^2	R-square adjusted
Financial Literacy	0.30	0.298
SMEs Performance	0.338	0.335

Source: *SmartPLS v. 4.1.1.4 Output (2025)*

The results in Table 3 revealed that coefficient of determination (R^2) values of 30.0% and 33.8% variance in financial literacy and SMEs performance respectively is explained by trade finance.

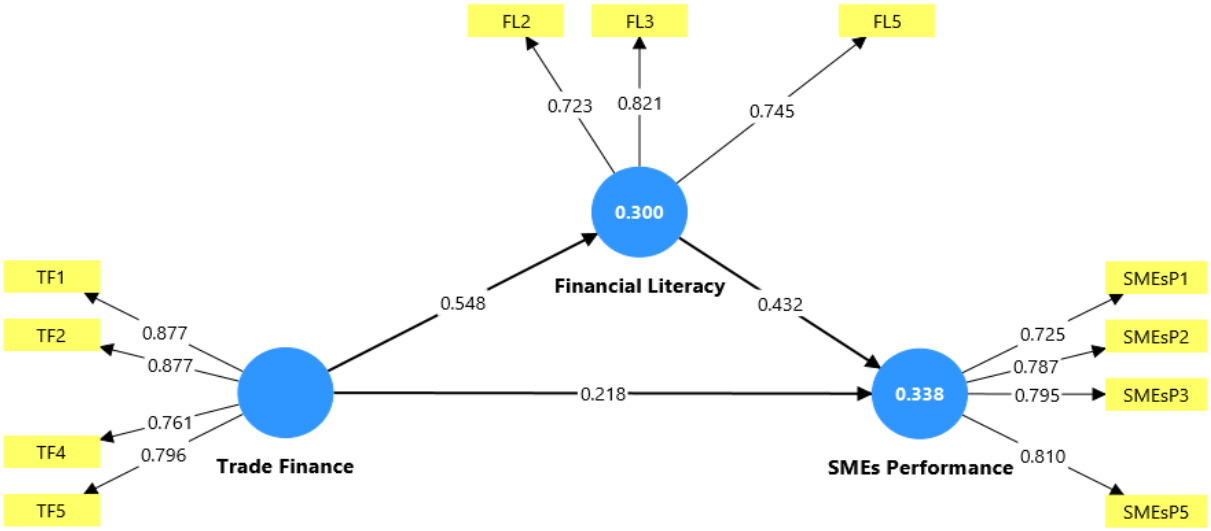
Table 4: Collinearity Statistics- Variance Inflation Factor (VIF)

Constructs	Variance Inflation Factor (VIF)
Financial Literacy	1.429
Trade Finance	1.429

Source: *SmartPLS v. 4.1.1.4 Output (2025)*

There is no multicollinearity in the data analysis of statistics as VIF scores in Table 4 were well below 3.3 (Statistics = 1.429 and 1.429) for financial literacy and SMEs performance respectively.

Figure 3: *Structural Model Path Analysis*



Source: *SmartPLS v. 4.1.1.4 Output (2025)*

Factor loading show how well an item represents the underlying construct. According to Hair *et al.* (2020) indicators loading must be at least 0.708. Figure 3 showed the retained indicators of three constructs of trade finance, financial literacy and SMEs performance.

Table 5: Assessing Path Coefficient and Hypotheses Testing for Direct Relationship

Research Hypotheses	Path Relationship	B	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Decision
HO1	Trade Finance -> SMEs Performance	0.218	0.218	0.06	3.655	0.000	Reject the null Hyp.
HO2	Trade Finance -> Financial Literacy	0.548	0.55	0.04	13.787	0.000	Reject the null Hyp.
HO3	Financial Literacy -> SMEs Performance	0.432	0.436	0.052	8.25	0.000	Reject the null Hyp.

Source: *SmartPLS v. 4.1.1.4 Output (2025)*

Discussion of Findings

A bootstrapping command was carried out and the result displayed the path coefficient and the p-value in Table 5 based on the direct relationships on two-tailed tests at 95% level of significance as postulated in the hypotheses. The results showed that there is a positive and significant relationship between trade finance and SMEs performance because the p-value of 0.000 was less than threshold of 0.05 and had the least contribution with Beta value of 0.218. This study is consistent with the study conducted by Adesunkanmi and Rita (2024). Trade finance plays a vital role in promoting and sustaining the growth of small and medium enterprises (SMEs) in Nigeria.

Trade finance revealed a positive and significant effect on financial literacy because the p-value of 0.000 less than the threshold of 0.05 and had the highest contrition with Beta value of 0.548. This study is in tandem with the study conducted by Witts (2024). Findings revealed that improving trade finance instruments such as letters of credit, trade credit, and export financing can significantly enable SMEs to engage in international trade.

Financial literacy revealed a positive and significant effect on SMEs performance because the p-value of 0.000 less than the threshold of 0.05 and had moderate contribution with Beta value of 0.432. This study agreed with the study conducted by Frimpong *et al.* (2022). The found that financial literacy positively affects access to digital finance. Also, access to digital finance improved performance.

Table 6: Assessing Path Coefficient and Hypotheses Testing for Specific Indirect Effect

Research Hypotheses	Path Relationship	B	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Decision
HO4	Trade Finance -> Financial Literacy -> SMEs Performance	0.237	0.24	0.036	6.647	0.000	Reject the null Hyp.

Source: *SmartPLS v. 4.1.1.4 Output (2025)*

The results in Table 6 showed that there is a positive and significant relationship between autonomy and performance of poultry farmers because the p-value of 0.000 was found to be less than threshold of 0.05. This study is consistent with the study conducted by Lontchi *et al.* (2023). The results further indicate that financial literacy positively and significantly mediates the relationship between fintech services and the performance of SMEs.

Table 7: Predictive Relevance (Q^2)

Constructs	Q^2predict	RMSE	MAE
Financial Literacy	0.593	0.846	0.673
SMEs Performance	0.520	0.9	0.706

Source: *SmartPLS v. 4.1.1.4 Output (2025)*

Table 7 revealed that that there is predictive relevance because Q^2 value of 0.593 for financial literacy and 0.520 SMEs performance is > 0.5 respectively. A higher Q^2 indicates better predictive accuracy of the model.

Table 8: Model Fit

Fit Indices	Saturated model	Estimated model
SRMR	0.075	0.075
d_ULS	0.504	0.504
d_G	0.17	0.17
Chi-square	397.52	397.52
NFI	0.77	0.77

Source: *SmartPLS v. 4.1.1.4 Output (2025)*

Table 8 showed the result of the model goodness of fit. This study used the standardized root mean square residuals (SRMR). The choice of this index was based on the fact that the SRMR provides the absolute fit measure where a value of zero indicates a perfect fit. The study result indicates an SRMR value of 0.075 which is less than 0.08,

Conclusion and Recommendations

The study established that trade finance significantly enhances SMEs performance and also improves financial literacy among SMEs operators. Financial literacy itself is a strong determinant of SMEs performance, and importantly, it mediates the relationship between trade finance and performance. This implies that while access to trade finance boosts performance directly, its impact is strengthened when SMEs possess higher levels of financial literacy. Policymakers and financial institutions should simplify requirements and reduce collateral constraints to enable more SMEs to access trade finance. Trade finance support should be complemented with structured financial literacy training to maximize the benefits of financing on performance. Governments, banks, and SME associations should collaborate to provide continuous workshops on budgeting, investment decisions, and risk management. Regulators should create incentives (tax rebates or lower interest rates) for SMEs that participate in financial literacy programs tied to trade finance.

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MAKING BUSINESS EDUCATION RELEVANT IN THE DIGITAL AGE: DEVELOPING DIGITAL AND ENTREPRENEURIAL COMPETENCIES AMONG BUSINESS EDUCATION GRADUATES

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Abstract

The study examined the digital and entrepreneurial competencies required to make Business Education relevant in the digital age. The study adopted a descriptive survey research design. The population comprised 50 respondents, consisting of 30 Business Education students and 20 Business Education lecturers drawn from three tertiary institutions within the geographical area of the study. The entire population was used for the study through a census sampling technique. Two structured questionnaires—Digital and Entrepreneurial Competencies Questionnaire for Students (DECQS) and Digital and Entrepreneurial Competencies Questionnaire for Lecturers (DECQL)—were developed for data collection. The instruments were validated by experts in Business Education and educational measurement and evaluation. Their reliability will be established using Cronbach's alpha. Data collected will be analysed using mean and standard deviation to answer the research questions, while appropriate inferential statistics may be used to test the hypotheses at the 0.05 level of significance. The study is expected to identify the digital and entrepreneurial competencies possessed by Business Education students, the competencies considered important by lecturers, and the areas of deficiency requiring curriculum improvement. The findings will provide useful information for strengthening Business Education through practical digital training, entrepreneurship education, technology-supported instruction, and improved employability preparation.
Keywords:*Digital age, digital competencies, entrepreneurial competencies.*

Introduction

The world of work is changing rapidly because of digital technology. Computers, smartphones, cloud services, artificial intelligence, digital communication, electronic payment systems, e-commerce and social media have become important parts of modern business activities. These changes have also increased the skills required from graduates. Employers and business owners now need graduates who can use digital tools, solve problems, communicate effectively, manage information and identify business opportunities. The World Bank (2022) noted that digital skills can improve young people's employment opportunities and participation in Africa's digital economy. Similarly, the African Development Bank (2022) identified skills development and digital transformation as important for improving the employability and productivity of African youth.

The growth of the digital economy has created new opportunities for employment and entrepreneurship in Africa. Digital technologies enable young people to market products, communicate with customers, provide services and operate businesses beyond their immediate physical environment. However, access to technology alone is not enough. The World Bank (2023) observed that people also need appropriate skills to use digital technologies productively. Tertiary institutions therefore have an important responsibility to prepare students with practical digital competencies that can be applied in real workplace and business situations.

Nigeria is also experiencing rapid digital transformation. The Federal Government has continued to promote digital skills as part of its economic development efforts. The National Information Technology Development Agency (NITDA, 2023), through the National Digital Literacy Framework, identified areas such as device and software operation, information and data literacy, digital content creation, communication and collaboration, digital safety and problem solving as important digital competencies. These competencies are relevant to tertiary education because students need them to participate effectively in modern workplaces and business activities. The Federal Government has also

emphasised skills development, digital innovation and employability among Nigerian youth (State House, 2023, 2024).

Business Education has an important role in responding to these changes. The programme is designed to equip learners with knowledge and skills for office work, business management, entrepreneurship and employment. However, many business activities have become digital. Accounting now involves accounting software and electronic financial records, while marketing increasingly depends on social media, digital advertising and e-commerce platforms. Consequently, Business Education must move beyond traditional knowledge and provide students with practical digital and entrepreneurial competencies relevant to the contemporary workplace.

Recent studies in Nigeria have identified gaps in the digital competencies of Business Education students and graduates. Amesi and Allison (2022) reported that digital skills acquired by university Business Education students were important for employability. Akudolu and Onyeneke (2022) found that Business Education graduates had moderate digital foundation skills but low digital communication and cloud computing skills. Uzoka and Okoli (2022) also identified gaps in digital accounting, digital marketing, and information and data skills required by employers. These findings raise concerns about the preparedness of Business Education graduates for the digital workplace.

More recent studies have continued to show the need for improvement. Okonkwo and Agwazie (2024) found low levels of e-entrepreneurship and cybersecurity skills among Business Education graduates in Anambra State. David et al. (2024) also reported a significant relationship between digitalisation of skills acquisition, the integration of digital learning tools and the employability of Business Education graduates in Lagos State. Edeh and Olupayimo (2023) further examined the delivery of Business Education for skills acquisition in the digital era in Ondo State. These findings suggest that Business Education programmes need to continuously adjust to changes in technology and the workplace.

Entrepreneurial competencies are equally important because the digital economy creates opportunities not only for paid employment but also for self-employment and business creation. Business Education students need to identify business opportunities, develop business ideas, market products, communicate with customers, manage finances and use technology to support business operations. Abdulkarim and Danagogo (2023) found a relationship between entrepreneurial competencies developed by Business Education students and their intention to become self-employed. David and Emmanuel (2025) also identified managerial, information and communication technology, and marketing skills as important entrepreneurial competencies for Business Education students interested in establishing small businesses in Lagos State.

The need for digital and entrepreneurial skills is not limited to Nigeria. The African Development Bank (2024) emphasised the growing importance of digital skills for employment and economic participation across Africa, while UNESCO IIEP (2022) highlighted the need for digital transformation and skills development to prepare young people for changing labour markets. Mordi (2023) also identified digital accounting, e-commerce, e-payment, digital marketing and social media marketing as important competencies required by Business Education graduates for employability.

The issue, therefore, is not whether Business Education remains relevant, but whether its content and delivery are changing fast enough to meet the demands of the digital economy. Business Education students need practical competencies in digital communication, digital marketing, electronic payment, data management, office productivity tools, e-commerce, cybersecurity, entrepreneurship, problem solving and innovation. Developing these competencies can improve their employability and prepare them for self-employment and business creation.

It is against this background that this study examines the digital and entrepreneurial competencies required to make Business Education relevant in the digital age. The study focuses on the competencies possessed by Business Education students, the competencies considered important by lecturers, and areas of deficiency that may require curriculum improvement. The study is based on the view that relevant Business Education should connect classroom learning with the realities of the modern workplace and digital business environment.

Statement of the Problem

The rapid growth of digital technology has changed employment, business and entrepreneurship. Employers now require graduates to possess practical digital skills in addition to academic qualifications. However, a gap remains between the digital competencies required in the economy and those possessed by many young people in Africa. The World Bank (2025) noted that inadequate digital skills and limited access to appropriate learning opportunities may exclude many young Africans from the digital economy.

Nigeria faces a similar challenge. Although the country promotes digital transformation and literacy, relevant skills development remains a concern (NITDA, 2023; State House, 2024). This problem is

important to Business Education because the programme is expected to prepare students for employment and self-employment. Studies have identified gaps in digital communication, cloud computing, digital accounting, digital marketing, information management, e-entrepreneurship and cybersecurity among Business Education students and graduates (Akudolu & Onyeneke, 2022; Uzoka & Okoli, 2022; Okonkwo & Agwazie, 2024).

The problem, therefore, is whether the digital and entrepreneurial competencies developed through Business Education are adequate for current workplace and business demands. This study consequently examines the competencies possessed by students, those considered important by lecturers, and areas requiring curriculum improvement.

Research Questions

1. What is the extent to which Business Education students possess digital competencies required for employment and entrepreneurship in the digital age?
2. What is the extent to which Business Education students possess entrepreneurial competencies required for employment, self-employment, and business creation?
3. What strategies can be adopted by tertiary institutions to improve the development of digital and entrepreneurial competencies among Business Education students?

Purpose of the Study

The main purpose of the study is to examine the digital and entrepreneurial competencies needed to make Business Education relevant in the digital age.

Specifically, the study seeks to:

1. determine the level of digital competencies possessed by Business Education students in tertiary institutions;
2. determine the level of entrepreneurial competencies possessed by Business Education students in tertiary institutions;
3. identify the digital competencies considered important by Business Education lecturers for students' employability and career development;
4. identify the entrepreneurial competencies considered important by Business Education lecturers for self-employment and business development; and
5. identify areas of digital and entrepreneurial competency gaps that may require improvement in the Business Education curriculum.

Significance of the Study

The findings of this study will be useful to Business Education students by helping them identify the digital and entrepreneurial competencies needed for employment, self employment and effective participation in the digital economy. It will also help Business Education lecturers identify skill gaps and improve their teaching methods, digital tools and practical learning activities.

The study will benefit curriculum planners and programme developers by providing evidence for reviewing Business Education curricula to include relevant competencies in digital marketing, e-commerce, data management, cybersecurity, digital communication and entrepreneurship. This aligns with Nigeria's emphasis on digital literacy and skills development (NITDA, 2023; State House, 2024).

Tertiary institutions may use the findings to improve digital facilities, entrepreneurship programmes and industry partnerships that support practical skills development. Employers and business organisations may also benefit from better understanding the competencies required of Business Education graduates, thereby supporting improved graduate employability.

Finally, the findings will assist government agencies, policymakers and researchers in developing policies and further studies on digital skills, entrepreneurship, curriculum relevance and employability among Business Education graduates.

Literature Review

Digital competence has become an important requirement for education, employment and entrepreneurship because many workplace and business activities now depend on digital technologies. The World Bank (2023) reported that digital technologies are creating new opportunities for jobs and businesses in Africa, but access to technology must be supported by appropriate digital skills. UNESCO IIEP (2022) similarly noted that digital transformation of education and skills systems in Africa is necessary to prepare young people for changing employment opportunities. These developments have important implications for Business Education because the programme is expected to prepare students for employment, self-employment and effective participation in business activities.

In Nigeria, the National Information Technology Development Agency (NITDA, 2023) identified device and software operation, information and data literacy, communication and collaboration, digital content

creation, digital safety and problem-solving as important areas of digital literacy. These competencies are relevant to Business Education because graduates are expected to work in offices and businesses where digital tools are increasingly used for communication, record keeping, marketing, accounting and other business activities. Therefore, Business Education programmes need to provide students with practical digital skills that reflect current workplace requirements.

Evidence from Nigerian studies indicates that gaps still exist in the digital competencies of Business Education students and graduates. Akudolu and Onyeneke (2022) found that Business Education graduates possessed digital foundation skills to a moderate extent, while their digital communication and cloud computing skills were low. Enang (2023) also observed that inadequate digital entrepreneurial competencies can reduce the effectiveness and competitiveness of Business Education students in the digital economy and recommended the integration of digital entrepreneurial competencies into the Business Education curriculum. Similarly, a study of Business Education students in Lagos State found that students required further development in digital marketing and e-content writing to effectively explore e-commerce opportunities (Nigerian Online Journal of Educational Sciences and Technology, 2023).

The importance of digital skills to graduate employability has also been demonstrated in recent Nigerian research. David et al. (2024) found a significant relationship between digitalisation of skills acquisition, the integration of digital learning tools and the employability of Business Education graduates in Lagos State. The researchers reported that graduates with digital skills were better positioned to compete in the labour market, explore entrepreneurial opportunities and perform efficiently at work. These findings suggest that digitalisation should not be treated as an additional component of Business Education but as an important part of skills development.

Entrepreneurial competencies are equally important to the relevance of Business Education in the digital age. Entrepreneurial competencies include the ability to identify opportunities, develop business ideas, solve problems, manage resources, communicate with customers and create value. In the digital economy, these competencies increasingly require the ability to use technology for marketing, communication, electronic payments, e-commerce and other business activities. Enang (2023) argued that Business Education students need digital entrepreneurial skills and competencies to remain relevant in the changing business environment. The author recommended that digital entrepreneurial competencies should be integrated into Business Education curricula so that graduates can become self-reliant and create employment opportunities.

Recent evidence from Nigeria further supports this position. The Nigerian Online Journal of Educational Sciences and Technology (2023) reported that Business Education students needed additional training in digital marketing and e-content writing to improve their ability to explore e-commerce opportunities. David et al. (2024) also established that digital skills acquisition and the use of digital learning tools were related to the employability of Business Education graduates. These findings indicate that entrepreneurial preparation should combine conventional business knowledge with practical digital skills.

The literature therefore shows that Business Education remains relevant, but its content and delivery need to respond continuously to technological and economic changes. Digital communication, digital marketing, e-commerce, electronic payment, data management, office productivity tools, cybersecurity and digital entrepreneurship are increasingly important to graduates. However, the studies reviewed have largely examined digital skills, entrepreneurial competencies or employability separately. There is limited evidence that considers digital and entrepreneurial competencies together from the perspectives of both Business Education students and lecturers. The present study addresses this gap by examining the digital and entrepreneurial competencies possessed by Business Education students, the competencies considered important by lecturers, and areas requiring curriculum improvement. Such evidence can support the development of a more practical, relevant and employment-oriented Business Education programme for the digital age.

METHODOLOGY

Research Design

This study adopts a descriptive survey research design. The design is considered appropriate because the study seeks to obtain information from Business Education lecturers and students on the digital and entrepreneurial competencies needed to make Business Education relevant in the digital age. The design will enable the researcher to collect data on the competencies possessed by students and the competencies considered important by lecturers.

Population of the Study

The population of the study consist of 50 respondents drawn from Business Education programmes in selected tertiary institutions in the study area. The population comprise 20 Business Education lecturers

and 30 Business Education students. The lecturers provided information based on their knowledge and experience of the competencies required for effective performance in the digital workplace, while the students provided information on the competencies they have acquired through their Business Education programme.

Sample and Sampling Technique

The study used the entire population of 50 respondents as the sample. This will comprise 20 Business Education lecturers and 30 Business Education students. A census sampling technique will be adopted because the population is small and manageable.

Instrument for Data Collection

The instrument for data collection is a structured questionnaire titled Digital and Entrepreneurial Competencies Questionnaire (DECQ). The questionnaire is divided into sections to obtain information on the digital and entrepreneurial competencies relevant to Business Education in the digital age. The items cover areas such as digital communication, office productivity tools, digital marketing, e-commerce, electronic payment, data management, cybersecurity, problem-solving, opportunity identification, innovation, business planning and resource management.

Also, the questionnaire is structured on a four-point rating scale. Respondents are to indicate the extent to which they possess or consider each competency important. The four-point scale will help the researcher obtain clear responses without providing a neutral option.

Validity of the Instrument

The questionnaire was subjected to face and content validation by experts in Business Education and Educational Measurement and Evaluation. The experts examined the instrument to determine whether the items are clear, relevant and adequate for measuring the digital and entrepreneurial competencies covered by the study. Their suggestions was used to revise the questionnaire before the final administration.

Reliability of the Instrument

The reliability of the questionnaire was determined using Cronbach's Alpha reliability method. The questionnaire was administered to respondents who are similar to, but will not form part of, the study population. The responses obtained was analysed to determine the internal consistency of the instrument. A reliability coefficient of **0.70 or above**was considered acceptable for the study.

Method of Data Collection

The researcher will administer the e-questionnaires on the 50 respondents. The purpose of the study was explained to the respondents, and they were given adequate time to complete the questionnaire..

Method of Data Analysis

Data collected from the study was analysed using mean and standard deviation to answer the research questions. The mean was used to determine the extent to which the identified digital and entrepreneurial competencies are possessed or considered important, while the standard deviation showed the level of variation in the respondents' responses.

Results

Research Question 1: What is the extent to which Business Education students possess digital competencies required for employment and entrepreneurship in the digital age?

Table I: Response on extent to which Business Education students possess digital competencies required for employment and entrepreneurship in the digital age

S/N	Item	VHE	HE	LE	VLE	Mean	SD	Remark
1	What is the extent to which Business Education students possess basic computer-operation competencies?	15	13	8	1	3.14	0.84	High Extent
2	What is the extent to which Business Education students possess word-processing, spreadsheet, and presentation competencies?	12	19	6	0	3.16	0.68	High Extent
3	3. What is the extent to which Business Education students possess internet-searching, email, and online communication competencies?	12	16	9	0	3.08	0.76	High Extent
4	4. What is the extent to which Business Education students possess cloud-computing, cybersecurity, and digital-information-management competencies?	13	13	8	1	3.09	0.85	High Extent
5	5. What is the extent to which Business Education students possess digital marketing, electronic-commerce, online payment, and digital customer-service competencies?	18	13	6	0	3.22	0.75	High Extent
	Grand Mean					**3.14**	**0.78**	

Source: Field work, 2026

Table I indicate that Business Education students possess the digital competencies required for employment and entrepreneurship to a high extent, as shown by the grand mean of 3.14 and standard deviation of 0.78. All five competencies recorded mean scores above the criterion mean of 2.50, indicating that the students generally possess the identified digital skills. Digital marketing, electronic commerce, online payment and digital customer service recorded the highest mean of 3.22, suggesting that students are relatively strong in using digital tools for business-related activities. Internet searching, email and online communication recorded the lowest mean of 3.08, although this was still rated high. The standard deviations, ranging from 0.68 to 0.85, indicate reasonable agreement among the respondents. The inference is that Business Education students have a good foundation in digital competencies that can support their participation in modern employment and entrepreneurial activities.

Research Question 2: What is the extent to which Business Education students possess entrepreneurial competencies required for employment, self-employment, and business creation?

Table II: Response on extent to which Business Education students possess entrepreneurial competencies required for employment, self-employment, and business creation

S/N	Item	VHE	HE	LE	VLE	Mean	SD	Remark
1	What is the extent to which Business Education students possess opportunity-recognition and business-idea-generation competencies?	14	14	7	0	3.20	0.76	High Extent
2	What is the extent to which Business Education students possess business-planning and feasibility-study competencies?	18	11	6	0	3.34	0.76	High Extent
3	What is the extent to which Business Education students possess financial-management and record-keeping competencies?	14	13	7	1	3.14	0.85	High Extent
4	What is the extent to which Business Education students possess marketing, customer-management, and negotiation competencies?	13	16	6	1	3.14	0.80	High Extent
5	What is the extent to which Business Education students possess creativity, innovation, risk-management, decision-making, and adaptability competencies?	15	15	5	0	3.29	0.71	High Extent
	Grand Mean					**3.22**	**0.78**	

Source: Field work, 2026

Inference from table II showed that Business Education students possess entrepreneurial competencies to a high extent, with a grand mean of 3.22 and standard deviation of 0.78. All five competency areas recorded mean scores above 2.50. Business planning and feasibility-study competencies had the highest mean of 3.34, indicating that students are particularly strong in planning and assessing business opportunities. Creativity, innovation, risk management, decision-making and adaptability also recorded a high mean of 3.29. Financial management, record keeping, marketing, customer management and negotiation recorded the lowest means of 3.14, but these were still rated high. The standard deviations, ranging from 0.71 to 0.85, show relatively consistent responses. The inference is that the students possess important entrepreneurial skills that can support employment, self-employment and business creation.

Research Question 3: What strategies can be adopted by tertiary institutions to improve the development of digital and entrepreneurial competencies among Business Education students?

Table III: Response on strategies can be adopted by tertiary institutions to improve the development of digital and entrepreneurial competencies among Business Education students

S/N	Item	VHE	HE	LE	VLE	Mean	SD	Remark
1	To what extent can curriculum review and integration of emerging technologies improve students' digital and entrepreneurial competencies?	14	21	2	0	3.32	0.58	High Extent

2	o what extent can practical digital marketing, electronic-commerce, and business-development projects improve students' competencies?	10	24	2	1	3.16	0.65	High Extent
3	To what extent can improved ICT infrastructure and access to digital learning resources enhance students' competency development?	14	18	4	1	3.22	0.75	High Extent
4	To what extent can lecturer capacity-building and professional development improve the teaching of digital and entrepreneurial competencies?	13	19	4	1	3.19	0.74	High Extent
5	To what extent can industry collaboration, mentoring, incubation programmes, and strengthened industrial training improve students' employability and entrepreneurial readiness?	16	19	3	0	3.34	0.63	High Extent
	Grand Mean					**3.25**	**0.67**	

Source: Field work, 2026

Responses from Table III indicate that all the proposed strategies can improve the development of digital and entrepreneurial competencies among Business Education students to a high extent. The grand mean of 3.25 and standard deviation of 0.67 support this conclusion. Industry collaboration, mentoring, incubation programmes and strengthened industrial training recorded the highest mean of 3.34, showing that practical exposure is considered particularly important. Curriculum review and integration of emerging technologies followed closely with a mean of 3.32. Improved ICT infrastructure and digital learning resources, lecturer capacity-building, and practical digital marketing and e-commerce projects also recorded high mean scores. The relatively low standard deviations (0.58–0.75) indicate strong agreement among respondents. The inference is that practical training, updated curriculum, adequate ICT facilities, competent lecturers and stronger links with industry are important strategies for improving students' digital and entrepreneurial competencies.

Discussion of Findings

The finding for Research Question One shows that Business Education students possess digital competencies to a high extent, with a grand mean of 3.14 and standard deviation of 0.78. All five competencies recorded high mean scores, ranging from 3.08 to 3.22. Digital marketing, electronic commerce, online payment and digital customer service had the highest mean (3.22), while internet searching, email and online communication had the lowest mean (3.08). This finding suggests that the students have acquired useful digital skills that can support employment and entrepreneurship. The finding agrees with the National Information Technology Development Agency (NITDA, 2023), which identified computer operation, communication, information management, safety and problem-solving as important areas of digital literacy. However, Akudolu and Onyeneke (2022) found that Business Education graduates possessed some digital skills only to a moderate extent, while digital communication and cloud-computing skills were low. The difference may suggest that students are gradually developing stronger digital competencies as institutions increasingly integrate technology into Business Education.

For Research Question Two, the findings show that students possess entrepreneurial competencies to a high extent, with a grand mean of 3.22 and standard deviation of 0.78. Business planning and feasibility-study competency recorded the highest mean (3.34), followed by creativity, innovation, risk management, decision-making and adaptability (3.29). These results indicate that the students have competencies that can support both employment and self-employment. The finding agrees with Enang (2023), who emphasized that Business Education students need digital entrepreneurial competencies to remain relevant and become self-reliant in the digital economy. It also supports David et al. (2024),

who found that digital skills acquisition and the use of digital learning tools were significantly related to the employability of Business Education graduates.

The finding for Research Question Three shows that the identified strategies can improve students' digital and entrepreneurial competencies to a high extent, with a grand mean of 3.25 and standard deviation of 0.67. Industry collaboration, mentoring, incubation programmes and stronger industrial training recorded the highest mean (3.34). Curriculum review and integration of emerging technologies also recorded a high mean (3.32). This finding is consistent with UNESCO IIEP (2022), which stressed the need to strengthen digital skills development systems in Africa to prepare learners for changing employment demands. Similarly, Amesi and Obi (2024) found a strong relationship between institution-industry collaboration, training and technological innovation in Business Education. The findings therefore suggest that curriculum improvement, better digital facilities, lecturer development and stronger institution-industry partnerships are important for preparing Business Education students for the digital economy.

Conclusion

The study concludes that Business Education students possess digital and entrepreneurial competencies to a high extent, with grand means of 3.14 and 3.22, respectively. However, continuous improvement is necessary to keep these competencies relevant to changing workplace and business demands. The findings also show that curriculum review, practical digital training, improved ICT facilities, lecturer development, industry collaboration, mentoring and incubation programmes can further strengthen students' employability and entrepreneurial readiness.

Recommendations

Based on the findings, the study recommends that:

1. Business Education curricula should be regularly reviewed to include emerging digital technologies and current workplace skills.
2. Tertiary institutions should provide more practical training in digital marketing, e-commerce, online payment, data management and other digital business activities.
3. ICT facilities and digital learning resources should be improved to provide students with adequate opportunities for practical learning.
4. Business Education lecturers should receive regular digital skills training to improve their capacity to teach emerging technologies and entrepreneurial skills.
5. Tertiary institutions should strengthen partnerships with industries through mentoring, incubation programmes, internships and practical projects to improve students' employability and entrepreneurial readiness.

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DIGITAL TRANSFORMATION AND TECHNOLOGICAL INTEGRATION IN TEACHING AND LEARNING BUSINESS EDUCATION IN TERTIARY INSTITUTIONS IN NIGERIA

BY

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Abstract

This works focused on digital and technological integration in teaching and learning business education, the researcher discussed the concept of digital transformation, technological integration in teaching and learning business education, importance of digital transformation in higher education, key technologies that support transformation, the emergence of online learning in tertiary institutions as well as framework for digital transformation in business education, policy challenges and curriculum gap in technology driven business education and later concluded that The integration of digital technologies and transformation of teaching and learning processes in Nigerian Tertiary institutions is crucial for enhancing business education. The use of digital tools, online resources, and innovative pedagogies can improve learning outcomes, increase accessibility, and equip students with industry relevant skills. However, challenges such as inadequate infrastructure, limited lecturer capacity, and resistance to change hinder the adoption of digital transformation and suggested that Infrastructure Development, Upgrade ICT Infrastructure and provide reliable internet access to support digital learning Lecturer Training, Offer regular training and workshops to enhance lecturer's digital literacy and pedagogical skills. Curriculum Review, Integrating digital skills and emerging technologies into business education curricular among others.

Keywords: digital transformation, technological integration, teaching and learning

Introduction

Businesses today are using cutting edge technologies to improve how they operate, serve customers, and stay competitive. This process, known as digital transformation, isn't just about upgrading old systems; it's about technology integration, bringing the latest innovations like cloud computing, artificial intelligence (AI), machine learning (ML), the Internet of Things (IoT), and block chain into business processes to support new goals. Digital transformation has emerged as a transformative force reshaping various sectors, including higher education, across the globe (Ajani & Maphalala, 2023). Digital transformation is a fundamental business shift that integrates digital technology across all areas, changing how an organization operates and delivers value. Technology integration is the act of using technology resources, like computers or software, within those processes, and it is a key component of digital transformation. While digital transformation is a broad strategic approach, technology integration is the practical application of technology to achieve the transformation's goals. Digital transformation in education refers to the integration of digital technologies into all aspects of the educational process, aiming to enhance the learning experience and improve educational outcomes (Bui & Nguyen, 2023). This transformation is not just about adopting new technologies but also about rethinking pedagogical approaches and administrative processes to better serve the needs of students and educators in a digital age.

Technology integration means combining different technologies to work together seamlessly. In African nations, where educational systems face unique challenges and opportunities, understanding the digital transformation landscape in higher education is crucial for advancing educational outcomes and fostering socio-economic development (Adeniyi et al., 2024). Despite the increasing recognition of the importance of digital transformation in higher education, the adoption and implementation of digital technologies vary significantly across African nations. Infrastructure limitations, resource constraints, and contextual differences pose opportunities and challenges for digital integration in higher education institutions (Afolabi & Ajani, 2023; Wende, 2001).In a business, it might involve connecting systems like inventory management software with customer relationship management (CRM) tools or integrating data from smart devices with analytics software to get a clearer picture of what's happening. Technology integration is essential for digital transformation because it allows companies to use the full potential of

each technology by connecting them. The goal is to streamline operations, improve decision-making, and create innovative solutions that make businesses more efficient and customer focused.

The rapid advancement of technology has transformed virtually every sector, including education, causing a paradigm shift and digital transformation in education (Palacios-Rodríguez et al., 2023). Digital transformation in business education involves integrating digital technologies into all aspects of the educational process, fundamentally altering how educators teach and students learn. As Panakaje et al., (2024) note, students have become very familiar with and show a strong preference for technologies. Young people pursuing higher education have also become particularly adept at using the internet and other digital devices as a medium of social interaction. Hence, to effectively educate these tech-savvy generations, it is essential for teachers to learn and incorporate digital media into their teaching practices.

Key Technologies That Support Digital Transformation

The use of digital technology in education has become pervasive across the world (Vásquez-Peñafiel et al., 2023). It stands as one of the most influential forces transforming the educational landscape today. Let's take a look at some of the major technologies that play a role in digital transformation and how they can be integrated into business processes. Cloud computing is a way to store and access data and software over the internet rather than on a physical computer or server in your office. This technology allows businesses to scale quickly, collaborate easily, and access information from anywhere. Instead of a company hosting all of its important files on local servers that could break down, cloud computing lets it store data on remote servers (in "the cloud"). This means employees can access the information they need whether they're at the office, at home, or traveling. Artificial Intelligence (AI) refers to the ability of machines to perform tasks that typically require human intelligence, such as recognizing patterns or making decisions. AI technology in education is expected to grow significantly in the coming decades, presenting new opportunities and challenges (Ouyang and Jiao, 2021; Zhang and Aslan, 2021; Khosravi, 2022). Moreover, the integration of advanced technologies such as artificial intelligence (AI) and machine learning can further enhance the learning experience by providing personalized learning paths and real-time feedback (Phuong et al., 2023). Professional development for educators is another crucial aspect of digital transformation. Educators need to be equipped with the skills and knowledge to effectively use digital tools and technologies in their teaching practices (Joseph & Uzondu, 2024b). Continuous professional development programs can help educators stay updated with the latest technological advancements and pedagogical strategies, thus improving their teaching effectiveness and enhancing student learning outcomes (Veckalne & Tambovceva, 2022).

Machine learning (ML) is a subset of AI that involves training machines to learn from data so they can improve their performance over time without being explicitly programmed. AI chatbots used by companies for customer service are trained to understand common questions and provide relevant answers. Over time, these bots get better at answering questions by learning from customer interactions (that's machine learning in action). The Internet of Things (IoT) refers to the network of physical devices—such as cars, appliances, or factory equipment—that is connected to the internet and can share data. IoT devices can collect and send information in real-time, allowing businesses to monitor and optimize their processes. A company that manages warehouses might use IoT sensors to track the temperature and humidity in storage units, ensuring products like food or medicines are kept in ideal conditions. Block chain is a type of digital ledger that securely records transactions across many computers in a way that makes it nearly impossible to alter or hack. While it's most famous for being the technology behind crypto currencies like Bit coin, block chain has many other uses. In the supply chain industry, block chain can be used to track the journey of products from manufacturers to consumers. This increases transparency and ensures the authenticity of products like luxury goods or pharmaceuticals, which may be subject to counterfeiting.

The Emergence of Online Learning in Tertiary Institution

Online learning, also known as e-learning, has experienced exponential growth in recent years, driven by advancements in digital technologies and the increasing demand for flexible and Accessible education (Maphalala & Ajani, 2024). This evolution of online learning presents Opportunities and challenges for educational institutions worldwide, including those in African Nations. Understanding the trajectory of online learning, from its inception to its current state, is Essential for navigating the complexities of digital education and harnessing its potential for Enhancing learning outcomes (Ajani & Khumalo, 2023; Guri-Rosenblit, 2005). Online learning Traces its roots back to the early days of the Internet, with the development of computer-mediated Communication tools and the establishment of virtual learning environments. In many African Nations, the adoption of online learning gained momentum in the late 20th Century, driven by

Efforts to expand access to education and address the challenges of traditional brick-and-mortar institutions (Bozkurt et al., 2017). One of the primary opportunities online learning offers is its potential to overcome barriers to access and promote inclusivity in education (Al-Azawei et al., 2017). Thus, in African nations, where geographical distances, limited infrastructure, and socio-economic disparities pose significant obstacles to education, online learning offers a pathway to reach learners in remote areas and marginalized communities (Allen & Seaman, 2017). Furthermore, online learning platforms allow learners to engage in education at their own pace, location and convenience, catering to diverse learning styles and preferences (Altbach & de Wit, 2017; Bates, 2019). This personalized approach to learning is particularly beneficial in African contexts, where traditional education systems may struggle to accommodate the needs of individual learners and provide equitable access to educational resources (Altbach & de Wit, 2019; Anderson, 2008). In addition, advancements in technology, such as mobile devices and high-speed internet connectivity, have further facilitated the growth of online learning and expanded its reach to even the most remote areas (UNESCO, 2020).

Furthermore, the digital divide, characterized by disparities in access to digital technologies and internet connectivity, remains a significant barrier to online learning in African nations (Bates & Sangra, 2011). While urban areas may have relatively better access to digital infrastructure, rural and underserved communities often lack the necessary resources to participate fully in online education initiatives. The transition to online learning requires a fundamental shift in pedagogical approaches and necessitates comprehensive training for educators to effectively facilitate online courses (Bates, 2019). Hence, in African nations, where teaching capacities may vary and digital literacy among educators is uneven, investing in teacher training and professional development is essential to ensure the successful implementation of online learning initiatives (Bozkurt et al., 2017). Further evidence asserts that online learning platforms must accommodate diverse cultural and linguistic contexts to ensure educational content is accessible and relevant to all learners AAA (Bates, 2019; Brown, 2015). In many African nations, where multiple languages and cultural traditions coexist, designing inclusive online learning experiences that resonate with learners' cultural identities and backgrounds is imperative for fostering meaningful engagement and learning outcomes (Bozkurt et al., 2017). Thus, sustaining online learning initiatives requires significant financial investments in infrastructure, technology, and human resources (Bates, 2019). Unlike most African nations, where financial resources may be limited and competing priorities abound, identifying sustainable funding models and securing long-term support for online education programmes pose considerable challenges. However, despite the challenges inherent in the evolution of online learning, the potential benefits of digital education for African nations are immense (Christensen et al., 2013). By leveraging technological innovations, fostering collaboration among stakeholders, and prioritizing equity and inclusivity, African nations can harness the transformative power of online learning to advance educational access, enhance learning outcomes, and drive socio-economic development in the 21st Century. The necessity for digital transformation in education has become particularly evident during the COVID-19 pandemic, which forced many educational institutions to shift to online learning abruptly. This sudden shift highlighted both the potential benefits and the significant challenges associated with digital education (Shukla & Jacob, 2022). One of the primary benefits of digital transformation is the ability to provide flexible and personalized learning experiences, which can be tailored to meet the diverse needs of students (Joseph & Uzondu, 2024a). However, the transition to digital education is not without its challenges. Among these are the technological infrastructure required, the need for professional development for educators, and the digital divide that exacerbates educational inequalities (Joseph & Uzondu, 2024d). Effective digital transformation requires comprehensive strategies that include investing in technological infrastructure, providing ongoing training for educators, and implementing policies that ensure equitable access to digital resources (Quaicoe, Ogunyemi & Bauters, 2023). One of the critical components of digital transformation in education is the development of a robust technological infrastructure. This includes high-speed internet, modern hardware and reliable software solutions that support both teaching and administrative functions. Investing in these technologies is essential to create a conducive environment for digital learning (Joseph & Uzondu, 2024c).

Framework for Digital Transformation in Business Education

The framework for digital transformation in business education is a complex and multifaceted concept that encompasses various elements aimed at enhancing the educational experience through the integration of digital technologies. Digital transformation involves more than just the adoption of new technologies; it requires a comprehensive approach that includes the development of technological infrastructure, changes in pedagogical practices and the involvement of all stakeholders in the educational process (Aditya, Ferdiana & Kusumawardani, 2022). One of the essential aspects of digital transformation in business education is the development of a robust technological infrastructure. This

includes high-speed internet, modern hardware and reliable software solutions that support both teaching and administrative functions. According to García-Peñalvo (2021), it is crucial to ensure the ethical use of data and make the right technological decisions to achieve a more inclusive and participative university environment supported by technology. The integration of advanced technologies such as artificial intelligence (AI) and machine learning can further enhance the learning experience by providing personalized learning paths and real-time feedback. A successful framework for digital transformation must also incorporate elements from established models and frameworks.

Marks and Al-Ali (2022) propose a maturity assessment framework for digital transformation in higher education, incorporating elements from Deloitte's digital transformation assessment framework and Petkovic's higher education process mapping. This framework helps institutions assess their current state and identify areas for improvement, ensuring a systematic and structured approach to digital transformation. In addition to technological infrastructure, digital transformation requires a shift in pedagogical approaches. Traditional teaching methods may not be suitable for digital learning environments, necessitating the adoption of innovative teaching strategies that leverage digital tools to enhance student engagement and learning. However, Adegbite, Olaleye, and Ibrahim (2025), who emphasized that digital innovations in Nigerian higher education are often selectively applied, with stronger attention given to theory rather than

Practice. Similarly, Awoniyi and Aromolaran (2025) observed that although lecturers acknowledge the relevance of digital tools in teaching, the actual classroom use of technology is fragmented, often due to lack of training or institutional support. The moderate integration discovered in this study thus reinforces prior scholarly warnings that entrepreneurship education in Nigeria remains largely disconnected from the technological realities of the business environment.

Policy Challenges and Curriculum Gaps in Technology-Driven Business Education

While the benefits of emerging technologies in business and entrepreneurship education are widely acknowledged, their adoption remains hindered by entrenched policy and structural challenges. As highlighted in the previous section, digital tools have transformed the potential of learning; yet across many institutions especially in developing economies practice has lagged behind. Closing this gap requires confronting a set of interrelated policy bottlenecks that limit systemic reform. Outdated Curricula: Despite growing global discourse around digital transformation, many higher institutions still deliver business education through outdated syllabi emphasizing legacy concepts over digital competencies. According to the Organisation for Economic Co-operation and Development (OECD, 2021), more than 60% of business-related academic programs do not reflect current industry needs. In Nigeria, researchers in ABEN have expressed concern that business education curricula remain overly theoretical, with limited emphasis on entrepreneurship, innovation, or digital market analysis (Onwubuya et al., 2024; Onwubuya, 2024, & Ikeh-anayo, 2024). Consequently, graduates are often misaligned with the skills demanded in the 21st-century workforce.

Digital Divide and Infrastructure Gaps: The technological revolution has exposed a stark divide in digital access between well-resourced institutions and those in rural or economically marginalized areas (Ikpeama, et al., 2025). UNESCO (2023) reports that only 47% of secondary and tertiary institutions in low-income countries have access to basic ICT tools. In Nigeria, inadequate infrastructure including erratic internet, insufficient computer labs, and power supply issues further widens this gap (Oluwajoba & Udofia, 2023). These disparities prevent equitable access to technology-driven pedagogy and reinforce systemic educational inequality. Faculty Capacity Deficits: The successful integration of technology into business education requires digitally competent instructors. However, a significant portion of faculty members lack training in modern digital tools and interactive pedagogy (Ubaka, 2024) Many business educators in Nigeria are still unfamiliar with core Etch platforms, coding environments, or block chain-based tools. The OEC (2023) stresses that formal faculty development frameworks particularly those incentivizing continuous up skilling are critical to sustainable curriculum reform. Weak Industry Academia Collaboration: Strong collaboration between business schools and industry partners is vital for relevant, practice-based education. Unfortunately, this remains a weak link in many institutions. The World Bank (2020) emphasizes that meaningful engagement with entrepreneurs, incubators, and digital startups enhances curriculum relevance. However, in Nigeria and many African countries, few institutions have embedded structured partnerships that allow students to work on real-world entrepreneurial problems or access mentorship from tech-driven firms (Okoli & Agbo, 2021). Inadequate Assessment and Credentialing Models: Finally, assessment systems in business education are largely outdated and ill-suited for evaluating skills like adaptability, design thinking, and digital entrepreneurship. Traditional exams fail to measure collaborative, real-world problem-solving. While some global institutions now deploy micro-credentials and block chain-based certifications (Grech & Camilleri, 2017), such innovations are largely absent in the Nigerian context. Without updating

assessment frameworks, true curriculum transformation remains incomplete. In sum, while emerging technologies offer rich possibilities, their integration into business education systems demands bold policy reform and structural rethinking. Addressing curriculum gaps, empowering educators, and fostering ecosystem collaboration are necessary steps to ensure learners receive both the tools and the environments they need to succeed.

Conclusion

The integration of digital technologies and transformation of teaching and learning processes in Nigerian Tertiary institutions is crucial for enhancing business education. The use of digital tools, online resources, and innovative pedagogies can improve learning outcomes, increase accessibility, and equip students with industry-relevant skills. However, challenges such as inadequate infrastructure, limited lecturer capacity, and resistance to change hinder the adoption of digital transformation.

Suggestions

1. Infrastructure Development: Upgrade ICT Infrastructure and provide reliable internet access to support digital learning
2. Lecturer Training: Offer regular training and workshops to enhance lecturer's digital literacy and pedagogical skills.
3. Curriculum Review: Integrate digital skills and emerging technologies into business education curricular
4. Collaboration and partnerships: Foster partnerships with industry and international institutions to provide experimental learning opportunities
5. Monitoring and evaluation: Establish a framework to monitor and evaluate the effectiveness of digital transformation initiatives.

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EFFECT OF DIGITAL TECHNOLOGY SKILLS ON TECHNOPRENEURSHIP DEVELOPMENT AMONG BUSINESS EDUCATION STUDENTS IN TERTIARY INSTITUTIONS IN ANAMBRA STATE, NIGERIA

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Abstract

The digital economy has altered the knowledge and competencies required for entrepreneurial participation, yet the possession of digital tools or exposure to technology does not necessarily translate into technology-enabled venture capability. This study examined the effect of communication, accounting and marketing digital skills on technopreneurship development among Business Education students in tertiary institutions in Anambra State, Nigeria. A correlational survey design was adopted. The population comprised 322 final-year degree Business Education students in four public tertiary institutions, from which 178 were sampled using proportionate stratified sampling. A 24-item researcher-developed questionnaire was validated by experts and pilot-tested; Cronbach alpha coefficients for the three predictor scales were .83, .76 and .82. Regression analysis was based on 147 valid responses. Simple linear regression was used to examine the individual effects of the three skill domains, while multiple regression examined their joint contribution. Communication digital skill significantly predicted technopreneurship development ($R = .390$, $R^2 = .152$, $p < .001$); accounting digital skill produced a stronger individual effect ($R = .490$, $R^2 = .240$, $p < .001$); and marketing digital skill also had a significant simple effect ($R = .226$, $R^2 = .051$, $p = .006$). Jointly, the three predictors explained 30.6% of the variance ($R = .553$, $R^2 = .306$, $p < .001$). In the combined model, communication ($\beta = .277$, $p < .001$) and accounting ($\beta = .417$, $p < .001$) remained significant, whereas marketing digital skill was not a significant unique predictor ($\beta = -.027$, $p = .733$). The study concludes that digital skill development should move beyond generic technology awareness toward integrated, practice-oriented entrepreneurial competence, with stronger attention to digital accounting and communication capabilities.

***Keywords**:* digital technology skills; communication digital skill; accounting digital skill; marketing digital skill; technopreneurship; Business Education

Introduction

The rapid diffusion of digital technologies is changing the knowledge, skills and competencies required for participation in contemporary economic activities. Digital platforms have altered how information is accessed, businesses are communicated, transactions are recorded and products are marketed. Consequently, entrepreneurship is increasingly being pursued through technology-enabled processes in which digital tools are not merely supportive resources but integral components of opportunity identification, venture creation and business development. This emerging form of entrepreneurship, commonly described as digital entrepreneurship or technopreneurship, requires individuals to combine entrepreneurial knowledge with the ability to identify and exploit opportunities through digital technologies. Ayeni and Killian (2023), for example, describe technopreneurship as the acquisition of knowledge, skills and competencies for venture creation through technological know-how and argue that technology-based entrepreneurship education should become an integral component of tertiary education in Nigeria.

This development has particular implications for Business Education. Business Education is expected to prepare learners for employment, self-employment, business management and entrepreneurship. Its traditional areas of accounting, marketing, office technology and management, however, are increasingly being performed through digital platforms. Thus, competence in conventional business practices without corresponding technological competence may leave graduates inadequately prepared for a labour market and entrepreneurial environment characterized by digital transactions, electronic communication, online marketing, digital accounting and technology-enabled business models. Recent evidence from Nigeria supports this concern. Osiesi et al. (2024), in a study of 250

Business Education undergraduates at the Federal University Oye-Ekiti, found moderate entrepreneurial digital skills, high digital knowledge and very good use of entrepreneurial digital skills. The researchers consequently recommended an enabling university environment and compulsory digital education courses.

Evidence from Business Education students in Anambra State is particularly relevant. Onwubuya and Odogwu (2023) examined 338 300-level Business Education students drawn from the four public tertiary institutions offering Business Education in Anambra State. Their findings showed that technology skills, digital communication, digital safety and media literacy were significantly connected with students' entrepreneurial intentions. This finding establishes an important local relationship between digital competence and entrepreneurship. However, the study conceptualised digital technology broadly as components of digital literacy and focused on entrepreneurial intention, rather than examining the contribution of specific business technologies to technopreneurship development. This distinction is important because intention represents a predisposition to engage in entrepreneurship, whereas technopreneurship development encompasses the ability to recognize technology-based opportunities, develop technology-enabled business ideas and apply digital tools to entrepreneurial activities.

Communication technology represents one important pathway through which digital technologies can facilitate technopreneurship. Internet connectivity, electronic communication, messaging applications, video-conferencing tools, social networking platforms and other digital communication channels reduce geographical barriers and improve access to information, networks and potential customers. Nigerian evidence demonstrates the relevance of this mechanism. Ashiru, Nakpodia and You (2023), using Diffusion of Innovations Theory, found that emerging digital communication technologies contributed to the resilience of Nigerian SMEs during the COVID-19 period. Similarly, Onwubuya and Odogwu (2023) found a positive relationship between digital communication and entrepreneurial intentions among Business Education students in Anambra State. The implication is that communication technology may provide aspiring technopreneurs with access to information, business networks and communication channels through which technology-based opportunities can be explored.

Accounting technology constitutes another important but less investigated dimension. Contemporary accounting increasingly involves digital bookkeeping, accounting information systems, electronic invoicing, cloud accounting, financial reporting software and data analytics. These technologies can improve the availability and processing of financial information required for entrepreneurial decisions. Lutfi et al. (2022), for instance, found that digital accounting system usage has implications for efficiency, decision-making and SME performance. A 2023 systematic review by Pargmann et al. further observed that accounting digitalization is transforming accounting activities and creating new competence requirements, particularly as routine accounting activities become increasingly automated.

More directly, recent Nigerian evidence has begun to connect digital accounting competence with entrepreneurship. Ishola (2025) investigated digital accounting skills and accountpreneurial intentions among Business Education students in Lagos State universities. The study is particularly significant because it moves beyond generic digital literacy to a business-specific technology competence. However, its focus was accountpreneurial intention rather than the broader development of technopreneurship. This leaves unanswered whether accounting technologies contribute to the actual technology-oriented entrepreneurial capabilities of Business Education students.

Marketing technology is perhaps the most visible dimension of technology-enabled entrepreneurship. Social media marketing, e-commerce platforms, search engine optimization, digital content creation, electronic customer engagement and marketing analytics have transformed how entrepreneurs identify, reach and retain customers. Yet the availability of these technologies does not necessarily mean that students possess the competence to use them entrepreneurially. Abdulkarim and Danagogo (2023), for example, found that Business Education students in Rivers State acquired social-media marketing skills to a high extent but digital content creation and search-engine-optimization skills only to a low extent. Similarly, Okeke (2024) reported that Business Education students in the Colleges of Education in Anambra State had acquired digital content and social-media marketing skills only to a low extent.

This apparent contradiction is important. On one hand, digital technologies are increasingly associated with entrepreneurship, innovation, market access and business development. On the other hand, students may have access to digital platforms without possessing the specific competencies required to transform those platforms into entrepreneurial opportunities. Olatunde (2023) whose study of Business Educators in Nigerian public institutions also found electronic communication and search-

engine marketing to be important digital marketing competencies for Business Education undergraduates in the digital economy. Thus, the critical issue is no longer simply whether students have access to technology, but whether specific forms of technology use translate into the development of technology-based entrepreneurial capabilities.

Recent evidence reinforces this broader argument. Ogongo et al. (2025), studying Business Education graduates of Lagos State University, reported the relevance of digital technology to entrepreneurship and innovation and situated digital competence within the changing requirements of Business Education. Edionwe and Erhirihie (2025) likewise found a high perception of digital technology use among undergraduate Business and Entrepreneurship Education students in Delta State, although their study focused on classroom activities rather than entrepreneurial development. More recent work also demonstrates that technology-oriented entrepreneurship education is moving towards actual technopreneurship behaviour rather than merely technology awareness. For example, Wibowo et al. (2026) reported that AI-integrated entrepreneurship education can influence technopreneurship behaviour through mechanisms including perceived usefulness and ease of use.

Despite these developments, important questions remain unanswered in the Nigerian Business Education literature. Existing studies have tended to examine digital literacy, digital skills, digital marketing skills, technology use or entrepreneurial intention separately. Few studies have decomposed digital technology into specific business-oriented dimensions and examined their relative contribution to technopreneurship development. Communication technology has received considerable attention, whereas accounting technology remains comparatively under-investigated, particularly among Business Education students. Marketing technology studies have also frequently measured skill acquisition rather than whether such skills contribute to technopreneurship development. Furthermore, while Anambra State has produced useful evidence on digital literacy and digital marketing, there remains a need for a study that simultaneously examines communication, accounting and marketing technologies as predictors of technopreneurship development across tertiary institutions offering Business Education.

The present study therefore focuses on the effect of communication technology, accounting technology and marketing technology on technopreneurship development among Business Education students in tertiary institutions in Anambra State. By separating these technology dimensions, the study seeks to move beyond the broad assertion that "digital technology is important" and determine which specific forms of business-related digital technology contribute to students' development as technopreneurs. The study is consequently positioned to provide evidence for curriculum revision, practical digital-skills development, lecturer capacity building and stronger university-industry linkages in Business Education.

Statement of the Problem

The contemporary digital economy has changed how businesses are created, managed and marketed, making digital technology skills increasingly important for entrepreneurial participation. Business Education students are expected to leave tertiary institutions with competencies that support both employability and self-employment. However, evidence from Nigeria indicates that students' digital competence is uneven and that digital technology knowledge does not automatically translate into entrepreneurial application (Onwubuya & Odogwu, 2023; Osiesi et al., 2024). This creates a practical concern for Business Education: whether specific digital skills can actually enhance students' capacity to engage in technopreneurship.

The concern is more specific in relation to communication, accounting and marketing. Communication skills may help students build networks and reach customers; accounting skills may help them manage financial information and make evidence-based decisions; while marketing skills may help them promote products and access wider markets. Existing studies have established the relevance of digital communication, accounting and marketing competencies, but much of the evidence focuses on digital literacy, skill acquisition, entrepreneurial intention or organisational performance rather than technopreneurship development as an applied outcome. In addition, few studies compare the relative contribution of these three skill domains within one regression model among Business Education students in Anambra State. Wibowo et al. (2026) further suggests that technology-related entrepreneurial behaviour is shaped by more than simple technology exposure, making it necessary to determine which practical digital capabilities are most closely associated with students' entrepreneurial development. The problem, therefore, is whether communication, accounting and marketing digital skills significantly contribute to technopreneurship development among Business Education students in tertiary institutions in Anambra State.

Objectives of the Study

The general aim of the study is to examine the effect of digital technology skills on technopreneurship development among Business Education students in public tertiary institutions in Anambra State. Specifically, the study sought to:

1. determine the extent to which communication digital skill influences technopreneurship development among Business Education students in tertiary institutions in Anambra State,
2. Investigate the extent to which accounting digital skill affects technopreneurship development among Business Education students in tertiary institutions in Anambra State,
3. Examine the extent to which marketing digital skill predicts technopreneurship development among Business Education students in tertiary institutions in Anambra State.

Research Questions

1. To what extent does communication digital skill affect technopreneurship development among Business Education students in tertiary institutions in Anambra State?
2. To what extent does accounting digital skill affect technopreneurship development among Business Education students in tertiary institutions in Anambra State?
3. To what extent does marketing digital skill affect technopreneurship development among Business Education students in tertiary institutions in Anambra State?

Hypotheses

$H_0$1: Communication digital skill has no significant effect on technopreneurship development among Business Education students in tertiary institutions in Anambra State.

$H_0$2: Accounting digital skill has no significant effect on technopreneurship development among Business Education students in tertiary institutions in Anambra State.

$H_0$3: Marketing digital skill has no significant effect on technopreneurship development among Business Education students in tertiary institutions in Anambra State.

Literature Review

Digital Technology Skills and Technopreneurship Development

Digital technology skill refers to the practical ability to select, operate, combine and apply digital tools to accomplish meaningful tasks. In an entrepreneurial context, the relevant issue is functional use rather than mere familiarity with devices or applications. Osiesi et al. (2024) conceptualised entrepreneurial digital competence around students' knowledge, skills and use, while Nigerian Business Education studies have identified communication, digital safety, technology and media-related competencies as relevant to entrepreneurial intentions (Onwubuya & Odogwu, 2023). These findings suggest that digital capability can form part of the human capital through which students convert education into economic activity.

Technopreneurship development is broader than entrepreneurial intention. It concerns the progressive development of the capability to identify technology-based opportunities, generate technology-enabled business ideas, develop digital solutions, initiate or support technology-enabled ventures, and use technology to improve business processes. Wibowo et al. (2026) makes a useful distinction between behavioural intention and technopreneurship behaviour: the study found a strong relationship between intention and behaviour, but also showed that intention was shaped by perceived usefulness, perceived ease of use, trust and social influence. This supports a cautious interpretation of digital skill effects: skills may provide the capacity for action, but actual technopreneurship is also influenced by learning environments, confidence, social support and opportunities to practise.

For Business Education, this interpretation suggests that digital competence should be taught through integrated business tasks. Students should not only learn how to operate digital tools but should also learn why a particular tool is selected, how its outputs inform decisions, what risks accompany its use and how several tools can be combined to support a venture. The present study's focus on communication, accounting and marketing reflects this functional orientation. These domains are sufficiently distinct to be measured separately, but sufficiently connected to represent major components of technology-enabled business activity.

The distinction is also important because technology-enabled entrepreneurship is often discussed as if technology itself were the innovation. In practice, the technology is a means through which an entrepreneurial opportunity is recognized, tested, communicated, financed, marketed and improved. A messaging application does not create a customer relationship automatically; accounting software does not produce financial discipline automatically; and a social-media platform does not generate a viable market automatically. The entrepreneur must possess the competence to interpret information, make decisions and use the tool strategically. Digital technology skills can therefore be viewed as enabling resources whose value depends on the learner's ability to connect them with business processes.

Digital technology skill is best understood as an applied capability rather than a list of devices or applications. In educational settings, a student may demonstrate operational familiarity with a platform

without demonstrating the judgement required to select an appropriate tool, combine several tools, evaluate digital information or adapt a technology to a changing business problem. The entrepreneurial relevance of digital skill therefore depends on transfer: the capacity to move from classroom exercises to unfamiliar business situations. This is consistent with the broader human-capital perspective in which education matters because it increases productive capability, not merely because it increases exposure to information.

Communication Digital Skill and Technopreneurship

Communication digital skill is the ability to use internet-enabled communication and networking technologies to exchange information, collaborate, obtain feedback and maintain relationships with customers, suppliers and other stakeholders. For a technology-enabled venture, communication is an entrepreneurial resource because it supports opportunity discovery, customer validation, networking and coordination. Digital channels can also reduce geographic barriers and allow emerging entrepreneurs to interact with wider markets at relatively low cost.

Onwubuya and Odogwu (2023) found that digital communication was substantially connected with entrepreneurial intentions among Business Education students in Anambra State. At the enterprise level, Ashiru et al. (2023) reported that emerging digital communication technologies supported resilience among Nigerian SMEs. The implication is that communication technology can facilitate both opportunity development and continuity of business activities. Nevertheless, these studies did not isolate communication digital skill as a predictor of technopreneurship development. The present study therefore extends the evidence from intention and organisational resilience to an applied student-level outcome.

The present study therefore treats communication digital skill as a business-facing competency. Its expected contribution is not simply that students who communicate more frequently online will become more entrepreneurial, but that students who can use digital communication purposefully may be better positioned to build networks, validate ideas and coordinate technology-supported activities. The distinction helps explain why communication skill may remain important even when accounting and marketing skills are considered simultaneously.

However, effective digital communication is more demanding than the ability to send messages. It includes selecting the appropriate channel, presenting information clearly, managing digital records, responding professionally, protecting sensitive information and interpreting feedback. In a business context, poor digital communication can damage trust just as effective communication can strengthen customer relationships. This is particularly relevant for technopreneurship because technology-mediated ventures often depend heavily on reputation, responsiveness and network effects.

Communication digital skill has become a strategic entrepreneurial capability because many venture relationships now begin and are maintained through digital channels. Entrepreneurs use email, messaging platforms, social networks, video-conferencing applications and collaborative platforms to obtain market information, communicate value propositions, negotiate with suppliers, coordinate employees and respond to customers. These activities reduce geographical barriers and can shorten the time between opportunity recognition and market interaction. For students, communication competence may therefore increase the range of networks through which entrepreneurial information and opportunities can be accessed.

Accounting Digital Skill and Technopreneurship

Accounting digital skill refers to the ability to use digital tools for recording, classifying, processing, analysing and reporting financial information. It includes electronic bookkeeping, accounting software, spreadsheets, digital invoicing and cloud-based accounting systems. For technopreneurs, these skills support cash-flow monitoring, pricing, budgeting, cost control, financial reporting and evidence-based decision-making. Thus, accounting technology links the creative side of entrepreneurship with the financial discipline required for venture sustainability.

Pargmann et al. (2023) found that digitalization is changing accounting activities and the competence requirements of accounting work. Lutfi et al. (2022) likewise demonstrated the relevance of digital accounting-system use to SME performance. Imjai et al. (2023) linked digital and management accounting competency to competitive performance among micro-entrepreneurs. Nigerian research is beginning to examine the student dimension; Ishola (2025), for example, investigated digital accounting skills among Business Education students in relation to accountpreneurial intentions. The remaining question is whether accounting digital skill makes a measurable contribution to broader technopreneurship development.

For Business Education students, accounting digital skill may therefore support technopreneurship through several routes: enabling accurate recording, improving cost awareness, supporting pricing decisions, monitoring profitability, producing information for funding or partnership discussions and

identifying financial problems early. This provides a plausible explanation for why accounting digital skill may demonstrate a comparatively strong association with technopreneurship development. At the same time, the relationship should not be interpreted as evidence that accounting skill alone creates entrepreneurial behaviour; rather, it represents one productive capability within a broader portfolio.

The literature on accounting digitalization reinforces the competency dimension. Pargmann et al. (2023) observed that digitalization is changing accounting activities and the competence requirements associated with them, while Lutfi et al. (2022) linked digital accounting system usage with SME performance. Imjai et al. (2023) further highlighted the relationship between digital and management accounting competencies and competitive performance among micropreneurs. These studies suggest that accounting technology is not simply an administrative support tool; it can form part of the decision-making infrastructure of small and technology-oriented ventures.

Accounting digital skill deserves particular attention because technology-enabled entrepreneurship still requires conventional financial discipline. Digital ventures may have low physical entry barriers, but they remain subject to revenue uncertainty, operating costs, pricing decisions, cash-flow pressures and the need to evaluate whether a business model is financially sustainable. Digital accounting tools can make financial information more timely and accessible, but only when users understand the accounting logic behind the outputs.

Marketing Digital Skill and Technopreneurship

Marketing digital skill involves the practical use of social media, e-commerce platforms, digital content, electronic customer engagement, search tools and marketing analytics to create and communicate value. These skills can lower market-entry barriers by enabling entrepreneurs to establish an online presence, reach customers beyond their immediate location, test ideas and monitor responses. Digital marketing is therefore closely connected with opportunity exploitation and customer development.

Evidence among Business Education students indicates that the acquisition of marketing skills is uneven. Abdulkarim and Danagogo (2023) examined digital marketing skill acquisition among final-year Business Education students and identified gaps across skill areas. Okeke (2024) similarly examined digital marketing skill acquisition among Business Education students in Colleges of Education in Anambra State, while Olatunde (2023) identified digital marketing competencies needed in the digital economy. The literature therefore establishes the relevance of marketing technology but leaves open the question of how strongly it contributes to technopreneurship development when other digital business skills are considered simultaneously. The possibility of overlap with communication skill is especially relevant. Both communication and marketing involve digital interaction with audiences, while marketing activities may also depend on the financial information generated through accounting processes.

Yet the availability of marketing platforms does not guarantee marketing competence. Effective digital marketing requires audience segmentation, content judgement, consistency, customer-response analysis, ethical communication and the ability to interpret engagement data. Nigerian studies have repeatedly reported uneven acquisition of these skills. Abdulkarim and Danagogo (2023), for example, identified stronger acquisition in some social-media-related areas than in content creation and search-engine optimization. Okeke (2024) similarly highlighted the importance of digital marketing skills among Business Education students in Anambra State. The issue is therefore not whether students use social media, but whether they can transform digital visibility into purposeful market activity.

Marketing digital skill is central to the contemporary entrepreneurial process because technology has changed how entrepreneurs identify customers, communicate value, test demand and maintain visibility. Social media, e-commerce platforms, digital content, search tools and analytics enable even small ventures to reach audiences that would previously have required substantial advertising resources. For students with limited start-up capital, such tools may provide relatively accessible routes into market experimentation.

Theoretical Framework

Human Capital Theory, developed by Becker (1964), provides the principal theoretical lens. The theory treats education and training as investments that increase productive capabilities. Applied to the present study, communication, accounting and marketing digital skills constitute forms of human capital that can increase students' capacity to identify opportunities, communicate value, manage resources and undertake technology-enabled business activities. The theory also explains why skill quality should matter more than access alone: a digital tool produces economic value when the user possesses the capability to apply it productively.

Diffusion of Innovations Theory (Rogers, 2003) provides a complementary perspective. It explains how new technologies spread through social systems and how perceptions of relative advantage,

compatibility, complexity, trialability and observability influence adoption. Communication, accounting and marketing technologies are innovations that students must incorporate into business processes. The theory therefore helps explain why skills may vary across students and why institutional exposure and peer environments can influence the use of digital tools.

Diffusion of Innovations Theory complements this perspective by explaining why technologies may be accepted and incorporated differently across individuals and social contexts. Rogers (2003) identifies relative advantage, compatibility, complexity, trialability and observability as characteristics that shape adoption. In the present study, these ideas are useful because students may possess skills but still differ in willingness or opportunity to incorporate technologies into entrepreneurial activities. The theory therefore provides contextual support for interpreting the movement from acquired capability to practical use, while Human Capital Theory remains the primary lens for explaining the productive value of skill.

Human Capital Theory provides the principal explanatory logic because the independent variables in this study are acquired competencies. Becker (1964) argued that education and training constitute investments that improve productive capabilities. In the present context, communication, accounting and marketing digital skills represent forms of human capital that can increase the productivity of students when they engage in technology-enabled entrepreneurial tasks. The theory therefore provides a direct bridge between education, skill acquisition and productive economic activity

Gap in Literature

The literature reveals four principal gaps. First is a construct gap: many studies treat digital technology or digital literacy as a broad construct, making it difficult to identify which business-facing competencies matter most. Second is an outcome gap: a large proportion of Nigerian evidence focuses on entrepreneurial intention or skill acquisition rather than technopreneurship development as an applied outcome. Third is an accounting gap: digital accounting has received less attention in student technopreneurship research despite its importance for venture control. Fourth is a model gap: few studies estimate the individual and combined effects of communication, accounting and marketing digital skills among Business Education students in Anambra State. This study addresses these gaps through three simple regressions and one multiple regression model.

The fourth gap is comparative and analytical. Previous studies often establish that digital skills matter without determining which dimensions contribute more strongly when related skills are considered together. The present study addresses this by examining communication, accounting and marketing digital skills both independently and jointly. This permits a more nuanced conclusion: a skill can be important in isolation yet provide limited unique explanatory power when its contribution overlaps with other competencies.

The third gap is contextual. Findings from Lagos, Rivers, Delta and other settings cannot automatically be assumed to represent students in Anambra State because institutional resources, curriculum implementation, digital infrastructure and exposure to enterprise opportunities differ. Although Onwubuya and Odogwu (2023) provide important Anambra evidence, their focus was digital literacy and entrepreneurial intention rather than the three business-facing skill domains examined here.

The second gap is outcome-related. A considerable proportion of existing Nigerian studies examine entrepreneurial intention, perceived usefulness, digital skill acquisition or classroom technology use. These outcomes are important, but intention is not the same as capability to undertake technology-supported entrepreneurial activities. The present study therefore uses technopreneurship development as an outcome that reflects the application of technology to opportunity recognition, business idea development, problem solving and venture activities.

The reviewed literature indicates a growing body of evidence on digital competence among Business Education students, but it does not yet provide a sufficiently integrated account of how specific digital technology skills relate to technopreneurship development in Anambra State. The first gap is conceptual. Digital literacy, digital technology use, digital marketing skill and entrepreneurial digital skill are frequently treated as broad or overlapping constructs. Such aggregation can conceal the distinct contribution of communication, accounting and marketing capabilities.

Methodology

The study adopted a correlational survey research design to determine the statistical influence of communication technology, accounting technology and marketing technology on technopreneurship development among Business Education students in tertiary institutions in Anambra State. The study was conducted in four tertiary institutions offering Business Education, namely Nwafor Orizu College of Education, Nsugbe (NOCE), Nnamdi Azikiwe University, Awka (NAU), Federal College of Education (Technical), Umunze (FCETU), and Chukwuemeka Odumegwu Ojukwu University (COOU). The population comprised 322 final-year degree Business Education students, distributed as follows: NOCE

(47), NAU (94), FCETU (78), and COOU (103). Using the Taro Yamane formula at a 5% level of precision, a sample size of 178 students was obtained. Proportionate stratified sampling was used to select 26 students from NOCE, 52 from NAU, 43 from FCETU and 57 from COOU. Data were collected using a researcher-developed Digital Technology Skills and Technopreneurship Development Questionnaire (DTSTDQ) comprising 24 substantive items distributed across Communication Technology Skill (6 items), Accounting Technology Skill (6 items), Marketing Technology Skill (6 items), and Technopreneurship Development (6 items). The items were measured on a four-point Likert scale ranging from Strongly Agree (4) to Strongly Disagree (1). The instrument was subjected to face and content validation by experts in Business Education and educational measurement and evaluation. A pilot test was conducted with 30 Business Education students of the Federal College of Education (Technical), Asaba, who were not part of the study population but had similar characteristics to the study respondents. Cronbach's alpha coefficients of 0.83, 0.76 and 0.82 were obtained for Communication Technology, Accounting Technology and Marketing Technology, respectively, indicating satisfactory internal consistency. The final questionnaire was converted to a Google Form and administered electronically through the various WhatsApp platforms of final-year Business Education students in the four institutions. The completed responses were retrieved electronically and prepared for analysis. A total of 147 properly completed responses were obtained and used for the analysis. These valid responses represented an 82.6% response rate, which was considered robust for the study. The data were analyzed using Statistical Package for the Social Sciences (SPSS), version 25. Descriptive statistics were used where necessary while simple and multiple linear regression were used to determine the effect of the identified digital technology skill dimensions on technopreneurship development. The hypotheses were tested at the 0.05 level of significance. The null hypotheses were rejected where the p-value was less than 0.05 and not rejected where the p-value was greater than or equal to 0.05.

Results

The regression results are presented in four distinct tables corresponding to the three research questions, hypotheses, and the combined model.

Table 1. Simple regression of communication digital skill on technopreneurship development (N = 147)

Predictor	R	R^2	Adj. R^2	F	p	B	β	t
Communication digital skill	.390	.152	.146	26.019	< .001	.420	.390	5.101

Table 1 shows a positive and statistically significant effect of communication digital skill on technopreneurship development, $R = .390$, $R^2 = .152$, $F(1,145) = 26.019$, $p < .001$. Communication digital skill explained 15.2% of the variance in technopreneurship development. The positive coefficient ($B = .420$; $\beta = .390$) indicates that higher communication digital skill was associated with higher technopreneurship development. The null hypothesis was rejected.

Table 2. Simple regression of accounting digital skill on technopreneurship development (N = 147)

Predictor	R	R^2	Adj. R^2	F	p	B	β	t
Accounting digital skill	.490	.240	.235	45.780	< .001	.494	.490	6.766

Table 2 indicates a positive and statistically significant effect of accounting digital skill on technopreneurship development, $R = .490$, $R^2 = .240$, $F(1,145) = 45.780$, $p < .001$. Accounting digital skill independently explained 24.0% of the variance. The coefficient was positive ($B = .494$; $\beta = .490$), and the null hypothesis was rejected. The result represents the largest explanatory contribution among the three single-predictor models.

Table 3. Simple regression of marketing digital skill on technopreneurship development (N = 147)

Predictor	R	R^2	Adj. R^2	F	p	B	β	t
Marketing digital skill	.226	.051	.044	7.775	.006	.283	.226	2.788

Table 3 shows that marketing digital skill significantly predicted technopreneurship development, $R = .226$, $R^2 = .051$, $F(1,145) = 7.775$, $p = .006$. The model explained 5.1% of the variance. The positive

coefficient (B = .283; β = .226) indicates that higher marketing digital skill was associated with higher technopreneurship development. The null hypothesis was rejected for the simple regression model.

Table 4. Multiple regression coefficients for communication, accounting and marketing digital skills (N = 147)

Variable	B	β	t	p
Constant	1.122	—	3.041	.003
Communication digital skill	.299	.277	3.584	< .001
Accounting digital skill	.421	.417	5.531	< .001
Marketing digital skill	−.034	−.027	−.341	.733

Model summary: R = .553, R^2 = .306, adjusted R^2 = .292, F(3,143) = 21.043, p < .001.

Table 4 shows that the three digital skill domains jointly produced a statistically significant model and explained 30.6% of the variance in technopreneurship development. In the joint model, accounting digital skill was the strongest unique predictor (β = .417, p < .001), followed by communication digital skill (β = .277, p < .001). Marketing digital skill did not make a significant unique contribution after the other two variables were controlled (β = −.027, p = .733). Consequently, the simple-regression result for marketing should not be interpreted as evidence of a significant unique effect in the combined model. The joint model rejects the null hypotheses for communication and accounting on unique effects; for marketing, the evidence supports retention of the null when the other two predictors are controlled.

Discussion of Findings

Communication Digital Skill and Technopreneurship Development

The significant positive effect of communication digital skill indicates that students with stronger digital communication capability tend to demonstrate stronger technopreneurship development. The result agrees with Onwubuya and Odogwu (2023), who reported substantial relationships between digital communication and entrepreneurial intentions among Business Education students in Anambra State. It is also consistent with Ashiru et al. (2023), who showed the importance of emerging digital communication technologies for resilience among Nigerian SMEs. The present finding extends those studies by treating communication skill as a specific predictor of technopreneurship development rather than as one component of general digital literacy or organisational resilience.

The result can be explained through Human Capital Theory. Communication skill is productive because it enables students to connect with customers, suppliers, collaborators and information sources. It supports opportunity recognition, customer validation and coordination. Its continued significance in the multiple model suggests that communication provides a distinct entrepreneurial capability even when accounting and marketing skills are considered. For Business Education, the implication is that digital communication should be taught as an entrepreneurial process—networking, customer interaction, negotiation, feedback and collaboration—not merely as the operation of communication applications.

Accounting Digital Skill and Technopreneurship Development

Accounting digital skill produced the strongest simple and unique multiple-regression effect. This is an important finding because accounting technology has received less attention in student-focused technopreneurship research than communication and marketing. The finding is consistent with Pargmann et al. (2023), who demonstrated that accounting digitalisation is changing activities and competence requirements, and with Lutfi et al. (2022) and Imjai et al. (2023), who linked digital accounting capabilities with organisational or competitive performance. It also complements Ishola (2025), which specifically examined digital accounting skills among Business Education students in relation to accountpreneurial intentions.

The strength of accounting digital skill may reflect the centrality of financial information to sustainable venture activity. A student may identify an opportunity and communicate with customers, but without the ability to record transactions, monitor costs, prepare digital financial information and interpret performance, technology-enabled activity may not become manageable enterprise activity. The result therefore supports a broader view of accounting education: digital accounting competence is not solely a technical requirement for accounting specialists; it is part of the entrepreneurial infrastructure needed for venture control and informed decision-making.

Marketing Digital Skill and Technopreneurship Development

Marketing digital skill significantly predicted technopreneurship development when considered alone, but its explanatory power was modest. This is consistent with Nigerian Business Education evidence showing that digital marketing is important but unevenly acquired (Abdulkarim & Danagogo, 2023; Okeke, 2024; Olatunde, 2023). The result suggests that marketing competence is relevant to entrepreneurial development because it helps students reach customers, communicate value and test market responses.

The more important finding, however, is that marketing digital skill was not a significant unique predictor after communication and accounting skills were controlled. This does not mean that digital marketing is irrelevant. Rather, its simple effect overlaps partly with other digital capabilities. The original correlation matrix showed moderate associations among the skill domains, including communication with marketing and accounting with marketing. Students who are stronger in one digital business domain may therefore tend to be stronger in others. Once shared variance is controlled, marketing skill did not explain additional unique variation in this sample. This distinction is methodologically important and provides a more defensible conclusion than stating that marketing skill has no relationship with technopreneurship.

Joint Contribution and Implications of the 30.6% Explained Variance

The combined model explained 30.6% of the variance in technopreneurship development. The result supports the view that technopreneurship is multidimensional and requires a portfolio of complementary business capabilities. Communication provides connectivity, accounting provides financial control, and marketing provides market-facing capability. Their joint contribution suggests that the most useful curriculum response is integration rather than teaching the three skill domains as isolated software competencies.

At the same time, 69.4% of the variance remained unexplained. This is theoretically meaningful. Digital skills are important resources, but they are not the whole explanation of technopreneurship development. Wibowo et al. (2026) demonstrates a related point from a different theoretical perspective: technology-integrated entrepreneurship education influenced technopreneurship behaviour through perceived usefulness, ease of use, trust, social influence and behavioural intention. Other factors potentially relevant to Business Education students include entrepreneurial self-efficacy, access to devices and connectivity, lecturer support, experiential learning, entrepreneurial family exposure, financial resources, creativity, technology anxiety and institutional support. Future research should therefore move from a skills-only model toward integrated human-capital, educational and entrepreneurial-ecosystem models.

Finally, the study reinforces the importance of moving from broad digital literacy claims to competency-specific evidence. This is particularly relevant as Nigerian education policy increasingly emphasises practical digital competence, AI awareness, data literacy and technology-enabled teaching. The challenge for Business Education is to translate these policy aspirations into observable student capabilities. The present findings provide one empirical basis for that translation by showing that specific business-facing digital skills have measurable relationships with technopreneurship development, although their contributions are not identical.

The result also has an important curriculum implication. Rather than asking whether Business Education students have been exposed to digital technology, curriculum planners should ask whether students can combine digital competencies to complete authentic entrepreneurial tasks. The evidence from the present study supports stronger attention to accounting and communication skills while retaining marketing as an essential complementary competency. The appropriate response is therefore not to remove marketing from the curriculum because its unique coefficient was non-significant; rather, marketing should be integrated with communication and accounting so that students understand how market engagement, customer relationships and financial outcomes are connected.

The 30.6% explained variance is substantial enough to demonstrate that digital technology skills matter, but it is also sufficiently incomplete to show that technopreneurship development cannot be explained by digital skill alone. The unexplained variance points toward other relevant factors such as entrepreneurial self-efficacy, opportunity recognition, access to finance, institutional support, mentoring, digital infrastructure, prior business experience, social networks and students' willingness to experiment with technology. This limitation should be viewed as theoretically productive rather than as a weakness of the model: it shows that digital skills are enabling capabilities within a wider entrepreneurial ecosystem.

The findings also clarify why the digital-skills question should not be reduced to a simple technology-access narrative. The significant simple effects indicate that students who report stronger communication, accounting and marketing digital skills also report stronger technopreneurship

development. However, the multiple regression result demonstrates that these capabilities are interrelated. Communication and accounting retained significant unique effects, whereas marketing did not. This pattern is consistent with the idea that technopreneurship depends on a portfolio of competencies and that some skills carry information that overlaps with other business functions.

Conclusion

The study concludes that communication, accounting and marketing digital technology skills are positively associated with technopreneurship development when considered separately, but their unique contributions differ when considered simultaneously. Accounting digital skill emerged as the strongest unique predictor, followed by communication digital skill. Marketing digital skill showed a significant simple relationship but did not contribute uniquely in the combined model. Collectively, the three skill domains explained 30.6% of the variance in technopreneurship development. The evidence therefore supports a shift from generic digital literacy toward practical, integrated digital-business competence.

Recommendations

Based on the findings of the study, the following recommendations are:

1. Business Education departments should strengthen students' acquisition of digital communication skills by incorporating practical activities that require students to use available digital platforms and tools for business communication customer interaction, networking an promotion.
2. Curriculum developers and Lecturers should place greater emphasis on the development of students' digital accounting skills because it produced the largest unique contribution in the present study. Students should be provided with opportunities to apply digital accounting techniques to basic business activities such as recording transactions, preparing financial information, monitoring cash flows and decision making.
3. Institutions should strengthen access to reliable internet, relevant accounting and marketing applications, digital-business laboratories and industry-linked mentoring so that students can practise skills in realistic environments.

Limitations and Future Research

The study used a correlational cross-sectional design and self-reported questionnaire data; consequently, the regression coefficients should not be interpreted as proof of causation. The analysis was based on 147 valid responses and did not control for factors such as prior digital training, access to devices, gender, entrepreneurial family background or institutional differences. Future studies should use larger multi-institutional samples, practical performance assessments, longitudinal designs and models that include entrepreneurial self-efficacy, digital infrastructure, institutional support and technology acceptance variables. Such studies would complement Wibowo et al. (2026) by testing whether specific skill acquisition can predict sustained technopreneurship behaviour over time.

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SOCIAL MEDIA ADOPTION AND USAGE PATTERNS AMONG SMEs IN MAINLAND LOCAL GOVERNMENT AREA OF LAGOS STATE

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Abstract
This study investigated social media adoption and usage patterns among Small and Medium Enterprises (SMEs) in Mainland Local Government Area of Lagos State. The purpose was to test the frequency of social media usage, the most frequently used platforms, the perceived operational effectiveness, and a test of the correlation between frequency of usage and perceived operational effectiveness. The quantitative survey research design was taken, and a structured questionnaire was conducted among the 184 SME owners who were chosen by purposive sampling. Descriptive statistics and Pearson Product-Moment Correlation were used to analyse the data. The results showed that SMEs actively use social media and especially WhatsApp, Instagram, Facebook, and Tik Tok and tend to believe that the media is effective in communication, visibility, customer engagement, and cost-effective promotion. The research also established a strong positive correlation between the frequency of social media use and effectiveness of operation. The conclusion made was that social media has a positive influence on SME operation, but the use of social media is still not organised. The research proposes SME capacity building, integration of curriculum in Business Education, and enhancing policy support of SME digitalisation.
Keywords: *Digital Entrepreneurship, Small and Medium Enterprises Social Media Adoption, Usage Pattern*

Introduction
SMEs are the foundation of the Nigerian economy and highly important in creating employment, distributing income, and diversifying the economy. National Bureau of Statistics (NBS) and Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) state that over 96 percent of all enterprises in Nigeria are SMEs, over 46 to 48 percent of the national Gross Domestic Product (GDP) is contributed by SMEs, and more than 84 percent of the national workforce is employed in SMEs (NBS, 202 SMEs are the key drivers of poverty alleviation and inclusive development, especially in a developing economy that is typified by a fast-growing population and scarce formal job opportunities (PwC Nigeria, 2024). They are not just important to economic indicators alone because SMEs offer livelihoods to millions of households and develop entrepreneurial potentials at the bottom level.
The largest concentration (7.3%) of SMEs in Nigeria is found in the commercial and financial center of the country, Lagos State (Agusto & Co., 2023). More than 30 percent of the GDP in Nigeria is made up by the state, and nearly half of its economic output is service and activities related to trade, most of which are made up of SMEs (Lagos State Ministry of Economic Planning and Budget, 2024). In this context, Mainland Local Government Area is a densely populated and commercially dynamic area, where thousands of formal and informal SMEs exist that deal with retail, food services, fashion, logistics, technology, and digital trade. These businesses play a major role in job creation, youth involvement and local tax collection. Nonetheless, SMEs of Lagos Mainland are forced to work under a lot of pressure because of the congested environment, large population density and unstable market conditions due to which the sustainability and growth of these enterprises are at risk.
Moreover, over the past years, the Nigerian SMEs have been experiencing increasing structural and operational pressures. These are poor infrastructure, unpredictable power supply, expensive operations, inaccessibility to credit, various taxation, and regulatory bottlenecks, and decreased consumer purchasing power (Agusto and Co., 2023). SMEs are also being pushed more and more to

struggle with big corporations and multinational companies that have better financial resources, technology and dominate the market better. It is indicated that a high percentage of enterprises in Nigeria, which are SMEs, do not survive their initial five years of operation, and this is partly because of the challenges to access the markets and to retain their customers (Moniepoint, 2025). The challenges have been especially high in cities such as Lagos Mainland where the reality of high competition and economic shocks puts SMEs at a greater risk of business failure.

It is on this background that social media has become one of the most renowned tools that SMEs have adopted to cope with these limitations. On the one hand, this fact has made social media platforms like WhatsApp, Instagram, Facebook, and the fast-growing Tik Tok the focus of SME marketing, customer interactions, communication, and sales operations (Kemp, 2024; NITDA, 2023). On the one hand, there are more than 33 million social media users in Nigeria, so social media platforms have become a center of SME marketing In Nigeria, empirical research has consistently indicated that the use of social media increases the market reach and competitive ability of SMEs through the ability to access customers cheaply, interactively, and in real time (Ogunnaike and Kehinde, 2013; Parveen, Jaafar and Ainin, 2015). Nonetheless, the increasing commercialisation of social media, especially the short-form content, the culture of influencers, and creator funds on Tik Tok and Instagram, has altered the use intentions of a significant proportion of users. More often than not, content creation is not motivated by organised business goals, but by the need to make fast personal money, which in many cases, moves SME owners away the strategic use of social media in regard to business growth (Salau, Ismaila, Adebayo, & Akinwumi, 2026). This trend draws questions on whether the regular use of social media inevitably becomes operational effectiveness of SMEs.

The necessity of the study is also explained by socio-economic conditions of the Lagos Mainland Local Government Area, in particular, youth behaviour. There are elevated levels of youth unemployment and poverty in the region, which have been associated with antisocial and high-risk behaviours, including cultism, gang violence in neighbourhoods such as Bariga and Mushin, drug abuse, street fighting, and gambling (Boge, 2024; African Cities Research Consortium, 2024). The SMEs and social media platforms thus are viable avenues towards economic inclusion, self-employment among the youth, and social stabilisation. The knowledge about the frequency with which SMEs utilise social media, what platforms they depend on, and how the frequency of use is connected with the operational effectiveness is important in ensuring that targeted digital activity, enhanced SME sustainability, and efficient youth involvement. Hence, this study examined social media adoption and usage patterns among SMEs in Mainland Local Government Area of Lagos State.

Statement of the Problem

Despite the popularity of the social media among the Small and Medium Enterprises (SMEs) in Mainland Local Government Area of Lagos State, there is increasing anxiety that its use is more a matter of trend and monetisation interests than a business goal. Most of the SMEs use social media regularly without having adequate knowledge of the most effective social media and the role of such use in operational effectiveness. This scenario brings up the question of whether business growth is indeed being aided by more social media action or this is just a distraction to the owners. Therefore, the research problem of the proposed study is to analyse the trends in the use of social media by SMEs and establish their connection with operation effectiveness in the local environment.

Purpose of the Study

This study examined social media adoption and usage patterns among SMEs in Mainland Local Government Area of Lagos. Specifically, this study is guided by three objectives, which are to:

1. determine the frequency with which SMEs in Mainland Local Government Area use social media in their daily business operations.
2. identify the social media platforms most commonly utilised by SMEs in Mainland Local Government Area.
3. ascertain the perceived operational effectiveness of the social media platform for business operations.
4. examine the relationship between the frequency of social media usage and the operational effectiveness of SMEs in Mainland Local Government Area.

Research Questions

Three research questions were answered in this study as follows:

1. How often do SMEs in Mainland Local Government Area use social media in their daily business operations?
2. Which social media platforms are most commonly utilised by SMEs in the Mainland Local Government Area?

3. To what extent do SMEs perceive social media platforms as operationally effective for their business operations?

4. What is the relationship between the frequency of social media usage and the operational effectiveness of SMEs in Mainland Local Government Area?

Research Hypotheses

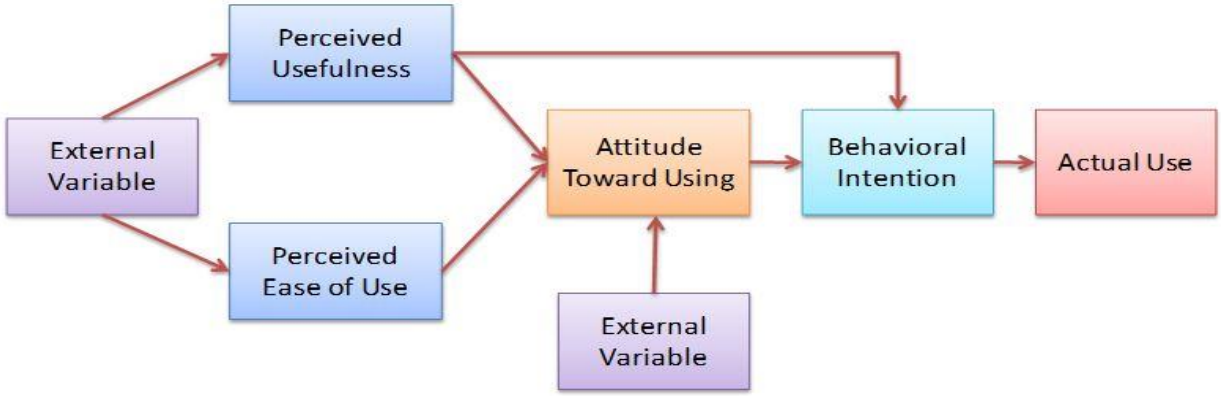
One null hypothesis was tested in this study:

Ho_1: There is no significant relationship between the frequency of social media usage and the operational effectiveness of Small and Medium Enterprises (SMEs) in Mainland Local Government Area of Lagos State.

Theoretical Framework: Technology Acceptance Model

Technology Acceptance Model (TAM) was firstly created by Davis in 1989 in order to describe the process of acceptance and use of information technology by users in the organisational environment. The theory was based on the Theory of Reasoned Action and suggested that two cognitive beliefs including perceived usefulness and perceived ease of use played a major role in determining technology adoption (Davis, 1989).

Figure 1: Technology Acceptance Model



Source**:** Phan and Daim (2011)

Perceived usefulness was the degree to which a person believed that the use of system would lead to a better job performance and perceived ease of use was the degree to which the system was believed to be easy to use. TAM also hypothesised that the beliefs were the driver of the attitude of users, behavioural intentions and ultimately actual use of the system (Davis, Bagossi, and Warshaw, 1989). The Technology Acceptance Model has two significant propositions that were selected and implemented in the framework of the current study directly in accordance with the purpose of the study. First, perceived usefulness was captured in perceptions of SMEs about social media being useful in enhancing communication, increasing the marketing area, and sustaining business activities. This suggestion guided the objective which aimed at establishing the social media platforms that were most frequently used by SMEs and how these platforms were viewed as being the most effective in the Mainland Local Government Area. Second, the ease of use was the reason why SMEs preferred platforms that were cheap, easy and simple to use in their daily business operations, which informed the objective that investigated the frequency with which the SMEs used social media in their daily operations. Also, actual usage, operationalised by frequency of social media use, reflected realised technology acceptance and directly favoured the objective that tested the relationship between the frequency of social media use and the operational effectiveness of SMEs. Together, these propositions were a logical theoretical foundation upon which to analyse the relationship between social media acceptance and operational outcomes of SMEs in Mainland Local Government Area.

Definition and Classification of SMEs

The classification of SMEs in Nigeria is provided by different regulatory bodies, primarily the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) and the Central Bank of Nigeria (CBN). While both classifications are similar, they use different criteria; SMEDAN focuses on the number of employees and asset base (excluding land and building), while CBN uses asset base and annual turnover (SMEDAN, 2021).

SMEDAN Classification

Category	No. of Employees	Asset Base (₦)
Micro	Less than 10	Less than ₦5 million
Small	10 – 49	₦5 million – ₦50 million
Medium	50 – 199	₦50 million – ₦500 million

Source**:** SMEDAN, (2021)

CBN Classification

Category	Asset Base (₦)	Annual Turnover (₦)
Micro	Less than ₦5 million	Less than ₦5 million
Small	₦5 million – ₦100 million	₦5 million – ₦100 million
Medium	₦100 million – ₦500 million	₦100 million – ₦500 million

Source**:** Central Bank of Nigeria, (2020)

These classifications are used to guide government support, funding programs, and policy implementation. While SMEDAN classifications are often used for policy and statistical purposes, CBN's classifications are applied more in the financial and credit sectors to determine access to loans and other banking services.

Empirical Review on Frequency of Social Media Usage among SMEs

Empirical research repeatedly indicates that SMEs are actively implementing social media as a normal business activity, even though application levels differ depending on the situation. Ogunnaike and Kehinde (2013) noted that social networking sites were widely used by Nigerian business persons in Ota to communicate with customers and promote their products and daily interaction was a common practice among growth oriented firms. On the same note, Parveen, Jaafar and Ainin (2015) found that Malaysian SMEs used social media frequently to facilitate the coordination, customer response and information sharing, and that frequent use was deemed essential to organisational responsiveness. Isiaka, Adeosun, and Okewale (2022) conducted a study in Nigeria based on national survey data that revealed that SMEs that posted on social media on a daily or regular basis realised considerably greater revenues compared to those that did not post regularly. According to Palladan et al. (2023), the usage intensity of the Nigerian SMEs was further determined as minimal, basic, moderate, and extensive usage; however, the frequency of use was a direct factor in determining performance outcomes with most firms performing at basic to moderate usage. In more recent studies, Okechukwu, Amin, and Mohammed (2025) found that almost every day, SMEs in Aba were on Facebook, Instagram, and Whatsapp marketing, taking orders, and communicating with customers. Though these studies confirm that the frequent use of social media is a common and healthy habit, they mostly consider frequency as a trait and not as a variable. In addition, there are minimal studies that analyse frequency in a local governmental context, which does not enable the measurement of how daily usage patterns are working in localised socio economic contexts such as Lagos Mainland.

Empirical Review on Social Media Platforms usage and Perceived Effectiveness.

The platform that SMEs have embraced and the perceived effectiveness of the platforms has been studied by numerous studies. According to Ogunnaike and Kehinde (2013), Facebook was the leading platform among SMEs in Nigeria because it is readily available and has interactive capabilities. Similarly, Parveen et al. (2015) established that SMEs favored platforms with real time interaction and feedback. Oyekan (2022) also emphasised that Facebook, Instagram, and Whatsapp were the most popular platforms among Nigerian SMEs and that WhatsApp provided the efficiency of transactions, and Instagram contributed to the product visibility. Isiaka et al. (2022) established that SMEs that used more than one platform recorded improved financial performance compared to those that used single platforms. Okechukwu et al. (2025) empirically proved that Facebook, Instagram, and WhatsApp significantly and positively impacted the performance of SMEs, and Instagram has the strongest impact as it is more visual and branding. Palladan et al. (2023) also found that the choice of the platform was influenced by the environmental pressure and familiarity with the owners instead of the systematic

strategy. Although this has been established, the majority of the research is on establishing popular platforms instead of critically comparing platform performance in a given locality. Moreover, novel platforms like TikTok are frequently discussed in a descriptive but non-systematic manner in terms of their impact on SME performance at the grassroots level.

Empirical Review on Social Media Usage and SME Operational Effectiveness

There is also a strong empirical evidence on the positive association between the use of social media and the effectiveness of the operation of SMEs. According to Ogunnaike and Kehinde (2013), social networking was associated with better customer relations and business development. As demonstrated by Parveen et al. (2015), the use of social media resulted in the improvement of coordination within the company, marketing performance, and decision making. Isiaka et al. (2022) have presented quantitative data that SMEs that had social media presence had far more profits and revenues as compared to non users. Palladan et al. (2023) moved this debate a step further by demonstrating that the adoption of social media directly contributed to the performance of SMEs and that the relationship between business strategy and adoption was moderated. Okechukwu et al (2025) established that over 60 percent of the differences in SME performance in Aba could be attributed to the use of social media as sales growth, customer engagement, and efficiency of communication improved. Though, the majority of research undertakings theorise the use of social media in general, without specifically isolating the frequency of use as an operational effectiveness predictor. Also, the measure of performance is usually monetised and little attention is paid to operational effectiveness, a factor comprised of speed, coordination, and process efficiency. Such omissions undermine the explanatory power of existing literature.

Methodology

This study adopted a quantitative research design, which enabled the collection of numerical data that facilitated objective measurement, as well as the testing of relationships among key variables of the study. The population of the study comprised SME owners operating within Mainland Local Government Area of Lagos State. A purposive sampling technique was employed to select respondents who were considered relevant to the study objectives. Specifically, SME owners who had at least primary education and were able to read and write in English were targeted, on the grounds that they possessed the minimum literacy required to meaningfully engage with social media platforms and accurately respond to the research instrument. A total of 350 questionnaires were administered to eligible SME owners across different business sectors within the study area. Out of these, 184 questionnaires were correctly completed and retrieved within 3 months of data collection, representing the final sample sise used for data analysis.

Data for the study were collected using a researcher-designed questionnaire titled *"Social Media Adoption and Usage Patterns among SMEs Questionnaire (SMAUPS-Q)"*. The instrument was structured into four sections. Section A elicited demographic information of the respondents (4 items), including gender, educational qualification, type of business, and years of business experience. Section B identified the social media platforms most commonly used by SMEs and was designed using an open-ended format. Section C examined the frequency of social media usage in daily business operations (10 items), focusing on how often SMEs engage social media for marketing, communication, and sales-related activities. Finally, Section D measured the perceived effectiveness of the platforms for business operations (10 items). Items in Sections B to D were rated on a 4-point Likert scale ranging from Strongly Agree (5) to Strongly Disagree (1).

To ensure the reliability of the instrument, a pilot study was conducted using 20 SME owners outside the main sample but within a similar business environment. The internal consistency of the questionnaire was tested using Cronbach's Alpha, which yielded coefficients ranging between 0.718 and 0.752 across the constructs, indicating that the instrument was sufficiently reliable for the main study. Data collected were analysed using descriptive and inferential statistics. Descriptive statistics such as frequency counts, percentages, and mean scores were used to answer the research objectives. The Pearson Product Moment Correlation was employed to test the null hypothesis at a 0.05 level of significance. Statistical analyses were carried out using Statistical Package for Social Science.

Results

Table 1: Presentation of Participants' Demographics

Variable	Category	N	%
Gender	Male	42	22.8
	Female	142	77.2
Educational Qualification	Primary School Certificate	18	9.8
	Secondary School Certificate	56	30.4
	NCE / OND	40	21.7
	HND / Bachelor's Degree	70	38.0
	Postgraduate Qualification	0	0.0
Type of Business	Trading	70	38.0
	Manufacturing	28	15.2
	Services	56	30.4
	Agriculture	0	0.0
	Other	30	16.3
Years of Business Experience	Less than 5 years	15	8.2
	5 – 10 years	68	37.0
	11 – 15 years	36	19.6
	Above 15 years	65	35.3

Table 1 indicates that out of the 184 respondents, 142 (77.2%) were female, while 42 (22.8%) were male, showing higher female participation in SMEs. With respect to education, 70 respondents (38.0%) possessed HND/Bachelor's degrees, 56 (30.4%) had secondary school certificates, 40 (21.7%) held NCE/OND, and 18 (9.8%) had primary education, while none had postgraduate qualifications. In terms of business type, 70 respondents (38.0%) were engaged in trading, 56 (30.4%) in services, 28 (15.2%) in manufacturing, and 30 (16.3%) in other businesses. Regarding experience, 68 respondents (37.0%) had 5–10 years, 65 (35.3%) had over 15 years, 36 (19.6%) had 11–15 years, and 15 (8.2%) had less than five years' experience.

Answering of Research Questions

Research Question 1: How often do SMEs in Mainland Local Government Area use social media in their daily business operations?

Table 2: Frequency of Social Media Usage among Respondents

S/N	Items	Never	Rarely	Sometimes	Often	Very Often	Mean
1	I check my social media accounts as soon as I wake up	10 (5.4%)	18 (9.8%)	36 (19.6%)	60 (32.6%)	60 (32.6%)	3.78
2	I find it difficult to stop using social media even when I have other important things to do	20 (10.9%)	30 (16.3%)	50 (27.2%)	48 (26.1%)	36 (19.6%)	3.27
3	I spend more time on social media than I originally intended	12 (6.5%)	22 (12.0%)	40 (21.7%)	60 (32.6%)	50 (27.2%)	3.62
4	I feel anxious or restless when I cannot access social media	40 (21.7%)	36 (19.6%)	50 (27.2%)	34 (18.5%)	24 (13.0%)	2.81
5	I use social media to escape from negative feelings or boredom	18 (9.8%)	30 (16.3%)	56 (30.4%)	44 (23.9%)	36 (19.6%)	3.27
6	I compare myself to others based on what I see on social media	30 (16.3%)	40 (21.7%)	52 (28.3%)	36 (19.6%)	26 (14.1%)	2.93
7	I lose track of time while browsing social media	14 (7.6%)	20 (10.9%)	40 (21.7%)	62 (33.7%)	48 (26.1%)	3.59
8	I neglect responsibilities because of social media use	50 (27.2%)	46 (25.0%)	44 (23.9%)	26 (14.1%)	18 (9.8%)	2.54
9	I feel the need to check notifications frequently throughout the day	10 (5.4%)	18 (9.8%)	36 (19.6%)	64 (34.8%)	56 (30.4%)	3.75
10	I feel upset if my posts do not receive attention	36 (19.6%)	40 (21.7%)	50 (27.2%)	34 (18.5%)	24 (13.0%)	2.84

Table 2 indicate that SMEs in Mainland Local Government Area use social media frequently, as supported by all ten metrics. A high proportion of respondents reported checking social media upon waking (65.2%; Mean = 3.78) and frequently checking notifications (65.2%; Mean = 3.75). Many also spend more time than intended (59.8%; Mean = 3.62) and lose track of time (59.8%; Mean = 3.59), indicating strong engagement. Moderate responses were observed for difficulty stopping usage (45.7%; Mean = 3.27) and using social media to escape boredom (43.5%; Mean = 3.27). Comparatively lower engagement was recorded for anxiety when unable to access social media (31.5%; Mean = 2.81), social comparison (33.7%; Mean = 2.93), emotional reaction to low engagement (31.5%; Mean = 2.84), and neglect of responsibilities (23.9%; Mean = 2.54). Hence, SMEs use social media often, though mainly for general engagement rather than structured business purposes.

Research Question 2: Which social media platforms are most commonly utilised by SMEs in the Mainland Local Government Area?

Table 3: Social Media Platforms Used by SMEs

S/N	Platform	Yes (n)	%
1	WhatsApp	170	92.4
2	Facebook	120	65.2
3	Instagram	135	73.4
4	TikTok	110	59.8
5	X (Twitter)	30	16.3
6	LinkedIn	0	0.0
7	YouTube	0	0.0
8	Google Business Profile	0	0.0
9	Telegram	80	43.5
10	Snapchat	0	0.0
11	Pinterest	0	0.0
12	Threads	15	8.2
13	Email Marketing	0	0.0

The findings show that SMEs in Mainland Local Government Area predominantly utilise a few key social media platforms for their business activities. WhatsApp (92.4%) is the most widely used platform, indicating its strong role in direct communication and daily business operations. This is followed by Instagram (73.4%) and Facebook (65.2%), which are commonly used for product display and marketing. TikTok (59.8%) also records notable usage, reflecting its growing relevance in creating awareness through short-form content. In contrast, other platforms such as Telegram (43.5%), X (16.3%), and Threads (8.2%) show relatively lower adoption, while several platforms recorded no usage. Hence, SMEs mainly rely on WhatsApp, Instagram, Facebook, and TikTok, highlighting a preference for accessible, interactive, and visually driven platforms for business engagement.

Research Question 3: To what extent do SMEs perceive social media platforms as operationally effective for their business operations?

Table 4: Perceived Effectiveness of Social Media Platforms

S/N	Items	SA (5)	A (4)	N (3)	D (2)	SD (1)	Mean
1	The social media platforms I use make it easy to communicate with my customers.	70 (38.0%)	65 (35.3%)	25 (13.6%)	14 (7.6%)	10 (5.4%)	3.93
2	The social media platforms I use help my business reach a wide range of customers.	68 (37.0%)	70 (38.0%)	20 (10.9%)	16 (8.7%)	10 (5.4%)	3.93
3	The social media platforms I use are effective for advertising my products or services.	60 (32.6%)	72 (39.1%)	26 (14.1%)	16 (8.7%)	10 (5.4%)	3.85
4	The social media platforms I use make it easier for customers to make enquiries.	72 (39.1%)	66 (35.9%)	20 (10.9%)	14 (7.6%)	12 (6.5%)	3.93
5	The social media platforms I use help customers locate my business easily.	50 (27.2%)	60 (32.6%)	36 (19.6%)	22 (12.0%)	16 (8.7%)	3.57
6	The social media platforms I use improve awareness of my business.	75 (40.8%)	65 (35.3%)	20 (10.9%)	14 (7.6%)	10 (5.4%)	3.93
7	The social media platforms I use are cost-effective for promoting my business.	80 (43.5%)	60 (32.6%)	18 (9.8%)	14 (7.6%)	12 (6.5%)	3.99
8	The social media platforms I use help attract new customers.	65 (35.3%)	70 (38.0%)	24 (13.0%)	14 (7.6%)	11 (6.0%)	3.90
9	The social media platforms I use help me maintain relationships with existing customers.	70 (38.0%)	64 (34.8%)	22 (12.0%)	16 (8.7%)	12 (6.5%)	3.89
10	Overall, the social media platforms I use are effective in supporting my business activities.	72 (39.1%)	66 (35.9%)	20 (10.9%)	14 (7.6%)	12 (6.5%)	3.92

The findings in Table 4 show that SMEs in Mainland Local Government Area perceive social media platforms as moderately effective for business operations across all ten metrics. A majority agreed that social media enhances communication (73.3%; Mean = 3.93), enables wider customer reach (75.0%; Mean = 3.93), supports advertising (71.7%; Mean = 3.85), and facilitates customer enquiries (75.0%; Mean = 3.93). Similarly, respondents acknowledged its role in improving business awareness (76.1%; Mean = 3.93), attracting new customers (73.3%; Mean = 3.90), maintaining relationships (72.8%; Mean = 3.89), and overall effectiveness (75.0%; Mean = 3.92). It was also considered cost-effective (76.1%; Mean = 3.99). However, effectiveness in helping customers locate businesses was comparatively lower (59.8%; Mean = 3.57). Hence, SMEs perceive social media as useful but not fully maximised for structured business operations.

Test of Hypothesis

Ho_1: There is no significant relationship between the frequency of social media usage and the operational effectiveness of Small and Medium Enterprises (SMEs) in Mainland Local Government Area of Lagos State.

Table 5: Correlation Analysis showing relationship between frequency of social media usage and operational effectiveness of SMEs

Variable	N	$\bar{X}$	SD	df	Cal r-value	p-value	Decision
Frequency of Social Media Usage	184	3.35	0.62	182			Ho Rejected
Operational Effectiveness of SMEs	184	3.88	0.41		0.312	0.001	

Significant at $p < 0.05$

The results in Table 5 show that the mean score for frequency of social media usage is 3.35 (SD = 0.62), indicating a moderate level of usage among SMEs, while operational effectiveness has a higher mean of 3.88 (SD = 0.41), suggesting relatively positive business outcomes. The Pearson correlation coefficient (r = 0.312) indicates a moderate positive relationship between the two variables.

Furthermore, the p-value (0.001) is less than the significance level of 0.05, confirming that the relationship is statistically significant. This implies that SMEs that use social media more frequently tend to experience better operational effectiveness. Although the relationship is not very strong, it is meaningful and suggests that increased engagement contributes to improved business performance. Therefore, the null hypothesis (Ho_1), which states that there is no significant relationship between frequency of social media usage and operational effectiveness of SMEs, is rejected.

Discussion of Findings

The results of the Research Question 1 indicate that SMEs in Mainland Local Government Area adopt the use of social media on a regular basis in their day-to-day business activities. Large percentages of the respondents indicated checking social media early in the day and often during the day as indicated by high mean scores on the items of account checking, monitoring notification, time spent online, and awareness of time loss. This trend implies that social media has integrated into the daily habits of SME owners. In the terms of TAM, such frequent use indicates high perceived ease of use since platforms are easy to use, are easily accessible, and are mobile-friendly, the more they are used repeatedly, the less cognitive and technical load they should have. This observation is consistent with Ogunnaike and Kehinde (2013) and Parveen et al. (2015), who found out that SMEs use social media regularly to communicate and to coordinate due to its convenience and low entry barriers. Nevertheless, reduced means of neglect of responsibilities and emotional distress suggest that despite a high frequency of usage, it is not too disruptive. This implies that social media is mainly a supportive tool used by the SMEs, but not a compulsive or totally non-productive tool. This localised characteristic of the evidence is an expansion of the literature that has focused on frequency of usage on primarily national or metropolitan scales, which adds context-sensitive information on Lagos Mainland.

The findings that respond to Research Question 2 indicate that SMEs depend mainly on an insufficient amount of platforms, specifically WhatsApp, Instagram, Facebook, and Tik Tok. WhatsApp became the most popular one, which indicates its use in direct communication, order handling, and managing customer relationships. Instagram and Facebook were also popular to use in marketing and displaying the products, whereas Tik Tok demonstrated an increasing importance in creating awareness. This trend is a strong indicator of the perceived usefulness construct of TAM. SMEs embraced platforms that can be directly integrated with their gross business requirements like communication with customers, visibility of products and reach to their customers through marketing. These results are in line with Oyekan (2022) and Isiaka et al. (2022), who found that interactive, visual, and cost-effective platforms are prioritised by the Nigerian SMEs. The fact that more formal or resource-demanding platforms, e.g. LinkedIn, YouTube, or Google Business Profile, are not widely used, also contributes to the thesis that ease of use and instant business applicability are more influential than strategic considerations in adoption decisions. This confirms the Palladan et al. (2023) stand that familiarity and practicality tend to influence SME platform decisions instead of digital strategy plans.

The results of Research Question 3 show that SMEs find social media platforms moderately to highly useful to support the business operations. Communication efficiency, customer reach, advertising effectiveness, awareness creation, cost-effectiveness, customer attraction and relationship maintenance were rated highly in terms of mean scores. These results indicate a high perceived usefulness, where SMEs are of the view that social media positively impacts the business performance measures of visibility, responsiveness, and market reach. Nevertheless, comparatively lower scores in helping customers find business imply that not all the operational dimensions are optimised to the maximum, which may be because of the lack of use of all the features, including location tagging or business profiles. This subtlety corroborates the previous empirical findings that SMEs tend to use the functionality of social media platforms to a greater extent. The results are aligned with Ogunnaike and Kehinde (2013), Parveen et al. (2015), and Okechukwu et al. (2025), who have demonstrated the positive impact of social media on customer interaction, marketing performance, and sales.

Lastly, the hypothesis test showed statistically significant positive correlation between frequency of social media use and operational effectiveness of SMEs. The correlation was moderate, but it proves the assumption of TAM that actual usage is the manifested technology acceptance and is a contributor to performance outcomes. SMEs that interact more with social media are likely to have improved communication, customer interaction, and operational performance. The finding fills a significant gap in the literature, as it empirically proves, on a local government scale, that frequency of use is not descriptive only but can also be used to explain operational outcomes. It supplements earlier research which has looked at performance in general but has not singled out usage frequency as a predictor.

Conclusion

Based on the findings of the study, it can be concluded that social media has become an integral part of the daily operations of SMEs in Mainland Local Government Area of Lagos State. SMEs make frequent use of accessible platforms such as WhatsApp, Instagram, Facebook, and TikTok. The study further established that SMEs generally perceive social media platforms as operationally effective, particularly in enhancing customer reach, visibility, communication efficiency, and cost-effective promotion. Notably, a statistically significant positive relationship exists between the frequency of social media usage and operational effectiveness, indicating that increased engagement contributes to improved business outcomes. However, social media tools are not yet fully maximised for structured and strategic business operations as greater strategic utilisation could enhance its benefits further.

Recommendations

Based on the findings of the study, the following recommendations are proposed:

1. **Capacity building for SMEs on strategic social media use:** SME owners should be encouraged to move beyond informal and routine use of social media by acquiring structured skills in digital marketing, customer relationship management, and business analytics. Targeted training programmes and workshops organised by government agencies, trade associations, and development partners can help SMEs maximise social media for improved operational efficiency and competitiveness.
2. **Training of Business Education teachers and curriculum integration:** Business Education teachers in tertiary institutions should be adequately trained on the practical use of social media for business operations, including digital marketing, online branding, and customer engagement. Furthermore, social media–based business practices should be integrated into the Business Education curriculum across junior secondary, senior secondary, and tertiary levels to equip students early with relevant digital entrepreneurial skills.
3. **Institutional and policy support for SME digitalisation:** Government and relevant stakeholders should provide supportive digital infrastructure, affordable internet access, and policy incentives that encourage SMEs to adopt and effectively use social media platforms. This would enhance sustained usage and improve the operational outcomes of SMEs.

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DIGITAL SKILLS AS A CATALYST FOR YOUTH TECHNO-ENTREPRENEURSHIP IN AFRICA: THE TRANSFORMATIVE ROLE OF DIGITALIZATION

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Abstract

Digital transformation is increasingly reshaping economic activity, employment and entrepreneurship across Africa. The rapid diffusion of mobile technologies, digital platforms, digital financial services and emerging technologies has created new opportunities for young people to participate in technology-driven economic activities. However, access to digital technologies does not automatically translate into productive entrepreneurial outcomes. This paper reviews the literature on the relationship between digital transformation, digital skills and youth techno-entrepreneurship in Africa, with particular emphasis on how digital skills enable young people to convert technological opportunities into entrepreneurial capabilities. The paper adopts an integrative literature review approach, drawing on studies and institutional reports published mainly between 2020 and 2026. The review reveals that digital transformation has expanded opportunities for youth entrepreneurship through digital platforms, e-commerce, fintech, EdTech, HealthTech, AgriTech and other technology-enabled activities. However, the extent to which young people benefit from these opportunities is strongly conditioned by their level and type of digital skills, as well as by infrastructure, finance, education, policy and entrepreneurial ecosystem conditions. Recent evidence further suggests that intermediate and advanced digital skills may generate greater employment and entrepreneurial value than basic digital literacy, while domain-specific information technology knowledge can strengthen opportunity recognition and nascent digital entrepreneurship. The paper argues that digital skills constitute a critical human-capital bridge between digital transformation and youth techno-entrepreneurship. It proposes an integrated framework in which digital transformation creates opportunities, digital skills generate entrepreneurial capability, and supportive ecosystems enable young people to convert these capabilities into sustainable technology-based enterprises. The paper concludes with implications for African governments, educational institutions, technology ecosystems and youth-development programmes.

Keywords: Digital transformation, digital skills, techno-entrepreneurship, youth, digital entrepreneurship, Africa, digital human capital.

1. INTRODUCTION

Digital transformation has become one of the most significant forces reshaping contemporary economies. The expansion of internet connectivity, smartphones, digital platforms, mobile financial services, cloud technologies, artificial intelligence and other emerging technologies has altered how individuals communicate, learn, work and conduct business. In Africa, these developments are occurring alongside a rapidly growing youth population and persistent challenges of unemployment, underemployment and limited access to formal economic opportunities.The convergence of these trends has generated increasing interest in digital entrepreneurship as a potential pathway for youth employment, innovation and economic inclusion. Friederici, Wahome and Graham (2020), describe the growth of digital entrepreneurship across Africa while emphasizing the importance of understanding African entrepreneurial ecosystems on their own terms.Their work demonstrates that Africa's digital entrepreneurial landscape has expanded through technology hubs, start-up ecosystems, entrepreneurship programmes, investment funds and digital platforms.

The digital transformation of African economies has also created opportunities for young people to engage in new forms of income generation. Mobile technologies, digital platforms and social media increasingly allow young people to market goods and services, communicate with customers, access information, conduct financial transactions and participate in online markets. Evidence from Centuries indicates that productive digital skills are particularly important for converting technological access into employment and income-generating opportunities. Nevertheless, digital access should not be confused

with digital capability. Having a smartphone, internet connection or access to a digital platform does not necessarily mean that an individual possesses the competencies required to create and manage a technology-based enterprise. This distinction is increasingly recognized in the literature. Carboni, Makuvaza and van der Linden (2020) found significant variation in the supply and demand for digital skills in African countries, including Kenya, Ghana and Senegal. Their work also identified substantial opportunities for developing digital skills within informal economic activities.

The distinction between digital access and digital capability is particularly important for Africa's youth. The continent has one of the world's youngest populations, yet many young people remain disconnected from productive employment opportunities. Consequently, digital transformation has frequently been presented as a mechanism through which young people can overcome geographical and institutional barriers to entrepreneurship. However, the benefits of this transformation are not automatic. They depend on whether young people possess the skills, resources and institutional support required to exploit digital opportunities. Recent evidence strengthens this argument. A 2026 systematic review of 23 quantitative studies examining digital skills and youth employment in Sub-Saharan Africa found that all reviewed studies pointed toward a positive relationship between digital skills and employment prospects, although only 10 reported statistically significant effects. Importantly, the review found that intermediate and advanced digital skills appeared more consequential than basic digital literacy.

Similarly, Sitaridis and Kitsios (2026) demonstrate that domain-specific IT knowledge can play a direct role in nascent digital entrepreneurship, while opportunity recognition acts as an important mechanism linking digital human capital to entrepreneurial activity. This suggests that the quality and specificity of digital skills matter, not merely access to technology or general computer competence. Against this background, this paper examines digital skills as a potential catalyst through which digital transformation can facilitate youth techno-entrepreneurship in Africa.

2. CONCEPTUALISING DIGITAL TRANSFORMATION

2.1 Digital Transformation

Digital transformation refers to the broad process through which digital technologies alter economic activities, organizational processes, markets, institutions and social interactions. It extends beyond the simple conversion of analogue information into digital formats. Rather, it involves the restructuring of activities and relationships around digital technologies.

In the African context, digital transformation includes the expansion of broadband and mobile connectivity, digital financial services, online platforms, e-commerce, digital public services and technology-based enterprises. The World Bank's digital-economy approach identifies digital infrastructure, digital public platforms, digital financial services, digital businesses and digital skills as interconnected components of a digital economy.

2.2 Digital Transformation and New Entrepreneurial Opportunities

Digital transformation has lowered some traditional barriers to entrepreneurship. A young entrepreneur can increasingly advertise products through social media, sell through online platforms, receive digital payments, communicate with customers remotely and access markets beyond the immediate geographical location. Ajide and Osinubi (2023) provide empirical evidence linking digital technology usage and entrepreneurship across selected African countries, reinforcing the argument that digital technologies have become increasingly relevant to entrepreneurial development.

However, digital transformation can simultaneously create new inequalities. Young people without affordable internet, appropriate devices, digital competencies, finance or supportive institutions may be excluded from the opportunities created by digitalization. Thus, digital transformation creates potential entrepreneurial opportunities, but digital skills and enabling conditions determine whether those opportunities can be converted into productive outcomes.

3. DIGITAL SKILLS AND DIGITAL HUMAN CAPITAL

3.1 Understanding Digital Skills

Digital skills encompass the knowledge and competencies required to use digital technologies effectively. They range from basic abilities such as accessing information and communicating online to more advanced capabilities involving programming, data analytics, artificial intelligence, cyber security and digital business development. For analytical purposes, digital skills can be classified into three broad categories.

Basic digital skills

These include: operating digital devices; accessing the internet; communicating digitally; searching for information; using basic applications.

Intermediate digital skills

These include: digital marketing; e-commerce; online business management; digital financial services; data handling; social-media management; digital content creation.

Advanced digital skills

These include: programming; artificial intelligence; machine learning; advanced data analytics; cloud computing; cyber security; software development.

The distinction is important because entrepreneurial outcomes may depend increasingly on higher-level capabilities rather than basic digital literacy alone.

3.2 Digital Skills as Human Capital

Human Capital Theory provides a useful basis for understanding the importance of digital skills. The theory views education, knowledge and skills as investments that enhance individuals' productive capabilities. Applied to digital entrepreneurship, digital skills represent a form of human capital that allows individuals to identify opportunities, use technologies, develop products and services, access markets and manage digital businesses. Sitaridis and Kitsios (2026) found that domain-specific IT knowledge had a significant positive relationship with opportunity recognition, digital entrepreneurial intentions and nascent digital entrepreneurial activity. Their findings suggest that entrepreneurial education should not focus exclusively on generic computer literacy but should incorporate technical knowledge relevant to emerging technologies.

4. YOUTH TECHNO-ENTREPRENEURSHIP IN AFRICA

Techno-entrepreneurship refers broadly to entrepreneurial activity in which technology plays a central role in identifying opportunities, developing products or services, creating enterprises or generating value. It therefore extends beyond conventional entrepreneurship conducted through digital communication. A techno-entrepreneur may develop software, operate an e-commerce platform, provide digital financial services, create an AgriTech solution, develop an EdTech product or use advanced technologies to solve social and economic problems. Africa's youth have increasingly participated in such activities. Digital entrepreneurship ecosystems have emerged around technology hubs, accelerators, incubators, universities, online communities and investment networks. Friederici et al. (2020) demonstrate that African digital entrepreneurship should be understood in relation to local institutional and economic realities rather than evaluated exclusively through Silicon Valley expectations.

The UNDP/AUC/HP Foundation (2023) similarly identifies FinTech, EdTech, HealthTech and AgriTech as important areas in which African digital entrepreneurs are contributing to development objectives. However, the literature also challenges overly optimistic assumptions about digital entrepreneurship. Pijnaker's (2025) study of young Ghanaian digital entrepreneurs demonstrates that the promise of digital start-ups as a straightforward pathway out of unemployment can be misleading. The study shows that entrepreneurial failure and unstable start-up trajectories can produce downward rather than upward socioeconomic mobility.

This critical perspective is important because it suggests that digital entrepreneurship should not simply be promoted as an automatic solution to youth unemployment. Instead, attention should be paid to the quality, sustainability and productivity of digital entrepreneurial activities.

5. THE RELATIONSHIP BETWEEN DIGITAL SKILLS AND TECHNO-ENTREPRENEURSHIP

The literature suggests that digital skills can contribute to techno-entrepreneurship through several interconnected mechanisms.

5.1 Opportunity Recognition

Digital skills enable young people to search for information, identify market gaps and understand emerging consumer needs. More advanced digital competencies can also expose entrepreneurs to new technologies and business models. Sitaridis and Kitsios (2026) are particularly important here because they identify opportunity recognition as a mechanism connecting digital human capital with digital entrepreneurial activity.

5.2 Innovation

Technology skills can increase the ability of young entrepreneurs to develop innovative products and services. For example, programming and data-analysis skills can facilitate the development of digital applications, while AI skills can support the development of new technology-enabled solutions.

5.3 Market Access

Digital platforms enable young entrepreneurs to reach customers beyond traditional geographical boundaries. Social media, e-commerce platforms and digital payment systems can reduce some of the costs associated with traditional market entry.

5.4 Digital Financial Access

Digital financial technologies can support entrepreneurship by facilitating payments, saving, borrowing and other financial transactions. Mathibe and Oppong (2025), using data from 30 Sub-Saharan African countries covering 2016–2023, indicates that digital technologies, including mobile banking, fintech and digital platforms, can enhance financial inclusion and entrepreneurial activity.

5.5 Business Management

Digital competencies can improve entrepreneurs' ability to manage customers, inventory, finances, marketing and business information. Thus, digital skills should not be understood merely as technical competencies. They also represent entrepreneurial capabilities that allow individuals to transform digital resources into economic value.

6. EVIDENCE FROM AFRICA

The African evidence reveals both opportunities and constraints. Carboni et al. (2020) demonstrate that digital skills are already being used within African informal economies but that there remain substantial gaps in skills development and exposure opportunities. Their evidence from Kenya, Ghana and Senegal illustrates the importance of aligning training with actual labour-market and economic needs. In Nigeria, Osiesi et al. (2024) examined entrepreneurial digital skills among 250 Business Education undergraduates at the Federal University Oye-Ekiti. The study found moderate levels of entrepreneurial digital skills, relatively high digital knowledge and substantial use of entrepreneurial digital competencies. The authors recommended stronger institutional support and integration of digital education into university curricula. In Rwanda, Dinika (2024) examined digital skills and entrepreneurship training as responses to youth unemployment. Drawing on Human Capital Theory and Entrepreneurship Theory, the study emphasized the importance of skills development, entrepreneurship programmes, policy and multi-stakeholder collaboration.

At the continental level, the 2025 scoping review by Mwesha, Koome and Wachira examined 20 studies published between 2019 and 2024. The review found that digital-skills development can enhance employability and that digital platforms can support youth entrepreneurship by expanding market and self-employment opportunities. However, infrastructure deficiencies, weak government support and rural digital divides remain significant barriers. These findings suggest that digital skills should be viewed within a broader ecosystem. Skills without connectivity may have limited value; connectivity without skills may produce passive technology consumption rather than productive entrepreneurship.

7. THE DIGITAL DIVIDE AND INCLUSIVE TECHNO-ENTREPRENEURSHIP

One of the central challenges facing African digital entrepreneurship is the digital divide. The digital divide is not simply the difference between people who have internet access and those who do not. It increasingly includes differences in: quality of connectivity; affordability; device ownership; digital literacy; advanced technical skills; digital financial access; ability to convert technology into economic value. Consequently, two individuals may both possess smartphones but derive substantially different economic benefits from them because of differences in skills, education, finance and entrepreneurial capability. This has important implications for youth development. Programmes that provide devices or internet connectivity without complementary skills training may improve access without necessarily improving entrepreneurial outcomes.

The evidence reviewed by Musuva (2026) supports a shift from basic digital literacy toward intermediate and advanced competencies. Similarly, the 2025 African scoping review identifies infrastructure limitations and rural digital exclusion as continuing challenges. Therefore, inclusive digital entrepreneurship requires simultaneous attention to access, affordability, skills and opportunity.

8. DIGITAL ENTREPRENEURSHIP ECOSYSTEMS

Digital skills alone cannot explain the success or failure of techno-entrepreneurship.

Entrepreneurs require supportive ecosystems involving: universities; technology hubs; incubators; accelerators; financial institutions; venture capital; government agencies; telecommunications companies; digital platforms; mentors; customers and markets The UNDP/AUC/HP Foundation report emphasizes strengthening Africa's entrepreneurship ecosystem alongside digital resources and skills development. The OECD's work on Africa's digital transformation likewise highlights the importance of digital skills and entrepreneurial ecosystems in enabling young people to participate productively in digital economies.

9. THE CRITICAL SYNTHESIS: FROM DIGITAL ACCESS TO ENTREPRENEURIAL CAPABILITY

The literature reviewed suggests that three stages should be distinguished.

Stage 1: Digital Access Young people gain access to: internet; smartphones; computers; digital platforms; digital financial services.
Stage 2: Digital Capability, Young people acquire: digital literacy; technical skills; digital business skills; data and AI competencies; problem-solving capabilities.
Stage 3: Entrepreneurial Application.
Young people use these capabilities to: identify opportunities; develop products; create businesses; reach markets; innovate; scale enterprises.
Therefore: Digital access does not necessarily produce digital entrepreneurship. Digital capability is the mechanism that enables technological access to become entrepreneurial value.

10. GAPS IN THE EXISTING LITERATURE

Despite the expanding literature, several gaps remain.

10.1 Conceptual Gap

Existing studies frequently examine digital transformation, digital skills, employment and entrepreneurship separately. There remains a need for greater integration of these concepts into a unified framework of youth techno-entrepreneurship.

10.2 Skills-Level Gap

Much of the intervention literature concentrates on basic digital literacy. Recent evidence suggests that intermediate and advanced skills may be more important for meaningful employment and entrepreneurial outcomes.

10.3 African Context Gap

Much of the digital entrepreneurship literature is influenced by models developed in advanced economies. African digital entrepreneurial ecosystems have distinctive institutional, infrastructural and financial conditions that require context-specific interpretation.

10.4 Sustainability Gap

Digital entrepreneurship is often presented as a solution to youth unemployment, but evidence from Ghana demonstrates that entrepreneurial failure and unstable start-up trajectories can produce disappointing or even negative socioeconomic outcomes.

10.5 Emerging Technology Gap

Artificial intelligence and other advanced technologies are changing the nature of digital entrepreneurship. Recent African reviews identify AI and emerging technologies as areas requiring substantially more research.

10.6 Gender and Spatial Gap

More research is needed on differences in digital entrepreneurial opportunities between: male and female youth; urban and rural youth; highly educated and less educated youth; formal and informal entrepreneurs.

11. CONCLUSION

Digital transformation has fundamentally altered the entrepreneurial landscape in Africa. Digital platforms, mobile technologies, financial technologies and emerging technologies have created new opportunities for young people to participate in technology-enabled economic activities. However, technology access alone does not guarantee productive entrepreneurial outcomes. The literature reviewed in this paper demonstrates that digital skills are an important human-capital bridge between technological opportunities and entrepreneurial capability. Recent evidence indicates that intermediate and advanced digital competencies may be particularly important, while domain-specific IT knowledge can strengthen opportunity recognition and nascent digital entrepreneurship.

At the same time, digital skills cannot be considered in isolation. Infrastructure, affordability, education, finance, policy, mentorship and entrepreneurial ecosystems determine whether young people can transform digital capabilities into sustainable businesses. The paper therefore argues that Africa's policy emphasis should shift from digital access alone to productive digital capability. The objective should not simply be to connect young people to the internet but to equip them with the skills, resources and institutional support required to create economic value from digital technologies. Ultimately, the pathway can be summarized as: Digital Transformation → Digital Access → Digital Skills → Entrepreneurial Capability → Youth Techno-Entrepreneurship → Innovation, Employment and Inclusive Development.

The central message is therefore that digital skills are not merely complementary to digital transformation; they are one of the principal mechanisms through which digital transformation can become economically productive for Africa's youth.

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DIGITAL COMPETENCE, EMOTIONAL INTELLIGENCE, AND ENTREPRENEURIAL INTENTION AS PREDICTORS OF PERCEIVED ENTREPRENEURIAL SUCCESS AMONG BUSINESS EDUCATION UNDERGRADUATES IN EDO AND DELTA STATES, NIGERIA

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Abstract

This study examined the predictive relationships of digital competence, emotional intelligence, and entrepreneurial intention with perceived entrepreneurial success among Business Education undergraduates in Edo and Delta States, Nigeria. A correlational survey design was adopted. Data were obtained from 570 undergraduates using measures of digital competence, emotional intelligence, entrepreneurial intention, and entrepreneurial success. Descriptive statistics, Pearson product–moment correlation, and simple and multiple linear regression were used to analyse the data. The measures demonstrated acceptable internal consistency, with Cronbach's alpha coefficients of .819 for digital competence, .768 for emotional intelligence, .810 for entrepreneurial intention, and .808 for entrepreneurial success. Digital competence significantly predicted perceived entrepreneurial success, Adjusted R^2 = .448, $F(1, 568) = 463.467$, $p < .001$. Emotional intelligence also significantly predicted perceived entrepreneurial success, AdjustedR^2 = .313, $F(1, 568) = 260.179$, $p < .001$. Entrepreneurial intention was the strongest individual predictor, AdjustedR^2 = .491, $F(1, 568) = 550.309$, $p < .001$. When entered simultaneously, the three predictors accounted for 68.4% of the variance in perceived entrepreneurial success, Adjusted R^2 = .706, $F(3, 566) = 455.462$, $p < .001$. The findings suggest that entrepreneurial preparedness in Business Education is multidimensional and should integrate motivational, digital, and emotional competencies. Because the study is cross-sectional and relies on self-reported measures, the findings should be interpreted as predictive associations rather than causal effects.

Keywords: digital competence; emotional intelligence; entrepreneurial intention; perceived entrepreneurial success; Business Education

Introduction

Entrepreneurship education has become an important component of higher education because universities are increasingly expected to equip graduates with competencies that support self-employment, innovation, opportunity recognition, and economic participation. For Business Education students in particular, entrepreneurship is closely related to the practical application of knowledge in management, accounting, marketing, information technology, and business development. However, exposure to entrepreneurship education does not necessarily guarantee entrepreneurial outcomes. A student may possess entrepreneurial knowledge and express a desire to start a business while lacking the digital capabilities, emotional resources, or practical readiness required to pursue and sustain an opportunity.

The contemporary entrepreneurial environment is also increasingly digital. Digital technologies are used for opportunity search, market analysis, communication, promotion, customer engagement, e-commerce, financial transactions, and innovation. Recent evidence shows that digital competencies are relevant to entrepreneurial intention, although their effects may operate through entrepreneurial orientation and self-efficacy rather than through a simple direct pathway (Bachmann et al., 2024). Similarly, digital competence has been examined as a factor shaping students' digital entrepreneurial intention (Lam et al., 2025). These developments suggest that Business Education programmes need

to treat digital competence as an entrepreneurial capability rather than merely as a general computer skill.

Entrepreneurship also involves uncertainty, interpersonal interaction, persistence, decision-making, and responses to setbacks. Emotional intelligence, broadly understood as the ability to perceive, understand, and regulate emotions and to use emotional information effectively, may therefore be relevant to entrepreneurial functioning. Mayer and Salovey (1997) conceptualized emotional intelligence as a set of abilities concerning the appraisal and use of emotion, while Bar-On (2006) emphasized emotional-social competencies. Recent Nigerian evidence has reported a significant relationship between emotional intelligence and entrepreneurial intention among university undergraduates, with self-efficacy dimensions helping to explain the relationship (Nwibe & Ogbuanya, 2024).

Entrepreneurial intention represents an individual's conscious willingness and commitment to engage in entrepreneurial behaviour. The Theory of Planned Behaviour (TPB) positions intention as a proximal predictor of planned behaviour and explains intention in terms of attitudes, subjective norms, and perceived behavioural control (Ajzen, 1991). Although intention is not identical to actual entrepreneurial behaviour, it remains a central construct in entrepreneurship research. Evidence from extended TPB research also indicates that a gap can exist between intention and subsequent entrepreneurial action, making it important to distinguish intention from entrepreneurial outcomes.

Against this background, the present study examines whether digital competence, emotional intelligence, and entrepreneurial intention are associated with entrepreneurial success among Business Education undergraduates. The study extends the common emphasis on entrepreneurial intention by considering three dimensions simultaneously: motivational readiness, technological capability, and emotional-social capability. This integrated perspective is particularly relevant where students are expected not only to express entrepreneurial aspirations but also to develop the competencies required to act on them.

Statement of the Problem

Despite continued emphasis on entrepreneurship education in tertiary institutions, concerns remain about whether students can translate entrepreneurial knowledge and intentions into meaningful entrepreneurial outcomes. Business Education undergraduates may complete entrepreneurship-related courses and demonstrate favourable attitudes towards entrepreneurship without necessarily possessing the digital and emotional competencies required to identify opportunities, engage customers, manage uncertainty, and sustain entrepreneurial activity. Existing studies have frequently focused on entrepreneurial intention, while fewer studies have examined entrepreneurial success alongside digital competence and emotional intelligence within a single predictive model. The extent to which these variables independently and jointly predict entrepreneurial success among Business Education undergraduates therefore requires empirical attention.

Purpose of the Study

The study examined the predictive relationships between digital competence, emotional intelligence, entrepreneurial intention, and perceived entrepreneurial success among Business Education undergraduates.

Objectives of the Study

Determine the extent to which digital competence predicts perceived entrepreneurial success among Business Education undergraduates.

Examine the extent to which emotional intelligence predicts perceived entrepreneurial success among Business Education undergraduates.

Determine the extent to which entrepreneurial intention predicts perceived entrepreneurial success among Business Education undergraduates.

Determine the joint predictive contribution of digital competence, emotional intelligence, and perceived entrepreneurial intention to entrepreneurial success.

Research Questions

To what extent does digital competence predict perceived entrepreneurial success among Business Education undergraduates?

To what extent does emotional intelligence predict perceived entrepreneurial success among Business Education undergraduates?

To what extent does entrepreneurial intention predict perceived entrepreneurial success among Business Education undergraduates?

What is the joint contribution of digital competence, emotional intelligence, and entrepreneurial intention to perceived entrepreneurial success?

Research Hypotheses

H01: Digital competence does not significantly predict perceived entrepreneurial success among Business Education undergraduates.

H02: Emotional intelligence does not significantly predict perceived entrepreneurial success among Business Education undergraduates.

H03: Entrepreneurial intention does not significantly predict perceived entrepreneurial success among Business Education undergraduates.

H04: Digital competence, emotional intelligence, and entrepreneurial intention do not jointly predict perceived entrepreneurial success among Business Education undergraduates.

Literature Reviews

Digital Competence

Digital competence refers to the knowledge, skills, abilities, and dispositions required to use digital technologies effectively, critically, safely, and responsibly. In an entrepreneurial context, it includes information and data handling, digital communication and collaboration, security, problem-solving, and the application of digital tools to business activities. These capabilities are relevant to market research, customer engagement, online promotion, e-commerce, digital content creation, and technology-enabled business processes. The present study therefore treats digital competence as a multidimensional capability that can support the recognition and exploitation of entrepreneurial opportunities.

Recent empirical work provides support for the relevance of digital competence to entrepreneurship. Bachmann et al. (2024) found that digital competencies are related to entrepreneurial intention, with entrepreneurial orientation and entrepreneurial self-efficacy playing important roles in the relationship. Lam et al. (2025) similarly examined digital competence in relation to digital entrepreneurial intention among university students. These findings provide a contemporary basis for examining digital competence beyond conventional computer literacy and in relation to entrepreneurial outcomes.

Emotional Intelligence

Emotional intelligence concerns the capacity to recognize, understand, regulate, and use emotional information effectively. The ability model developed by Mayer and Salovey (1997) conceptualizes emotional intelligence in terms of abilities associated with perceiving, using, understanding, and managing emotion. Bar-On (2006) presents a related emotional-social perspective that includes personal and interpersonal competencies. In entrepreneurship, such capabilities may be relevant because entrepreneurs must manage uncertainty, interpersonal relationships, setbacks, motivation, and decision-making.

Nwibe and Ogbuanya (2024), in a study of university undergraduates in Nigeria, reported a significant positive relationship between emotional intelligence and entrepreneurial intention and found that self-efficacy dimensions helped explain the relationship. The present study extends this line of inquiry by examining emotional intelligence in relation to the broader outcome labelled entrepreneurial success in the study's measurement framework.

Entrepreneurial Intention

Entrepreneurial intention is an individual's conscious willingness, commitment, and readiness to engage in entrepreneurial activity. Within the Theory of Planned Behaviour, intention is a central proximal determinant of planned behaviour (Ajzen, 1991). Entrepreneurial intention is therefore expected to be relevant to venture-related planning, persistence, and action. However, intention should not be treated as synonymous with actual entrepreneurial behaviour or verified business performance. The distinction is important in the present study because the respondents are undergraduates and the outcome measure is self-reported.

Entrepreneurial Success

Entrepreneurial success can encompass venture creation, growth, profitability, innovation, customer satisfaction, sustainability, and perceived achievement. Objective measures may include revenue, profitability, employment growth, and survival, whereas subjective measures may include satisfaction and perceived achievement. In the present study, entrepreneurial success is an instrument-based, self-reported construct. It should therefore be interpreted as reported entrepreneurial success within the operational definition of the study rather than as independently verified business performance.

Theoretical Framework

Theory of Planned Behaviour

The study draws on Ajzen's (1991) Theory of Planned Behaviour. The theory proposes that behavioural intentions are shaped by attitudes, subjective norms, and perceived behavioural control and that intention are important predictors of planned behaviour. The theory provides the principal explanation for the inclusion of entrepreneurial intention in the present model. However, because the study also

examines digital competence and emotional intelligence, TPB is complemented by human-capital and emotional-intelligence perspectives rather than being treated as a complete explanation of entrepreneurial success.

Emotional Intelligence Perspective

The emotional-intelligence perspective provides a basis for understanding how emotional awareness, regulation, interpersonal functioning, and related competencies may contribute to entrepreneurial functioning. Entrepreneurs frequently operate under conditions of uncertainty and social interaction, making emotional competencies potentially relevant to decision-making, persistence, and relationship management.

Human Capital Theory

Human Capital Theory (Becker, 1964) provides a rationale for viewing knowledge and skills as productive resources. Digital competence can be understood within this perspective as a form of human capital that enables individuals to perform technology-mediated tasks, access information, communicate with markets, and exploit digital opportunities.

Methodology

Research Design

A correlational survey design was adopted because the study sought to examine statistical relationships and predictive associations among naturally occurring variables without experimental manipulation.

Population

The stated population comprised Business Education undergraduates in accredited universities in Edo and Delta States, Nigeria..

Sample and Sampling Procedure

The study analyzed responses from 570 Business Education undergraduates which were distributed through Google form to higher educational institutions offering business education in the sampled state.
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Instrumentation

Data were collected using four multi-item measures: the Digital Competence Scale (DCS), Emotional Intelligence Scale (EIS), Entrepreneurial Intention Questionnaire (EIQ), and Entrepreneurial Success Scale (ESS). The constructs (DCS, EIS, EIQ and ESS) all had ten items each making a total of 40 items. The items were developed on a Five point Likert scale of Strongly Agreed (SA), Agreed (A), Undecided (U), Disagreed (D) and Strongly Disagreed (SD).

Validity and Reliability

Content validity was established through expert review, while construct validity was assessed using confirmatory factor analysis. Internal consistency using Cronbach's alpha was .819 for digital competence, .768 for emotional intelligence, .810 for entrepreneurial intention, and .808 for entrepreneurial success.

Data Analysis

Descriptive statistics were used to summarize respondents' characteristics and study variables. Pearson product–moment correlations were used to examine bivariate relationships. Simple linear regression was used to test the first three hypotheses, while multiple linear regression was used to test the joint predictive model. Statistical significance was evaluated at the .05 level; all reported models were significant at $p < .001$.

Results

Respondent Characteristics

The analysis included 570 Business Education undergraduates. Females constituted 64.9% (n = 370) and males 35.1% (n = 200). Most respondents were aged 20–24 years (61.4%), and 54.4% were in 100 Level. Respondents were drawn predominantly from federal universities (61.4%), followed by state universities (31.6%) and private universities (7.0%). In addition, 77.2% reported having taken an entrepreneurship course.

Table 1: *Correlation Matrix showing the relationship among digital competence, emotional intelligence, entrepreneurial intention and entrepreneurial success*

Variable	Mean	Standard Deviation	1	2	3	4
1. Digital competence	4.016	0.635	1.000			
2. Emotional intelligence	4.109	0.523	.476	1.000		
3.Entrepreneurial intention	4.391	0.498	.416	.323	1.000	
4. Perceived Entrepreneurial success	4.211	0.572	.656***	.560***	.688***	1.000

***p < .001.

All three predictor variables were positively and significantly associated with entrepreneurial success. Entrepreneurial intention had the strongest bivariate association with entrepreneurial success (r = .688, p < .001), followed by digital competence (r = .656, p < .001) and emotional intelligence (r = .560, p < .001).

Hypothesis Testing

Hypothesis One: Digital competence does not significantly predict perceived entrepreneurial success among Business Education undergraduates.

Table 2: *Digital Competence predicting entrepreneurial success*

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	18.684	1.077		17.340	.000
	Digital Competence	.571	.027	.670	21.528	.000

a. Dependent Variable: Entrepreneurial Success

Note: Adjusted R^2 = .448, df = 1, 568, SE = .027, F = 463.467, P < .05, t = 21.528, β = .670

Table 2 reveals that digital competence (F (1, 568) = 463.467, SE = .027, *β* = .670, t = 21.528) had a significant positive influence on perceived entrepreneurial success. The Adjusted R-square (.448) reveals that 44.8% of the variance in perceived entrepreneurial success is influenced by digital competence. Therefore, hypothesis 1 is rejected in the study. That is, digital competence is a significant predictor of business education students' perceived entrepreneurial success in Edo State.

Hypothesis Two: Emotional intelligence does not significantly predict perceived entrepreneurial success among Business Education undergraduates.

Table 3: *Emotional intelligence predicting* perceived *entrepreneurial success*

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	17.817	1.486		11.989	.000
	Emotional Intelligence	.579	.036	.560	16.130	.000

a. Dependent Variable: Entrepreneurial Success

Note: Adjusted R^2 = .313, df = 1, 568, SE = .036, F = 260.179, P < .05, t = 16.130, β = .560

Table 3 reveals that emotional intelligence (F (1, 568) = 260.179, SE = .036, *β* = .560, t = 16.130) had a significant positive influence on perceived entrepreneurial success. The Adjusted R-square (.313) reveals that 31.3% of the variance in perceived entrepreneurial success is influenced by emotional intelligence. Therefore, hypothesis 2 is rejected in the study. That is, emotional intelligence is a significant predictor of business education students' entrepreneurial success in Edo State.

Hypothesis Three: Entrepreneurial intention does not significantly predict perceived entrepreneurial success among Business Education undergraduates.

Table 4: *Entrepreneurial intention predicting perceived entrepreneurial success*

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	8.162	1.434		5.3691	.000
	Entrepreneurial Intention	.761	.032	.701	23.459	.000

a. Dependent Variable: Perceived Entrepreneurial Success

Note: Adjusted R^2 = .491, df = 1, 568, SE = .032, F = 550.309, P < .05, t = 23.459, β = .701

Table 4 reveals that digital competence (F (1, 568) = 550.309, SE = .032, *β* = .701, t = 23.459) had a significant positive influence on perceived entrepreneurial success. The Adjusted R-square (.491) indicates that entrepreneurial intention explains 49.1% of the variance in entrepreneurial success. Therefore, the study rejects hypothesis 3. That is, digital competence is a significant predictor of business education students' perceived entrepreneurial success in Edo State.

Hypothesis Four: Digital competence, emotional intelligence, and entrepreneurial intention do not jointly predict perceived entrepreneurial success among Business Education undergraduates.

Table 5: Digital competence, emotional intelligence, and entrepreneurial intention *predicting perceived entrepreneurial success*

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-3.368	1.275		-2.642	.008
	Digital Competence	.307	.023	.361	13.237	.000
	Emotional Intelligence	.243	.027	.235	8.971	.000
	Entrepreneurial Intention	.516	.027	.476	18.777	.000

a. Dependent Variable: Perceived Entrepreneurial Success

Note: Adjusted $R^2 = .706$, df = 3, 566, F = 455.462, P < .05

Table 5 reveals that digital competence, emotional intelligence and entrepreneurial intention (F (3, 566) = 455. 462, jointly had a significant positive influence on perceived entrepreneurial success. The Adjusted R-square (.706) indicates that 70.6% of the variance in perceived entrepreneurial success is explained by digital competence, emotional intelligence and entrepreneurial intention. Table 4 further revealed that all the constructs individually predicts perceived entrepreneurial success.

Discussion

Digital Competence and Entrepreneurial Success

Digital competence was a significant positive predictor of perceived entrepreneurial success and independently explained 44.8% of the variance in the outcome. It also retained a significant unique contribution in the combined model. This finding implies that digital competence plays a significant role in ensuring entrepreneurial success. This finding corroborates the findings by Kim and Jin (2024), QA et al (2024), Ahmed et al (2025), Shatila and Hernandez-Lara (2026), and Shatila et al (2026). However, this finding contradicts the findings by Sanusi and Roostika (2023),Wulandari et al (2024), and Li et al (2025), who in their different studies did not find a significant relationship between digital competence and perceived entrepreneurial success.

Emotional Intelligence and Entrepreneurial Success

Emotional intelligence significantly predicted perceived entrepreneurial success and accounted for 31.3% of the variance when considered individually. This shows that those that are emotionally intelligent are able to make successes in their entrepreneurial adventure. This finding corroborates the findings by Pincheira et al (2023), Peng et al (2024), Kovid et al (2025) and De-Esteban-Escobar et al (2025). This however contradicts the findings by Razzaque et al (2024) and Khan et al (2025) who reported a non-significant relationship between emotional intelligence and perceived entrepreneurial success.

Entrepreneurial Intention and Entrepreneurial Success

Entrepreneurial intention was the strongest individual predictor, explaining 49.1% of the variance in entrepreneurial success and recording the largest standardized coefficient in the combined model. This is consistent with TPB, which places intention at the centre of planned behaviour (Ajzen, 1991). Nevertheless, intention should not be equated with actual venture creation or verified business performance. The high predictive association observed in this study therefore indicates that students who reported stronger entrepreneurial intentions also tended to report higher entrepreneurial success on the study's scale. This finding corroborates the findings by Wiyanto et al (2024) and Rasulong et al (2025) who concluded that entrepreneurial intention plays a significant role in ensuring entrepreneurial success.

Joint Contribution of the Three Predictors

The combined model explained 70.6% of the variance in entrepreneurial success. This finding supports a multidimensional interpretation of entrepreneurial preparedness: entrepreneurial intention represents motivational readiness, digital competence represents technology-enabled capability, and emotional intelligence represents affective and interpersonal resources. The three variables therefore provide complementary information about the outcome. The relatively high R^2 should, however, be interpreted cautiously because all variables were measured through self-report at the same time and the outcome was not independently verified.

Theoretical Implications

The findings provide empirical support for the relevance of TPB to entrepreneurial intention while also suggesting that intention alone does not capture the full range of competencies associated with entrepreneurial outcomes. The significant contributions of digital competence and emotional

intelligence support a broader human-capital and competency perspective. In this integrated view, entrepreneurial intention provides motivational direction, digital competence provides technology-enabled capability, and emotional intelligence provides psychological and interpersonal resources.

Practical Implications

Business Education programmes should provide practical entrepreneurial activities rather than relying mainly on theoretical instruction.

Digital competence should be embedded across entrepreneurship, marketing, accounting, management, and other Business Education courses.

Students should practice digital marketing, e-commerce, online customer engagement, digital content creation, information management, and technology-enabled business planning.

Entrepreneurship education should include structured activities that develop emotional awareness, emotional regulation, resilience, communication, and relationship management.

Universities should provide opportunities for students to convert entrepreneurial intentions into practical projects through mentoring, incubation, enterprise assignments, and supervised business-plan activities.

Limitations

The cross-sectional design permits interpretation of predictive associations but does not establish causal relationships.

The measures are self-reported, creating the possibility of common-method and social-desirability effects.

Entrepreneurial success was not independently verified through business records or objective venture-performance indicators.

The sample is restricted to Business Education undergraduates in Edo and Delta States, which limits generalization to other disciplines and geographical areas.

Entrepreneurial intention and entrepreneurial success were measured contemporaneously, so the study cannot determine whether intention subsequently translated into entrepreneurial behaviour.

Recommendations

Universities should strengthen experiential entrepreneurship education by combining intention formation with practical venture-development activities.

Business Education curricula should deliberately integrate digital entrepreneurship competencies across courses.

Entrepreneurship programmes should include structured emotional-intelligence development activities.

Universities should strengthen mentoring, incubation, enterprise projects, and supervised entrepreneurial practice to narrow the intention–action gap.

Future studies should use longitudinal designs to determine whether entrepreneurial intention predicts subsequent venture creation and performance.

Future research should consider structural equation modeling, mediation analysis, and multi-group analysis across university types and geographical regions.

Future studies should consider entrepreneurial self-efficacy as a possible mediator or explanatory mechanism linking competence variables to entrepreneurial outcomes.

Conclusion

This study provides evidence that digital competence, emotional intelligence, and entrepreneurial intention are significant positive predictors of reported entrepreneurial success among Business Education undergraduates in the study area. The findings support an integrated approach to entrepreneurship education in which students develop the motivation to pursue entrepreneurship alongside the digital and emotional competencies needed to function effectively in entrepreneurial environments. Because the evidence is cross-sectional and self-reported, the findings should be interpreted as predictive associations rather than proof of causal effects or independently verified business success. This study contributes to the body of knowledge especially in exploring the predictive influence of these three constructs (digital competence, emotional intelligence, and entrepreneurial intention) in relation with perceived entrepreneurial success.

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DIGITAL LITERACY AND DIGITAL ENTREPRENEURIAL SKILLS ACQUISITION: A CALL FOR BUSINESS EDUCATION CURRICULUM REVIEW

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Abstract

The integration of digital literacy and digital entrepreneurship skills into Nigerian Business Education curriculum is essential for equipping students with 21st century skills. This study examines the urgent need to review the Business Education curriculum to integrate digital literacy and digital entrepreneurial skills. Traditional Business Education programme often focus on conventional accounting, entrepreneurial, office and management skills. However, the modern economy demands proficiency in digital tools, accounting software, e-commerce, digital marketing, and online enterprise management. This paper adopts a qualitative research method to review existing literature. Findings reveal a significant gap between graduate competencies and the digital demands of the contemporary labour market and startup ecosystem. The study argues that embedding practical digital literacy into Business Education curriculum will enhance student digital entrepreneurial skills and foster tech-driven entrepreneurship. Furthermore, the paper highlights institutional challenges such as infrastructural deficits, inadequate Business Educator training, and rigid academic policies as major setbacks in incorporating digital literacy and digital entrepreneurial skills into Business Education curriculum. The study concluded that modern digital Business Education curriculum should integrate data analytics, digital marketing, e-commerce, and cloud-based financial tools; prepare graduates to launch agile, tech-driven start-ups and teach adaptability and continuous learning in a technologically-driven environment.

Keywords: Digital Literacy; Digital Entrepreneurial Skills, Digital Competence, Entrepreneurial Skills, Information Literacy

Introduction

The contemporary world of work is increasingly shaped by rapid advancements in digital technologies, which have transformed organisational practices and redefined the skills required of entrepreneurs. Digital literacy has therefore become a core competence for effective participation in the modern labour market. The mere acquisition of entrepreneurial skills by entrepreneurs is no longer enough with advancement of artificial intelligence, digitalisation of business activities and remote work; the gap between what Business Education students learn and what the labour market needs is an issue that requires rapid attention.

The National Policy on Education (2013) documented Business Education to be part of Vocational and Technical Education offered in Nigerian tertiary institutions with the aim to impart the necessary skills to individuals who shall be self-reliant economically. This indicates that, Business Education programme is supposed to prepare students to become business owners and thus reducing the rate of unemployment in the country. But universities produced graduates on a yearly basis in different field of study with a huge gap between those that are gainfully employed and those that are unemployed. This is because of the inadequate entrepreneurship skills that will make them entrepreneurs and self-sufficient rather than just job seekers. These skills will make them more innovative and creative if the rate of unemployment in the country is to be reduced (Ore & Hassan, 2023).

Business Education students are basically trained to acquire business skills for paid and self-employment rather than also preparing them to be employers of labour (Ore *et. al.,* 2025). Business Education is a vocational-oriented programme designed to equip students with knowledge, skills, and attitudes necessary for effective participation in the business world as administrators, entrepreneurs, office professionals and educators. Consequently, digital literacy has become a fundamental requirement for Business Education graduates. Despite the relevance of Business Education to

workforce development, students' unemployment remains a major concern in Nigeria. Labour market reports indicate that many graduates are unemployed or underemployed due to a mismatch between the skills acquired in higher education institutions and those required by employers (National Bureau of Statistics, 2023).

Ore (2022) noted that, universities produce huge number of graduates every year but the number of those that are gainfully employed do not commensurate with those that are \unemployed. Hence, the need for innovative, creative and technologically inclined graduates that can be job creators rather than job seekers.

According to Ore *et. al.* (2025), the rate of unemployment is on the rise and the question is; are graduates well equipped with the right skills that will make them become job creators rather than job seekers who can compete favourably with their counterparts? Business Education graduates need to be innovative and creative if the rate of unemployment in the country is to be reduced. The high rate of unemployment in Nigeria is caused by so many factors of which include inadequate entrepreneurial skills and this are cause by inappropriate school curricula (Ibikunle *et al.*, 2019). Graduates with higher levels of digital competence tend to demonstrate better job readiness, adaptability, and workplace productivity (Adeola & Ogunleye, 2021).

Digital literacy has been found to enhance communication skills, entrepreneurial capacity, and problem-solving ability among graduates. These findings highlight the critical role of digital literacy in improving entrepreneurial outcomes. However, evidence suggests that many Business Education graduates still lack adequate digital entrepreneurial skills that will make them excel as job creators rather than job seekers. This deficiency has been linked to out-dated curricula, limited access to information and communication technology (ICT) facilities, insufficient integration of digital tools into teaching and learning, and inadequate digital competence among lecturers (Ogunyemi & Bello, 2022). According to Ogunode and Ndayebom (2023) countries are increasingly focusing on fostering digital literacy and skills development through policies and programmes. However, these efforts are often faced with challenges like limited internet access, inadequate qualified personnel, inadequate funding, unreliable electricity, high maintenance costs and resistance to change.

Literature Review

Digital Literacy

Digital literacy refers to the ability to use digital technologies and tools to access, manage, evaluate, create, and communicate information for academic, professional, and societal purposes (Adewale & Yusuf, 2021). It is a combination of knowledge, skills and attitudes. UNESCO (2018) described digital literacy as the ability to use digital technology, communication tools and networks to locate, use, create and evaluate information. It goes beyond knowing how to operate a computer or a smart phone; digital literacy is about understanding why, when and how to use digital tools effectively, efficiently, safely and securely. It deals with understanding (that is; technical know-how), critical thinking, and ethical awareness.

In the 1980s, digital literacy was known as computer literacy, focusing on basic computer and technical skills such as programming. In the early 1990s, it shifted to focus on knowing how to send an email, navigate the World Wide Web, and use applications. Today, digital literacy encompasses many skills. Digital literacy is the skill set necessary for a person to be an active member of the modern Internet-mediated world (Anthonysamy, 2022). Digital literacy encompasses the understanding, mind-set, and proficiency of individuals ineffectively utilising digital devices, as well as their capacity to access, discern, manipulate, integrate, assess, analyse, and combine diverse digital resources in a meaningful and appropriate manner (Yuan *et al.,* 2021). Nyoman *et al.* (2022) averred that the growth and success of entrepreneurs can be greatly bolstered through the cultivation of digital literacy. This entails fostering proficiency in forging digital business connections, leveraging online resources and amenities, and harnessing the power of expansive networks.

In developing countries such as Nigeria, digital literacy is particularly important due to the growing integration of technology into business operations. Nigeria's labour market has experienced notable changes due to globalisation and the expansion of the digital economy. Entrepreneurs need to be digitally inclined in order to survive the ever-changing business world. As a result, higher education institutions are under pressure to align academic programmes with labour market expectations. Thus, digitally literate graduates are better positioned to engage in self-directed learning and adapt to emerging workplace technologies, thereby enhancing their long-term entrepreneurial.

To be considered digitally literate, a person needs to understand: how to use modern digital technologies to access information, how to manoeuvre through the complex web of information made

available by digital technologies, how to read and understand the messages on digital media, and how he or she can contribute to the digital information economy by using digital technology (Baron, 2019). Digital literacy also contributes to the development of broader entrepreneurial skills such as teamwork, creativity, and critical thinking, which are essential in modern, digitally mediated work environments.

Components of Digital Literacy

Digital literacy is a mind-set that requires a combination of interconnected abilities and skills. Digital literacy lays out five digital competence areas and a total of 21 digital competencies. The digital competence areas include information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving. Digital competence involves the confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society. It includes information and data literacy, communication and collaboration, media literacy, digital content creation (including programming), safety (including digital well-being and competences related to cyber security), intellectual property related questions, problem solving and critical thinking (European Union, 2018).

To address the need for digital literacy, the Coalition for Digital Intelligence created a globally recognised framework for digital literacy, skills and readiness know as the IEEE Standards for Digital Intelligence (DQ) Framework. This framework encompasses eight key competencies, including digital identity, use, safety, security, emotional intelligence, literacy, communication, and rights. It also emphasises three levels of development: citizenship, creativity, and competitiveness (Oladipupo & Abdulazeez, 2024). Digital intelligence is increasingly recognised as a fundamental human right, with the potential to aid sustainable national development through inclusive growth, well-being, and prosperity (Boughzala *et al.,* 2020).

Technical Skills: This skill deals with the ability to use digital tools effectively. Technical skills refer to the proficiency and knowledge individuals possess in effectively using and adapting to various technological tools, software applications, and digital platforms such as password managers, cloud storage, and troubleshooting issues. The development of students' entrepreneurial ambitions is anticipated to be significantly influenced by their technical abilities, which include competence in using digital tools, software programmes, and technical platforms (Onwubuya, & Ikechukwu, 2023).

Information Evaluation: This consists of providing people with concepts and training in order to process data and transform them into information, knowledge and decisions. It includes methods to search and evaluate information, elements of information culture and its ethical aspects, as well as methodological and ethical aspects for communication in the digital world (Goswami, 2025). Information literacy has to do with an individual's capacity to critically assess and interpret various forms of digital information, which could have a substantial impact on students' entrepreneurial inclinations. Students with higher levels of Information literacy will recognise entrepreneurial opportunities and traverse the complicated digital ecosystem by comprehending the impact of media messages, recognizing biases, and engaging with media in a discerning manner (Onwubuya, & Ikechukwu, 2023). Agus *et al.* (2021) discovered that information literacy has a beneficial impact on students' entrepreneurial interests and that entrepreneurship education in the family also has a positive impact.

Content Creation: Students should use digital tools to create videos, images, presentations, and written work. This involves developing skills like editing, collaborating with others, and understanding copyright laws to ensure their creations are both high-quality and ethical (Deflitch, n.d.)

Critical Thinking: This has to do with the ability to know how to distinguish reliable information from misinformation is one of the most crucial digital skills. This involves checking sources, understanding bias, and questioning how algorithms shape what is seen online (Goswami, 2025).

Digital Communication: This is the ability to communicate respectfully online, work in teams across platforms, and understand tone and context in digital conversations. Digital communication is the exchange of information, ideas, and messages via digital platforms and technologies. Digital communication has a big impact on how students behave and what their objectives are when it comes to starting their own business (Lifintsev *et al.,* 2022). The potential of digital communication channels like social media to support quick growth, improve marketing and promotional efforts, and offer beneficial networking and information-sharing opportunities demonstrates their revolutionary power in corporate activities (Onwubuya, & Ikechukwu, 2023).

Safety, Security and Privacy: Digital literacy includes understanding how data are protected and the overall digital wellbeing. This can be achieved through the setting of strong passwords to using encryption tools, to recognising phishing attempts. Digital safety also refers to as online safety or cyber-security. It is the procedures and safeguards put in place to guard against various online hazards and threats for people, businesses and their digital assets (Onwubuya, & Ikechukwu, 2023). It entails making sure that data and information is available, confidential, and intact in digital contexts (Ribble, 2021).

Digital safety ensures that the dangers involved in establishing and operating a business online is minimal (Onwubuya, & Ikechukwu, 2023). Entrepreneurs who place a high priority on online security are more likely to defend against cyber threats and safeguard their priceless assets, including intellectual property, customer data, and financial information. Entrepreneurs may lower their risk of data breaches, financial fraud, and other cyber-attacks by putting strong security measures in place. This can boost their confidence in moving on with their business ventures (Mohsen *et al.,* 2021).

Digital Entrepreneurial Skills

Entrepreneurship was derived from the French word "entrepredre" meaning the organiser of musical or other entertainments (Gautam, & Singh, 2015). It refers to the dynamic process of wealth creation by individual who takes up the risk of providing value for the society (Kuratko in Ore et al., 2023); it is the process of performing the roles of operating, planning, and assuming the risk of a business venture. The role of entrepreneurship is crucial in boosting sustainable growth and development (Ho, *et. al.,* 2018). Therefore, Alharbi *et al.* (2018) defined entrepreneurial skills as teachable skills that can be imparted on any student irrespective of the choice of course.

Entrepreneurship skills are necessary for the continuous survival of graduates in any nation. In the opinion of Mgbonyebi and Olaniyi (2019), entrepreneurial skills are globally acknowledged as an instrument for achieving economic growth and development through employment creation for decent works. Entrepreneurial skills are the individual's ability to translate ideas into action. It encompasses creativity, innovativeness and calculated risk taking, as well as ability to plan and direct action towards the achievement of goals (Ukata & Amini, 2022). There is ability in entrepreneurship; hence Ore et. al. (2025) opined that entrepreneurship is the ability to seek investment opportunities and persisting to exploit that opportunity. According to Sherine *et al* (2018) entrepreneurial skills in Business Education are: risk taking, critical thinking, problem solving, and innovation. Inculcation of entrepreneurial skills impels students to put theory into practice transcending mere understanding of what entrepreneurship is about. In so doing, students gain self-confidence and motivation, become proactive, and creative (Ore et. al., 2023).

Digital entrepreneurial skills are the abilities required to use digital tools and platforms to develop, innovate, and grow an online business, including digital marketing, e-commerce, and online business management. Skills related to digital entrepreneurship also include marketing, data analytics, cloud computing, and cyber security (Khan, 2021; Martinez, 2021). Digital entrepreneurial skills involve the use of automation in managing to achieving effective communication, branding, marketing and getting the targeted audience for the supply of products and services (Afrodigital, 2021). Digital entrepreneurial skills refer to the strategic, creative, and technical abilities required to use digital technologies for business development, innovation, and problem-solving (Melnikova *et al.*, 2019; Jardim, 2021). These skills enable entrepreneurs to transform digital knowledge into practical business actions.

Digital entrepreneurial skills are core part of business owner's toolkit that is required for a successful business venture in a digitalised economy. The five top digital entrepreneurial skills needed to succeed by today`s entrepreneurs and acquire decent works are cloud computing, cyber security, data analysis, social media marketing and user experience design skills (Martinez, 2021). Melnikova *et al.* (2019) are of the opinion that entrepreneurs with higher levels of digital entrepreneurial competence exhibited greater adaptability and innovation in digital markets. Digital entrepreneurship involves leveraging the internet and digital technologies to create and carryon a business. Unlike traditional entrepreneurs who are limited by geography and resources, digital entrepreneurs can reach a global audience and utilise cost-effective marketing strategies (Okonkwo, *et. al.,* 2025).

Digital entrepreneurial skills give entrepreneurs the ability to find, evaluate, utilise, share, and create contents using information and communication technologies and the internet anywhere, anytime and any day to sale their products and services (Ukata & Amini). In digital entrepreneurship, digital literacy forms the foundational competence that enables entrepreneurs to recognise opportunities, utilise digital platforms, and manage online operations (Shahrim, *et. al.,* 2026). Iloeje and Okolocha (2018) reported that digital marketing skills such data analysis and social media marketing digital entrepreneurial skills are needed by graduate for successful operation of business enterprises. According to Utaka and Amini (2022), digital marketing entrepreneurial skills, digital data analysis and social media marketing entrepreneurial skills are digital entrepreneurial skills that keep the entrepreneur informed, knowledgeable and confident of their business visibility. Unlike traditional entrepreneurship, digital entrepreneurship requires individuals to possess not only business knowledge but also advanced digital competencies that support adaptability, innovation, and online engagement (Shahrim, *et. al.,* 2026)

Business Education

Business Education refers to the study of courses that are technology related and the acquisition of functional and practical skills required to function efficiently and effectively as employees or employers

of labour (David, *et. al.,* 2023). Obafemi, *et. al.,* (2025) asserted that Business Education is a broad and comprehensive programme with the capacity to provide knowledge, skills, vocation and aptitude to effectively manage personal business and function in the economic system.

According to Gidado and Akaeze in Amoda *et. al.,* (2024), the advantage of Business Education is that it affords recipients the opportunity to function independently as an entrepreneur and employer of labour. This accords a lot of job opportunities to graduates of Business Education at all levels. Due to the evolving nature of business environment digitalisation of operations is now the practice in corporate governance, hence the aim of business education is to produce graduates who are independent and self-reliant, job creators, entrepreneurs and not bunch of unemployable graduates lacking vocational digital skills.

The objectives of Business Education programme in Nigeria that is supposed to produce graduates that are self-confident, job creator and self-reliant, who are well equipped with entrepreneurial skills rather than job seekers. As a result of the inability of the Business Education curriculum to meet with its objectives and equip students with the right entrepreneurial skills, the programme has constantly turnout huge number of graduates who are faced with the problem of been unemployed. This problem arises from faulty curriculum planning, design, implementation and evaluation, inadequate qualified and well exposed and experienced Business Educators and lack of integration of practical with theoretical contents of Business Education curriculum (David, *et. al.,* 2023).

Digital Literacy, Digital Entrepreneurial Skills Acquisition and Business Education Curriculum

The integration of digital literacy and digital entrepreneurial skills into Business Education programme, will not only equip students entrepreneurially but will also contribute to the growth of the economy. According to Jadhav and Moharekar (2025), digital entrepreneurship has emerged as a critical component of economic growth in the digital economy, redefining how businesses are created, developed, and scaled through the use of digital technologies and platforms. Unlike traditional entrepreneurship, digital entrepreneurship requires not only access to technology but also the capacity and competences to strategically apply digital skills, digital knowledge, and entrepreneurial competencies to achieve sustainable business outcomes (Popescu, *et. al.*, 2022).

Business Education as an integral part of Vocational Education is aimed at equipping the students to become entrepreneurs with relevant digital entrepreneurial skills for purpose of making them functional in the society. Business education focuses on skills acquisition in different areas such Office Technology and Management, Management, Insurance, Marketing, Digital Marketing, Entrepreneurship, Management Information System and Accounting. It is therefore expected that the various components of Business Education courses that formed different skills are effectively delivered to the learners to become entrepreneurs via digital entrepreneurial skills (Oyerinde, *et. al.,* 2020). According to Utaka and Amini (2022) graduates of Business Education in Nigeria are not engaging in adequately in entrepreneurial activities as expected due to inadequate digital entrepreneurial skill as a result of inadequate relevant digital entrepreneurship competencies in the areas of self-management, marketing, financial management, ICT and leadership skills needed to operate their chosen businesses.

The integration of digital literacy and digital entrepreneurial skills into Business Education curriculum will create educational opportunities through e-learning tools, enable career preparedness as a result of familiarity with digital collaboration tools, and proficiency in specialised software and building critical thinking skills and social connectivity and also help reduce socio-economic inequalities by providing graduates with opportunities to learn, innovate, and participate in the global economy (Goswami, 2025).

Barriers of Digital Literacy and Skills Development in Nigeria

Unreliable Power Supply: Unstable electricity poses a serious challenge for educational institutions. Nigeria's limited power generation and distribution infrastructure makes it difficult for schools to provide consistent access to technology, hindering the development of advanced digital skills which require uninterrupted practice (Jacob, Somadina & Olatunde-Aiyedun, 2021). While solar power solutions exist, their high cost is a barrier for many institutions.

The Digital Divide: A critical barrier is the unequal access to affordable technology. This disparity creates a "digital divide" between those with financial resources and marginalized groups, often including women and girls due to socio-cultural norms (Oladipupo & Abdulazeez, 2024; Mariscal *et al.,* 2019). This gap hinders economic empowerment and overall progress. Bridging the digital divide is essential for promoting equality and youth development.

Limited Internet Connectivity: Quality internet service is primarily concentrated in urban areas, leaving rural communities with weak signals and slow speeds (Adediran *et al.,* 2016). This makes it difficult to access educational content, download software, and participate in online learning activities. The high cost of data further restricts access for many institutions. While initiatives like the free

broadband programme for select universities are commendable, continued funding and monitoring are crucial to ensure their effectiveness ((Oladipupo & Abdulazeez, 2024).

Shortage of Skilled Instructors: A global issue impacting Nigeria is the inadequate of qualified instructors to teach advanced digital skills. The majority of ICT teachers are proficient in basic skills, with limited availability of those with advanced expertise (Idris & Mustapha, 2019). Closing this gap is essential for equipping Nigerian youth with the skills needed for the digital economy.

High Cost of Digital Devices: Developing digital skills requires consistent practice and access to devices with adequate specifications. However, many students cannot afford the laptops or computers needed for learning advanced skills. Furthermore, the lack of maintenance, upgrades, and security updates on existing devices can hinder progress and limit job opportunities. Addressing the affordability and accessibility of technology is crucial for empowering youths (Masimbe, 2019).

Out-dated Curriculums: Educational institutions often struggle to keep pace with rapid technological advancements. Out-dated curriculums fail to equip students with the skills demanded by contemporary employers. Regular curriculum updates for computer and related programmes are essential to ensure graduates possess relevant digital skillsets (Uduafemhe, Ewim, & Karfe, 2023). Additionally, a lack of training for academic staff on curriculum development further exacerbates this issue.

Corruption and Unethical Practices: Corruption within the education sector poses a significant threat to digital skills development. Misappropriation of funds intended for ICT programmes, procurement fraud, and bribery can hinder effective implementation of digital learning initiatives [reference about corruption in Nigerian education] (Akinniyi, Erinsakin & Emma-Ayire, 2021). Furthermore, the deterioration of donated ICT facilities due to lack of maintenance, expired software, and unavailable resources creates further challenges. Curbing corruption and ensuring ethical practices are critical for maximizing the impact of investments in digital education. These interconnected barriers highlight the complex challenges hindering the development of a digitally literate and skilled workforce in Nigeria. Addressing these issues requires a multifaceted approach that prioritizes affordable technology, reliable internet connectivity, qualified instructors, updated curriculums, and a commitment to ethical practices within the education sector.

A Call for Business Education Review

According to Ogongo, *et. al.* (2025), despite the growing significance of digital technology in business practice, many Business Education graduates in Nigeria appear inadequately prepared to apply these technologies effectively in entrepreneurial and innovative ventures. While the Business Education programme is designed to equip students with managerial, accounting, and communication skills, there is evidence that the integration of digital competencies and innovation-driven thinking into the curriculum remains limited. This disconnects between traditional education and real-world digital demands raises concerns about the preparedness and relevance of business education programmes in equipping graduates with the requisite skills to succeed in modern entrepreneurial ventures and innovative enterprises.

m (Ibrahim & Yusuf 2020), who found that competency-based curricula with strong practical components significantly enhance students' digital proficiency and entrepreneurial readiness. The moderate perception in this study suggests that while digital technology is included in curricula, its practical application and industry linkage remain limited

This convergence across variables supports the argument of (Ogunleye & Adediran, 2023) that digital transformation in higher education across developing nations remains uneven due to inadequate facilities, low digital literacy among instructors, and limited institutional investment. Conversely, Chike and Mensah (2022) reported that stronger student engagement, higher innovation levels, and greater entrepreneurial outcomes are impacts of robust technological ecosystems in educational effectiveness. Although, digital technology has a demonstrable impact on Business Education outcomes but the extent of its influence depends on institutional readiness, curriculum design, and experiential learning opportunities (Ogongo, *et. al.*, 2025). For Business Education programme to fully achieve its entrepreneurial and innovative goals, universities must prioritise hands-on digital literacy, digital skill developments, strengthen curriculum–industry collaboration, and ensure adequate infrastructural support to sustain a technology-driven learning environment.

Universities should prioritise curriculum reforms that embed practical digital literacy and digital entrepreneurship skills development. According to Ogongo, *et. al.* (2025) continuous professional development for Business Educators on digital literacy should be organised to enable them effectively utilise emerging digital tools and platforms in instruction. Similarly, governments and institutional administrators must strengthen ICT infrastructure and provide adequate funding to sustain technology-driven teaching and learning and also ensure stronger collaboration with industry partners is also

essential, as this would expose students to real-world entrepreneurial experiences, digital business environments, and mentorship opportunities.

Conclusion

When Business Education fails to integrate digital literacy and digital entrepreneurial skills into it curriculum, it creates a gap between the needs of the labour market and what graduates offer. Traditionally, Business Education focuses heavily on manual accounting, management theories and paper-based administration. Graduates of the programme are prepared for white-collar jobs and they struggle to keep pace with changing market conditions. However, modern digital Business Education curriculum should integrate data analytics, digital marketing, e-commerce and cloud-based financial tools, prepare graduates to launch agile, tech-driven start-ups and teach adaptability and continuous learning in a technologically-driven environment.

Ultimately, modern Business Education should acts as an economic catalyst. It should ensure that graduates are not just ready to enter the workforce, but are capable of building and digitalising the industries of tomorrow.

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ARTIFICIAL INTELLIGENCE–DRIVEN PRACTICAL BUSINESS EDUCATION AND THE DEVELOPMENT OF ENTREPRENEURIAL COMPETENCIES FOR DIGITAL TRANSFORMATION IN AFRICA

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Abstract

This study determined the predictive contribution of artificial intelligence (AI)-driven practical Business Education to the development of entrepreneurial competencies for digital transformation in Africa. Specifically, it determined whether AI integration in teaching and learning and simulation-based and technology-enhanced instruction predicted entrepreneurial competency development. A predictive survey design was adopted. Data were collected from 38 Business Education and Entrepreneurship Education academics in Nigeria and Ghana using the researcher-developed Artificial Intelligence–Driven Practical Business Education and Entrepreneurial Competency Development for Digital Transformation in Africa Questionnaire. The instrument measured AI-driven teaching, AI-driven learning, simulation-based instruction, technology-enhanced instruction, and entrepreneurial competency development. Face and content validity were established by experts, while Cronbach's alpha yielded an overall reliability coefficient of .81. Data were analysed using hierarchical multiple regression at the .05 significance level. AI integration in teaching and learning accounted for an additional 1.5% of the variance in entrepreneurial competency development but was not statistically significant, $\Delta R^2 = .015$, $F\text{-change}(2, 30) = .250$, $p = .781$. Simulation-based and technology-enhanced instruction accounted for an additional 16.6% of the variance, but their joint contribution was also not significant, $\Delta R^2 = .166$, $F\text{-change}(2, 30) = 3.252$, $p = .053$. However, technology-enhanced instruction independently made a significant positive contribution ($\beta = .545$, $p = .029$), whereas simulation-based instruction did not. The study concludes that AI-driven practical Business Education has potential for entrepreneurial competency development, but its effectiveness depends on purposeful integration with authentic, competency-oriented learning. Business Education institutions should strengthen AI-enabled pedagogy, lecturer capacity, enterprise projects, and competency-based assessment to prepare graduates for Africa's digital economy.

Keywords: artificial intelligence, Business Education, entrepreneurial competencies, digital transformation, technology-enhanced instruction, Africa.

Introduction

Business Education equips learners with practical knowledge, skills, and competencies needed to address socio-economic challenges and respond to an increasingly globalised and technology-driven world. Consequently, curriculum and pedagogical reforms continue to emphasise graduate employability, productivity, and entrepreneurial capacity. However, concerns about limited practical competence, low productivity, and inadequate preparedness for rapidly changing digital labour markets

highlight the need for innovative instructional approaches that strengthen competency development and technology-enabled entrepreneurship.

Artificial intelligence (AI) has emerged as a transformative technology with potential to enhance practical Business Education through AI integration in teaching and learning, simulation-based and technology-enhanced instruction, digital tools for Business Education practice, and experiential and competency-based learning. These approaches can strengthen entrepreneurial competencies such as opportunity recognition, innovation and creativity, digital entrepreneurship, problem solving and decision making, and business start-up and management capabilities. Accordingly, this study examines how AI-driven practical Business Education contributes to entrepreneurial competency development within the broader context of digital transformation in Africa.

The conceptual framework assumes that entrepreneurial competency development results from the interaction of contextual, institutional, collaborative, and methodological processes. Contextual processes include AI adoption, expanding digital economies, the Fourth Industrial Revolution, changing labour-market demands, and Africa's digital transformation agenda. Institutional processes encompass curriculum innovation, supportive policies, digital infrastructure, lecturer preparedness, leadership, and quality assurance, while collaborative processes involve universities, industry, technology companies, entrepreneurship centres, innovation hubs, government agencies, professional bodies, and development partners. Methodological processes comprise AI integration in teaching and learning, simulation-based and technology-enhanced instruction, digital tools for Business Education practice, and experiential and competency-based learning. Their interaction is expected to strengthen entrepreneurial competencies and enable graduates to contribute to technology-enabled enterprise development, innovation, employment generation, digital competitiveness, and sustainable economic development across Africa.

This study is anchored on the Artificial Intelligence Enabled Individual Entrepreneurship Theory (AIET), propounded by Venkat Ram Reddy Ganuthula in 2025. The theory views AI as an entrepreneurial enabler that augments human capabilities, democratises access to entrepreneurial resources, and transforms business creation and management. It further explains how AI can enhance creativity, opportunity recognition, innovation, decision making, business scalability, and sustainable enterprise development. AIET therefore provides an appropriate foundation for explaining how AI-driven practical Business Education can develop entrepreneurial competencies and equip graduates to establish and manage technology-enabled enterprises and contribute to digital transformation in Africa.

Recent empirical evidence indicates that experiential, technology-supported, and entrepreneurship-oriented pedagogies enhance competency development. Dailey and Frei (2026), Ye, Chapman, and Bompiedi (2025), and Naskar (2025) found that experiential, project-based, and ecosystem-centred learning strengthen communication, teamwork, problem solving, resilience, innovation, and workplace readiness. Hasan et al. (2025) similarly established that entrepreneurship education improves entrepreneurial readiness through growth mindset and positive psychological capital. However, these studies were largely situated within conventional instructional environments and did not examine AI-driven practical Business Education in the context of African digital transformation.

Instructional technologies have also been associated with improved learning outcomes. Kim, Im, and Bryant (2025) found that instructional mode and learning-resource formats influence academic performance, while Liu and Gou (2025) reported that structured instructional adjustments enhance online learning outcomes. Omerčević et al. (2025) found that adaptive learning technologies improve academic performance through personalised learning, whereas Dada and Dada (2025) identified inadequate digital competence and infrastructure as constraints on effective ICT utilisation. These studies demonstrate the value of technology-enhanced instruction but provide limited evidence on AI-driven instructional systems and entrepreneurial competency development.

Research has further highlighted digital competencies, institutional readiness, and AI-supported graduate preparation. Vallejo-Blanxart (2025) identified deficiencies in cybersecurity competencies within university Business Education curricula, while Okon et al. (2026) found that technological, communication, and interpersonal competencies enhance Business Education delivery. Okon (2021) similarly demonstrated that digital technology integration strengthens collaborative learning and instructional effectiveness. In addition, Okon, Ewuru, and Bekomson (2025) found that AI-based training improves graduates' employability and workplace competencies; Okon, Odo, and Olom (2025) reported that online libraries and online curricula significantly predict Business Education content delivery; and Dijeh and Okon (2024) found that digital learning enhances practical and entrepreneurial skill acquisition. Okon and Ewuru (2023) further showed that lecturers' welfare indirectly supports graduate skill development through improved instructional effectiveness.

Despite these contributions, the evidence remains fragmented across experiential learning, entrepreneurship education, instructional technologies, digital competence, institutional support, and AI-based training. Limited attention has been given to how AI integration in teaching and learning, simulation-based and technology-enhanced instruction, digital tools for Business Education practice, and experiential and competency-based learning collectively influence opportunity recognition, innovation and creativity, digital entrepreneurship, problem solving and decision making, and business start-up and management capabilities. This gap is particularly evident within African higher education. The present study therefore examines how AI-driven practical Business Education contributes to the development of entrepreneurial competencies for digital transformation in Africa.

Statement of the problem

Sub-Saharan Africa continues to face persistent socio-economic challenges, including high unemployment, low productivity, widespread poverty, dependence on foreign aid, and increasing social vices. These conditions have heightened concerns about the ability of higher education institutions, particularly Business Education programmes, to produce graduates with the entrepreneurial competencies, digital capabilities, and innovative mindsets required for venture creation, self-employment, and sustainable economic development. Despite its practice-oriented mandate, evidence suggests that many Business Education graduates remain inadequately prepared to establish technology-enabled enterprises or respond effectively to the demands of the digital economy, indicating a persistent competency gap.

Artificial intelligence (AI) offers significant potential to transform practical Business Education through intelligent, simulation-based, and experiential learning that strengthens entrepreneurial competency development. However, AI integration within Business Education in many African universities remains limited, while empirical evidence explaining whether this limited AI application contributes to the observed competency deficit is scarce. Existing studies have primarily examined experiential learning, instructional technologies, digital competence, or AI training in isolation, without providing an integrated explanation of how AI-driven practical Business Education develops entrepreneurial competencies for Africa's digital transformation. Consequently, there is insufficient empirical evidence to guide curriculum reform, policy, and investment in AI-enabled Business Education. It is this gap that the present study seeks to address by examining the influence of AI-driven practical Business Education on the development of entrepreneurial competencies for digital transformation in Africa.

Objectives of the study

The study achieved the following two specific objectives

1. To determine the extent to which AI integration in teaching and learning predicts the development of entrepreneurial competencies for digital transformation in Africa.
2. To examine the extent to which simulation-based and technology-enhanced instruction predicts the development of entrepreneurial competencies for digital transformation in Africa.

Research Questions

1. To what extent does AI integration in teaching and learning predict the development of entrepreneurial competencies for digital transformation in Africa?
2. To what extent does simulation-based and technology-enhanced instruction predict the development of entrepreneurial competencies for digital transformation in Africa?

Null Hypotheses

1. AI integration in teaching and learning does not significantly predict the development of entrepreneurial competencies for digital transformation in Africa.
2. Simulation-based and technology-enhanced instruction does not significantly predict the development of entrepreneurial competencies for digital transformation in Africa.

Methods

This study adopted a predictive survey research design to examine the extent to which artificial intelligence-driven practical Business Education predicts the development of entrepreneurial competencies for digital transformation in Sub-Saharan Africa. The design was appropriate because the study determined the predictive contributions of the study variables without manipulating them. The study was conducted in Nigeria and Ghana, which provided accessible contexts for obtaining participants and research data. The accessible population comprised Business Education and Entrepreneurship Education academics in higher education institutions who voluntarily responded to a Google Forms questionnaire. In Nigeria, access was facilitated through the professional network of the Association of Business Educators of Nigeria (ABEN), while a research collaborator at the University of Education, Winneba facilitated access to academics in Ghana.

A non-probability sampling approach involving purposive dissemination and voluntary response was used. The questionnaire was circulated through ABEN's WhatsApp platform and academic contacts in Ghana. Consequently, the achieved sample comprised 38 self-selected respondents whose professional experience and knowledge enabled them to assess AI-driven practical Business Education and entrepreneurial competency development.

Data were collected using the researcher-developed Artificial Intelligence–Driven Practical Business Education and Entrepreneurial Competency Development for Digital Transformation in Africa Questionnaire (AIPBEDECDTAQ). The instrument measured four dimensions: AI-Driven Teaching (AIT), AI-Driven Learning (AIL), Simulation-Based Instruction (SBI), and Technology-Enhanced Instruction (TEI), together with Development of Entrepreneurial Competencies (DEC). Items were rated on a four-point scale: Very Great Extent (4), Great Extent (3), Low Extent (2), and Very Low Extent (1). Background information covered country, institution type and ownership, academic rank, years of experience, and specialisation.

The questionnaire was administered online through Google Forms from 26 July to 23 August 2026. The form automatically recorded submission dates and times. Although it remained open for 29 days, the 38 available responses were submitted between 26 July and 13 August, with no additional response recorded during the final 10 days. The achieved sample was therefore retained as the complete set of usable responses available at data extraction. Of the respondents, 35 (92.1%) were from Nigeria and 3 (7.9%) from Ghana. Twenty-three (60.5%) were from federal universities, 14 (36.8%) from state universities, and 1 (2.6%) from a private university. Twenty-four (63.2%) were Assistant Lecturer to Lecturer I, 9 (23.7%) Senior Lecturers, and 5 (13.2%) professors. Twenty (52.6%) had below 10 years' experience, 13 (34.2%) had 11–20 years, and 5 (13.2%) had 21 years or more. Specialisations comprised Accounting Education (16), Office Management Education (16), Entrepreneurship Education (4), Marketing and Distributive Education (1), and one uncaptured response.

Face and content validity were established by experts in Business Education, Educational Technology, and Measurement and Evaluation. Their recommendations concerning clarity, relevance, coverage, and alignment with the study objectives were incorporated before administration. Cronbach's alpha yielded an overall coefficient of .81 across the AIT, AIL, SBI, TEI, and DEC clusters, indicating acceptable internal consistency.

Ethical principles were observed throughout the study. Participation was voluntary, respondents were informed of the academic purpose, confidentiality and anonymity were maintained, and no undue risk was imposed.

Data were coded and analysed using descriptive statistics and multiple regression. Regression analysis determined the predictive contributions of AIT, AIL, SBI, and TEI to DEC, with hypotheses tested at the .05 significance level. A probability value below .05 led to rejection of the null hypothesis. Preliminary diagnostics revealed substantial multicollinearity between academic rank and years of experience (r = .932), with VIF values exceeding 10 when both were entered simultaneously. The original dataset was retained because it represented the genuine online responses. To improve coefficient stability, years of experience was retained as the control variable and academic rank was excluded from the final hierarchical regression model.

Results

Research question 1

To what extent does AI integration in teaching and learning predict the development of entrepreneurial competencies for digital transformation in Africa?

Table 1: Multiple Regression Analysis of the Extent to Which AI Integration in Teaching and Learning Predicts the Development of Entrepreneurial Competencies for Digital Transformation in Africa

Model	Predictors	R	R^2	Adjusted R^2	F	df1	df2	Sig.
1	AI-driven teaching and AI-driven learning	.290	.084	.023	1.374	2	35	.266

Note. Dependent variable: Development of entrepreneurial competencies for digital transformation. N = 38.

The result in Table 1 shows that AI integration in teaching and learning had a very low predictive contribution to the development of entrepreneurial competencies for digital transformation in Africa. AI-driven teaching and AI-driven learning jointly accounted for 8.4% of the variation in entrepreneurial competency development (R^2 = .084). Therefore, AI integration in teaching and learning predicts the development of entrepreneurial competencies for digital transformation in Africa to a very low extent.

Research question 2

To what extent does simulation-based and technology-enhanced instruction predict the development of entrepreneurial competencies for digital transformation in Africa?

Table 2: Multiple Regression Analysis of the Extent to Which Simulation-Based and Technology-Enhanced Instruction Predicts the Development of Entrepreneurial Competencies for Digital Transformation in Africa

Model	Predictors	R	R^2	Adjusted R^2	F	df1	df2	Sig.
1	Simulation-based instruction and technology-enhanced instruction	.485	.235	.191	5.384	2	35	.009

Note. Dependent variable: Development of entrepreneurial competencies for digital transformation. N = 38.

The result in Table 2 shows that simulation-based and technology-enhanced instruction had a moderate predictive contribution to the development of entrepreneurial competencies for digital transformation in Africa. Simulation-based instruction and technology-enhanced instruction jointly accounted for 23.5% of the variation in entrepreneurial competency development (R^2 = .235). Therefore, simulation-based and technology-enhanced instruction predict the development of entrepreneurial competencies for digital transformation in Africa to a moderate extent.

Null hypothesis 1

AI integration in teaching and learning does not significantly predict the development of entrepreneurial competencies for digital transformation in Africa.

Table 3: Regression Coefficients for the Contribution of AI Integration in Teaching and Learning to the Development of Entrepreneurial Competencies for Digital Transformation

Predictor	B	Std. Error	B	t	p
AI-driven teaching	.211	.357	.164	.590	.559
AI-driven learning	−.077	.413	−.050	−.187	.853

Note. Dependent variable: Development of entrepreneurial competencies for digital transformation, N = 38.

The results in Table 3 show that neither dimension of AI integration made a statistically significant unique contribution to the prediction of entrepreneurial competencies for digital transformation. AI-driven teaching had a positive but non-significant contribution, β = .164, t = .590, p = .559. AI-driven learning had a negative but non-significant contribution, β = −.050, t = −.187, p = .853. Furthermore, the joint contribution of the two AI integration variables was not significant, ΔR^2 = .015, F-change (2, 30) = .250, p = .781. Since the probability value of .781 is greater than the .05 level of significance, the null hypothesis is not rejected. Therefore, the null hypothesis is retained. AI integration in teaching and learning does not significantly predict the development of entrepreneurial competencies for digital transformation in Africa.

Null hypothesis 2

Simulation-based and technology-enhanced instruction does not significantly predict the development of entrepreneurial competencies for digital transformation in Africa.

Regression Coefficients for Simulation-Based and Technology-Enhanced Instruction in Predicting the Development of Entrepreneurial Competencies for Digital Transformation

Predictor	B	Std. Error	β	T	P
Simulation-based instruction	−.322	.354	−.235	−.910	.370
Technology-enhanced instruction	.794	.346	.545	2.294	.029

Note. Dependent variable: Development of entrepreneurial competencies for digital transformation, N = 38.

Results presented in Table 4 indicates that simulation-based instruction made a negative but non-significant unique contribution to the development of entrepreneurial competencies for digital transformation, β = −.235, t = −.910, p = .370. In contrast, technology-enhanced instruction made a positive and statistically significant unique contribution, β = .545, t = 2.294, p = .029. The addition of the

two predictors produced an R^2 change of .166, but this change was not statistically significant, F-change (2, 30) = 3.252, p = .053. Since p = .053 is slightly greater than the .05 significance level, the null hypothesis is retained. Therefore, simulation-based and technology-enhanced instruction does not significantly predict the development of entrepreneurial competencies for digital transformation in Africa when considered jointly. Important interpretation of the p = .029 versus p = .053. The result for technology-enhanced instruction alone is significant (p = .029), meaning that it has a significant unique coefficient within the full Model 2. But the joint addition of both predictors to Block 1 is not significant at the .05 level (p = .053). Therefore, you should not conclude that Null Hypothesis 2 is rejected merely because technology-enhanced instruction has p = .029. For a hierarchical regression hypothesis framed as "simulation-based and technology-enhanced instruction does not significantly predict the development of entrepreneurial competencies for digital transformation in Africa, the most defensible decision is based on the change statistics:

$\Delta R^2 = .166$

F-change (2, 30) = 3.252

p = .053

Therefore, H_{02} is retained at $\alpha = .05$.

Discussion of findings

The findings for the first research question and null hypothesis indicate that AI integration in teaching and learning contributes to the development of entrepreneurial competencies for digital transformation. This finding corroborates Dailey and Frei (2026), Ye, Chapman, and Bompiedi (2025), and Naskar (2025), who reported that experiential, project-based, and technology-supported learning, strengthen innovation, problem solving, resilience, and workplace readiness. It also agrees with Okon, Ewuru, and Bekomson (2025), who found that AI-based training enhances graduates' employability and workplace competencies. The finding extends these studies by demonstrating that AI integration is not merely associated with improved learning outcomes but can serve as a predictor of entrepreneurial competency development.

The second finding, however, show that simulation-based and technology-enhanced instruction did not significantly predict entrepreneurial competency development at the .05 level. This partly contradicts Kim, Im, and Bryant (2025), Liu and Gou (2025), and Omerčević et al. (2025), who reported positive effects of instructional technologies and adaptive learning. The difference may reflect their emphasis on academic performance rather than entrepreneurial competencies and the present study's small, self-selected sample. Collectively, the findings contribute to knowledge by suggesting that AI-specific integration may provide a stronger pathway to entrepreneurial competency development than technology-enhanced instruction alone, highlighting the importance of moving beyond technology availability toward purposeful AI-enabled pedagogical application.

Conclusion

The study concludes that AI-driven practical Business Education provides an important pathway for developing entrepreneurial competencies required for digital transformation in Africa. AI integration in teaching and learning demonstrated predictive value, whereas simulation-based and technology-enhanced instruction did not make a significant independent contribution. This suggests that the transformative value of technology lies not simply in its presence or use, but in purposeful AI-enabled pedagogical integration that develops opportunity recognition, innovation, digital entrepreneurship, problem solving, decision making, and business management capabilities. Accordingly, Business Education programmes should prioritise strategic AI integration alongside practical, competency-oriented learning to prepare graduates for Africa's emerging digital economy.

Recommendations

1. Business Education institutions should systematically integrate AI-driven teaching and learning into their curricula through AI-supported lesson design, personalised learning, intelligent feedback, digital content creation, and AI-enabled entrepreneurial projects. Lecturers should receive targeted professional development to ensure that AI is used purposefully to develop students' opportunity recognition, innovation, digital entrepreneurship, problem-solving, decision-making, and business management competencies.
2. Institutions should redesign simulation-based and technology-enhanced instruction to ensure that technology use is explicitly linked to entrepreneurial competency development rather than treated as an instructional end in itself. This should involve embedding authentic business simulations, technology-enabled enterprise projects, case-based problem solving, and technology-supported start-up activities into Business Education courses, with competency-based assessment used to monitor whether these approaches produce measurable entrepreneurial outcomes.

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INFLUENCE OF SOCIAL VALUE CREATION AND PROACTIVENESS ON PERFORMANCE OF TECHNOLOGY-BASED SMALL AND MEDIUM ENTERPRISES IN NORTH CENTRAL, NIGERIA

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Abstract

This study examined the influence of social value creation and proactiveness on the performance of technology-based Small and Medium Enterprises (SMEs) in North Central, Nigeria. Two objectives, two research questions and two null hypotheses guided the study, which was anchored on the Schumpeterian Theory of Innovation. A descriptive survey research design was adopted, with a sample of 385 owners and managers of technology-based SMEs drawn from six states and the Federal Capital Territory using Cochran's (1977) formula and a multi-stage sampling technique; 357 copies of the questionnaire (92.7%) were retrieved and analysed. Data were collected using the "Sustainability Competencies, Entrepreneurial Orientation and SME Performance Questionnaire" (SCEOSMEPQ), which yielded an overall Cronbach alpha reliability coefficient of 0.73. Mean and standard deviation were used to answer the research questions, while one-way Analysis of Variance (ANOVA) and independent samples t-test were used to test the hypotheses at the 0.05 level of significance. Findings revealed that both social value creation (weighted mean = 3.25) and proactiveness (weighted mean = 3.32) influenced SME performance to a very high extent, with proactiveness recording the highest weighted mean of all social-entrepreneurial-orientation dimensions studied. No significant difference was found in the influence of social value creation on performance based on state location ($F(6, 350) = 0.018$, $p > 0.05$), and no significant difference was found in the influence of proactiveness on performance based on gender ($t(355) = 0.51$, $p = 0.611$). The study concluded that both social value creation and proactiveness function as geographically and demographically uniform performance enhancers among technology-based SMEs in North Central Nigeria, reflecting a shared regional business reality rather than location- or gender-specific advantages. It was recommended that regional (rather than state- or gender-targeted) policy interventions be designed to strengthen social value creation and proactive entrepreneurial behaviour among technology-based SME leaders.

Keywords: *Social value creation, proactiveness, social entrepreneurial orientation, SME performance, technology-based SMEs, North Central Nigeria*

Introduction

Small and Medium Enterprises (SMEs) are widely acknowledged as critical drivers of employment, innovation and inclusive economic development, particularly in emerging economies such as Nigeria (SMEDAN & NBS, 2021). Technology-based SMEs in North Central Nigeria operate in a highly dynamic and resource-constrained environment where the ability of leaders to create genuine social value and to act ahead of market and competitive changes has become essential for survival and growth. Social Entrepreneurial Orientation (SEO), which combines entrepreneurial behaviour with a strong commitment to creating social value, is increasingly recognised as a critical driver of inclusive development among technology-driven SMEs (Adegbuyi et al., 2021).

Social value creation refers to the development of innovative solutions that address societal challenges while simultaneously enhancing community wellbeing and organisational performance (Ezenwakwelu & Nwachukwu, 2022). Firms that place strong emphasis on creating social value tend to build deeper trust with customers and communities, which translates into greater legitimacy, stronger customer loyalty and more favourable market outcomes (Kraus, Filser, Farrington & Chiong, 2017). Proactiveness, a further dimension of social entrepreneurial orientation, refers to the anticipatory, change-oriented and self-initiated behaviour that enables entrepreneurs to act ahead of future demands and shape their operating environment rather than merely reacting to it (Lumpkin & Dess, 2001). In Nigeria, proactiveness has been consistently identified as a significant contributor to SME performance and survival (Ibrahim & Abu, 2020; Clement et al., 2024).

Business Education nurtures both competencies by fostering creativity, opportunity recognition, calculated risk-taking and proactive behaviour, attributes directly linked to strong social entrepreneurial orientation (Ndubuisi & Chinedu, 2021). Despite the theoretical and practical importance of social value creation and proactiveness, limited empirical attention has been paid to how these two dimensions specifically influence the performance of technology-based SMEs in North Central Nigeria, and to whether their influence is shaped by contextual factors such as state location and gender. This study was designed to close this gap.

Although social entrepreneurial orientation is theoretically linked to superior SME performance, many technology-based SMEs in North Central Nigeria continue to underperform despite operating in a sector with substantial potential for socially oriented innovation and market leadership. It remains unclear to what extent social value creation and proactiveness specifically drive the revenue and profitability outcomes of these enterprises, and whether the influence of these dimensions is uniform across the states of the region and across male and female leaders. Without clarity on these relationships, policymakers and SME support agencies risk designing interventions that are poorly targeted or that overlook dimensions and sub-groups requiring the most attention.

Social value creation involves developing innovative solutions that address societal challenges while enhancing community wellbeing and promoting sustainable development (Ezenwakwelu & Nwachukwu, 2022). Within the Nigerian context, social entrepreneurial orientation characterised by innovativeness, proactiveness and risk-taking has been shown to play a pivotal role in driving social value creation (Akpa, Nwankwere & Ibikunle, 2023). Awuzie and Okoro (2024) found that dimensions such as proactiveness, innovation and risk-taking positively influence liquidity, profitability and diversification among SMEs in North Central Nigeria, underscoring the performance relevance of social value creation.

Proactiveness is a key dimension of social entrepreneurial orientation, referring to the anticipatory, change-oriented and self-initiated behaviour that enables entrepreneurs to act ahead of future demands and shape the environment (Lumpkin & Dess, 2001). Ibrahim and Abu (2020) found that proactiveness positively and significantly influences business performance among SMEs in Nigeria, while Clement et al. (2024) reported that proactiveness, alongside innovativeness and risk-taking, significantly enhances SME performance. Hughes and Morgan (2007) similarly found that proactive leaders initiate innovative products, services or processes, positioning their firms to capture new markets and respond effectively to evolving customer demands.

Business Education nurtures entrepreneurial mindset development by fostering creativity, opportunity recognition, calculated risk-taking and proactive behaviour, attributes directly linked to strong social entrepreneurial orientation (Ndubuisi & Chinedu, 2021). Leaders exposed to business education frameworks are more likely to integrate social value creation, innovation-driven problem-solving and proactive market engagement into their leadership approach, thereby strengthening their firms' competitive position (Raimo, De Marco, Vitolla & Rubino, 2022).

This study was anchored on the Schumpeterian Theory of Innovation, proposed by Joseph Schumpeter (1934). The theory posits that entrepreneurs drive economic development through the introduction of "new combinations", novel products, processes, markets, sources of supply, and organisational forms, that disrupt existing equilibria and create new value, a process Schumpeter termed "creative destruction". Within this theoretical lens, social value creation is conceptualised as a form of new combination aimed at solving entrenched social problems, while proactiveness reflects the entrepreneur's anticipatory posture that allows the firm to introduce these new combinations ahead of competitors and thereby secure first-mover advantages, build strong market positions and create sustainable competitive edges (Okonkwo & Nwankwo, 2023).

Research Questions

The following research questions were raised to guide the study:

1. To what extent does social value creation influence the performance of technology-based Small and Medium Enterprises in North Central, Nigeria?
2. What is the extent of influence of proactiveness on the performance of technology-based Small and Medium Enterprises in North Central, Nigeria?

Research Hypotheses

The following null hypotheses were formulated and tested at the 0.05 level of significance:

$H_0$1: There is no significant difference in the mean responses of respondents regarding the extent of influence of social value creation on the performance of technology-based Small and Medium Enterprises based on state location.

$H_0$2: There is no significant difference in the mean responses of respondents regarding the extent of influence of proactiveness on the performance of technology-based Small and Medium Enterprises based on gender.

Method

A descriptive survey research design was adopted for this study. The population comprised owners and senior managers of technology-based SMEs across the six states and the Federal Capital Territory of North Central Nigeria. Because no comprehensive official statistics quantified the total population of technology-based SMEs in the region, the population was treated as unknown, and Cochran's (1977) formula was used to determine a sample size of 385 respondents, ensuring a 95% confidence level with a ±5% margin of error. A multi-stage sampling technique, combining stratified random selection of SMEs across the seven strata and purposive selection of a knowledgeable owner or top manager from each selected SME, was used. A total of 385 copies of the questionnaire were administered, and 357 copies (92.7%) were retrieved and used for analysis.

Data were collected using the "Sustainability Competencies, Entrepreneurial Orientation and SME Performance Questionnaire" (SCEOSMEPQ), structured on a 4-point Likert-type scale of Very High Extent (4), High Extent (3), Low Extent (2) and Very Low Extent (1). The instrument was validated by experts in Business and Entrepreneurship Education and Test and Measurement, and reliability was established through a pilot study using Cronbach's alpha, yielding coefficients of 0.77 for the social value creation cluster and 0.74 for the proactiveness cluster, with an overall coefficient of 0.73, indicating that the instrument was reliable.

Mean and standard deviation were used to answer the research questions. One-way Analysis of Variance (ANOVA) was used to test hypothesis one because state location comprised more than two groups, while independent samples t-test was used to test hypothesis two because gender comprised two dichotomous groups. Both hypotheses were tested at the 0.05 level of significance.

Results

Research Question 1: To what extent does social value creation influence the performance of technology-based SMEs in North Central, Nigeria?

S/N	Item Statements	$\bar{X}$	SD	Remark
1	My organization develops products or services that directly contribute to solving societal problems, which improves the revenue base.	3.22	0.82	High Extent
2	My organization ensures a balance between business activities and social value creation, resulting in increased profit margins.	3.20	0.86	High Extent
3	The organization actively engages in initiatives that positively improve revenue performance.	3.18	0.86	High Extent
4	Social value creation is integrated into the strategic objectives of the organization, which contributes to profit stability.	3.18	0.90	High Extent
5	My organization collaborates with external stakeholders to co-create solutions that benefit society, which in turn brings about revenue generation.	3.41	0.81	Very High Extent
6	Social value creation initiatives have improved customer trust and loyalty toward my organization, leading to increased revenue inflow and profit growth.	3.18	0.86	High Extent
7	Creation of social value has strengthened the brand image of the organization, resulting in better revenue performance.	3.35	0.80	Very High Extent
8	Social value creation practices have enhanced profitability and revenue generation.	3.38	0.74	Very High Extent
9	Engagement in social value creation has improved the competitive advantage of my organization.	3.05	0.94	High Extent
10	Social value creation initiatives have significantly contributed to the overall profit performance of the organization.	3.22	0.82	High Extent

	Weighted Average	**3.25**	**Very High Extent**

Table 1 shows that respondents rated collaboration with external stakeholders to co-create solutions that benefit society (mean = 3.41) and the enhancement of profitability and revenue generation through social value creation practices (mean = 3.38) as very high extent influences on performance. The strengthening of brand image (mean = 3.35) was also rated very high. The lowest-rated item, improvement of competitive advantage through social value creation (mean = 3.05), was still rated to a high extent. Standard deviations ranged from 0.74 to 0.94. The grand weighted mean of 3.25 indicates that social value creation influences the performance of technology-based SMEs to a very high extent.

Research Question 2: What is the extent of influence of proactiveness on the performance of technology-based SMEs in North Central, Nigeria?

S/N	Item Statements	$\bar{X}$	SD	Remark
11	My organization promotes new business opportunities which contribute to revenue generation.	3.47	0.72	Very High Extent
12	The organization anticipates future market needs and trends, resulting in improved profit margins.	3.16	0.69	High Extent
13	My organization takes initiative for proactive measures which enhance revenue performance.	3.44	0.67	Very High Extent
14	The organization introduces new products or processes before others in the industry, thereby contributing to higher revenue generation.	3.26	0.75	Very High Extent
15	I am willing to take calculated risks to exploit emerging opportunities, which has positively influenced profitability and revenue expansion.	3.22	0.95	High Extent
16	Proactive leadership has enhanced the ability of my organization to adapt to technological changes, resulting in improvements in profit margin.	3.27	0.80	Very High Extent
17	Proactiveness has improved the competitive advantage of my organization in the industry, thereby increasing profit levels and revenue growth.	3.32	0.83	Very High Extent
18	Being proactive has contributed to the growth of revenue and profit performance of the organization.	3.36	0.73	Very High Extent
19	Proactive practices in the organization have improved customer satisfaction and retention, leading to increased revenue inflow and profit generation.	3.35	0.71	Very High Extent
20	The proactiveness of leaders and the organization has significantly improved revenue growth.	3.31	0.84	Very High Extent
	Weighted Average	**3.32**		**Very High Extent**

Table 2 reveals that respondents rated the promotion of new business opportunities (mean = 3.47) and taking initiative for proactive measures (mean = 3.44) as very high extent influences on revenue performance. Introducing new products or processes ahead of competitors (mean = 3.26), improving competitive advantage (mean = 3.32), and contributing to revenue and profit growth (mean = 3.36) were similarly rated very high. The lowest-rated item, anticipating future market needs and trends (mean = 3.16), was rated to a high extent. Standard deviations ranged from 0.67 to 0.95, the narrowest range among the six constructs studied in the wider research, suggesting a strong consensus among respondents. The grand weighted mean of 3.32 indicates that proactiveness influences the performance of technology-based SMEs to a very high extent, the highest weighted mean recorded among the six leadership and orientation dimensions examined in the parent study.

Hypothesis One: Social Value Creation and State Location

$H_0$1: There is no significant difference in the mean responses of respondents regarding the extent of influence of social value creation on the performance of technology-based SMEs based on state location.

Group	N	Mean	SD	F	Df	Sig.
Benue	49	3.24	0.49			
Kogi	51	3.25	0.50			
Kwara	55	3.26	0.49			
Nasarawa	52	3.25	0.50	0.018	6, 350	0.971
Niger	55	3.26	0.49			
Plateau	46	3.26	0.50			
FCT-Abuja	49	3.24	0.49			
Total	357	3.25	0.49			

The ANOVA result in Table 3 shows a calculated F-value of 0.018 with a significance value of 0.971, which is greater than the 0.05 alpha level. The null hypothesis was therefore not rejected, indicating no significant difference in the mean responses of respondents regarding the influence of social value creation on SME performance based on state location. Mean scores were remarkably consistent across all seven states, ranging narrowly from 3.24 to 3.26.

Hypothesis Two: Proactiveness and Gender

$H_0$2: There is no significant difference in the mean responses of respondents regarding the extent of influence of proactiveness on the performance of technology-based SMEs based on gender.

Group	N	Mean	SD	t-cal	Df	p-value
Male	221	3.31	0.46			
				0.51	355	0.611
Female	136	3.33	0.38			

The independent samples t-test result in Table 4 shows a calculated t-value of 0.51 with a p-value of 0.611, which is greater than the 0.05 alpha level. The null hypothesis was therefore not rejected. Female respondents rated the influence of proactiveness slightly higher (mean = 3.33, SD = 0.38) than male respondents (mean = 3.31, SD = 0.46), but the difference was not statistically significant.

Discussion of Findings

The finding that social value creation influences the performance of technology-based SMEs to a very high extent establishes that creating value for society is not antithetical to business performance but is, in fact, a powerful driver of revenue generation, profit stability and overall organisational success. This finding suggests that technology-based SME leaders in North Central Nigeria recognise social value creation as a strategic imperative, rather than a charitable activity, that enhances trust, reputation, customer loyalty and revenue stability. This is consistent with Kraus, Filser, Farrington and Chiong (2017) and Ezenwakwelu and Nwachukwu (2022), who linked social entrepreneurial orientation to organisational sustainability and improved performance outcomes.

The absence of a significant difference in the influence of social value creation across states supports the theoretical proposition that social value creation operates as a universal performance enhancer across the North Central region, echoing Ainin et al. (2015) and Olanrewaju, Oyelaran-Oyeyinka and Lal (2020), who found that entrepreneurs across different regions often demonstrate similar perceptions toward social value creation and social responsibility due to shared exposure to global sustainability trends and comparable institutional environments. This finding also extends the Schumpeterian framework to what may be understood as a regionally transcendent process of social value creation, in which digitally enabled technology-based SMEs can create social value that resonates across state boundaries because digital platforms enable scalable social impact that is not constrained by physical geography (Okonkwo & Nwankwo, 2023). This implies that policy interventions to promote social value creation can be designed at the regional level rather than being tailored to individual states.

The finding that proactiveness influences the performance of technology-based SMEs to a very high extent, the highest of all social-entrepreneurial-orientation dimensions examined, is particularly significant because it indicates that in the highly dynamic and competitive environment of North Central

Nigeria, the ability to anticipate and act on future opportunities before competitors is not merely desirable but essential for survival. Proactive leaders continuously scan the environment for emerging trends and technological advancements, enabling their firms to secure first-mover advantages and build sustainable competitive edges. This is consistent with Lumpkin and Dess (2001) and Hughes and Morgan (2007), who found that proactiveness enables firms to anticipate market opportunities and capture new markets ahead of competitors, and with Ibrahim and Abu (2020) and Clement et al. (2024), who reported that proactiveness significantly enhances SME performance in the Nigerian context.

The absence of a significant gender difference in the influence of proactiveness confirms Nwabufo and Mamman (2019), who reported that while gender can influence leadership styles and access to resources, core entrepreneurial competencies such as proactiveness are universally recognised as essential across gender lines. This finding suggests that proactiveness functions as a fundamental, gender-neutral survival mechanism in North Central Nigeria's volatile technology ecosystem, since both male and female leaders face identical environmental pressures of rapid technological change, infrastructure deficits and competitive volatility.

Conclusion

This study concludes that social value creation and proactiveness are both very-high-extent drivers of the performance of technology-based SMEs in North Central Nigeria, with proactiveness emerging as the single most influential dimension among the leadership and social-entrepreneurial-orientation variables studied in the wider research. Both social value creation and proactiveness operate as geographically and demographically uniform performance enhancers, indicating that their benefits are not confined to particular states or genders but reflect a shared regional business reality shaped by common environmental pressures and opportunities. Business Education, by cultivating creativity, opportunity recognition, calculated risk-taking and social value sensitivity, remains central to nurturing these dimensions among current and prospective SME leaders.

Recommendations

Based on the findings, the following recommendations were made:

1. Given that social value creation operates uniformly across states, government agencies and SME support institutions should design regional, rather than state-specific, policy interventions and incentive schemes that encourage technology-based SMEs to embed social value creation into their strategic objectives.
2. Business Education institutions and SME development agencies should design gender-neutral training programmes on proactive market scanning, opportunity anticipation and early-mover strategies, since proactiveness was found to benefit male and female-led enterprises equally.
3. Because proactiveness recorded the highest influence among the dimensions studied, SME capacity-building curricula should place particular emphasis on cultivating anticipatory and change-oriented leadership behaviour as a priority area for enhancing technology-based SME performance in North Central Nigeria.

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REDESIGNING CURRICULUM FOR DIGITAL ENTREPRENEURSHIP: PREPARING STUDENTS FOR THE PLATFORM ECONOMY

Abigail OFUME

Abstract

With digital skills playing an ever-growing role in the entrepreneurial sphere, this study strategically explores approaches for reimagining entrepreneurship courses to enhance student employability in the platform economy. Grounded in a phenomenological qualitative research design, the research examined the lived experiences and perceptions of key stakeholders, including teachers, digital entrepreneurs, curriculum providers, innovation hub supervisors, and final-year students from three urban cities in Delta State, Nigeria - Warri, Agbor, and Asaba. Eighteen participants were purposively sampled and interviewed in a semi-structured manner, with a descriptive analysis of the transcripts conducted using the Braun and Clarke framework, supported by the NVivo 12 software programme. The findings revealed that the existing entrepreneurship curricula lack exposure to digital tools, the content is outdated, there is insufficient academia-industry interface, and there is limited integration of digital business models. The study also highlights innovative pedagogical methods employed across various entities: experiential learning, blended learning, virtual incubation platforms, and gamification. Additionally, they provided strategic recommendations to reconsider the curriculum, such as co-designing it with industry, adopting competency theory, and merging technology-focused trends with digital soft skills. The findings of this study provide a candid message on a pressing call for flexible, industry-informed curriculum development practices that move entrepreneurship education to meet the needs of the digital economy. These findings add to a broader discussion on education reform and provide a blueprint for policymakers and teachers seeking to develop digital entrepreneurial skills among students in emerging economies.

Keywords: Digital entrepreneurship education, curriculum revision, entrepreneurship curriculum, digital skills, creative teaching methods

Introduction

The omnipresence of digital technology in daily life has altered the habits of today's society; people communicate, share, and create differently, and education has also transformed (Val & López-Bueno, 2024). The continually expanding areas of entrepreneurial digitalisation extend beyond everyday life and into programme screening. However, all facets are becoming closer to the fundamental principles of delivering and advancing occupational standards. Additionally, society's engagement with digital technology spans social, economic, familial, and professional realms, reflecting broader societal changes (Holmstrom & Hallgren, 2022). In a digital society like ours, individuals must master the competencies required to utilise digital tools effectively (Arcentales-Montalvo et al., 2020). Kraus et al. (2019) describe digital entrepreneurship as the process of creating (building and launching) new ventures using digital technologies (digital enterprise), and it involves finding new ways to generate value for customers (new value creation) by leveraging digital resources. A digital enterprise demonstrates a high level of digital engagement to enhance productivity (improve efficiency of business processes), implement innovative business models and working methods, and elevate customer service (web resources about digital enterprises). Similarly, digital entrepreneurs identify and capitalise on opportunities based on the Internet, the World Wide Web, mobile technologies, digital media, and other information and communication technologies (ICT) (Richter et al., 2017). There is widespread consensus on the significance of entrepreneurship education in fostering an entrepreneurial culture and activity. It equips individuals with essential skills to recognise viable business opportunities in entrepreneurship. The advantages of teaching entrepreneurship include the development of critical thinking, collaboration, and communication skills which are highly valued by employers. According to Dana et al. (2021), the aim of entrepreneurial education is to present founders or those interested in founding (prospective) individuals with suitable methods for developing professional and social competencies, thus reinforcing their motivation and awareness, and consequently, enhancing their likelihood of starting a business. Essential conditions for this include knowledge of the character traits and professional competencies required for successful founders, strong connections with professional

associations and the economy, close collaboration with like-minded individuals, as well as the openness and curiosity of the target group who have decided to reflect on their own identity.

The planetary economy is increasingly monitored, driven, and organised by digital platforms like Uber, Amazon, Airbnb, and Upwork, through which value is decentralised via technical intermediaries. This phenomenon, commonly referred to as the platform economy, gives rise to a new generation of entrepreneurs who can compete in the digital jungle. Copy-paste concepts that served students in traditional entrepreneurship education as pathways to success using a brick-and-mortar model are no longer as practical in the industry's fluctuating ecosystem. This paper evaluates the current state of entrepreneurship curricula, followed by a proposition in which digital competencies and platform-based entrepreneurial thinking play an essential role.

Literature Review

The fast-changing digital economy has prompted a rethinking of traditional entrepreneurship education and justified the need for scholars and educators to evaluate the sufficiency of current curricula. A burgeoning literature documents a significant mismatch between the skills taught in much of today's entrepreneurship education and the capabilities needed to build a successful business in the platform economy.

Nambisan (2017) argues that digital entrepreneurship is not completely explainable with traditional opportunity discovery and resource-based theories. It requires understanding virtual customer engagement, algorithmic feedback loops, and platform-powered scaling. Likewise, Giones and Brem (2017) highlight that digital entrepreneurs possess specific capabilities, such as managing digital infrastructures, developing platform strategies, and conducting real-time experimentation in digital ecosystems.

However, despite these insights, most higher education programs rely on traditional models emphasizing business plan writing, raising venture capital, and physical product innovation. These models favor conventional business practices and provide little space to develop vital digital skills. Students , therefore, leave the tertiary experience without the skills needed to succeed in a digital-first environment dominated by platform-based business models.

In response, new educational offerings like hackathons, startup weekends, digital boot camps, and innovation labs have emerged. These challenges allow students to develop and pitch digital products in pressurized, time-limited scenarios. Yet, as Ndou (2020) points out, they are typically extracurricular and often operate in isolation from formal academic curricula. Though useful, they are not consistently integrated into the educational environment, thus having little impact on total student readiness.

Recent research has suggested including several core components required to address the requirements of the digital economy in a core entrepreneurship curriculum. These elements consist of:

• Platform Strategy and Ecosystem Design: conveying skills to handle platform dynamics, trace the logic of driver effects, or develop and operate digital marketplaces.
• Digital Marketing and Analytics: Instruct scholars on improving business ventures through contemporary technologies to enhance commercial strategies, such as search engine marketing (SEM), search engine optimization (SEO), A/B testing, data analytics platforms, and data visualization tools.
• Cybersecurity and Digital Ethics: This course prepares students for the security, ethical, and legal issues in digital business environments.
• Artificial Intelligence and Automation: What is AI, and how can it be used in digital enterprises to enhance customer service, tailor products
and simplify processes?
• UX and Interface Design: The importance of designing intuitive, user-focused digital spaces to enhance customer satisfaction and engagement
is emphasized.

With a curriculum that is not adapted to this and does not include those things, you risk having an entrepreneurship education that expires in a world where mastery of the digital and participation in platforms and technological adaptability become increasingly important. The current cravats between what is offered educationally and the needs of the platform economy is a serious challenge for preparing students for the requirements of modern business
life.

Objectives

This study aims to
1. find and analyze gaps in current entrepreneurship programs regarding the digital skills, tools, and knowledge needed in the contemporary entrepreneurial context.
2. investigate new pedagogical techniques and digital learning tools that can improve the quality and delivery of digital entrepreneurship education.
3. formulate strategies for the digital curriculum redesign that align with the technological and industry atmosphere.

Research questions

1. What are the main limitations of current entrepreneurship courses regarding the digital skills, tools, and competencies necessary for success in contemporary digital entrepreneurial education?
2. What new teaching methods and digital learning support are emerging to improve digital entrepreneurship education?
3. What strategies may be adopted to restructure and reorient the digital entrepreneurship program with technologies and business industry trends?

Methodology

Research Design

Research design This study used a qualitative research design underpinned by phenomenology to understand and interpret key stakeholders' lived experiences, opinions, and knowledge in providing digital entrepreneurship education. A qualitative design was appropriate for exploring detailed views on the curriculum's inadequacies, innovative teaching approaches, and curriculum redesign in the face of digital evolution.

Sampling technique

The research involved three specific urban centres in Delta State, Nigeria—Warri, Agbor, and Asaba—to obtain in-depth contextual information. The sites were selected for their potential as educational and entrepreneurial hubs. Both contain a range of tertiary institutions, innovation hubs, and burgeoning digital businesses.

An information sampling method was employed to identify and select participants actively involved in entrepreneurship education and digital innovation. The sample was intentionally designed to represent a broad spectrum of views, including:

- Entrepreneurship educators from both public and private universities,
- Innovation hub coordinators and managers,
- Tech-savvy entrepreneurs and startup founders,
- Curriculum developers and educational policy makers, and
- Final-year students enrolled in entrepreneurship or digital business programs.

A total of 18 people were interviewed from four higher education institutions and three innovation hubs in Warri, Agbor, and Asaba. This variety in the type of institution and role of the actors allowed for triangulation of the perspectives and enhanced the quality and credibility of the data.

The data was gathered in a semi-structured interview to generate open-ended answers consonant with the research's fundamental aims. Each interview session lasted 40 to 60 minutes and was face-to-face or virtual, depending on preference and availability. Interviews were conducted with participants' permission, recorded using an audio recorder, and transcribed verbatim for analysis.

Braun and Clarke (2006) explained thematic analysis as involving the study of interview transcripts. This included coding the data, identifying common patterns, and establishing thematic categories that reflected essential aspects of curriculum gaps, pedagogical innovation, and strategic reform. Qualitative data were organized and analysed using NVivo software.

All ethical issues were strictly followed. The participants were guaranteed knowledge of the study, voluntary participation, and the right to withdraw at any time. Participant anonymity was safeguarded with the use of pseudonyms in reporting.

Through the case studies of Warri, Agbor, and Asaba, we contribute local perspectives on entrepreneurial education in the digital age that may illuminate the national dynamics of entrepreneurship, digital skills, and innovation in Nigeria. Purposeful sampling at the individual and site levels provided contextual data and enhanced the study's transferability and credibility.

Data Collection Method

Semi-structured interviews facilitated an open and flexible approach to cross-examining topics, which can help achieve uniformity in the language spoken about a particular topic between participants. The guide focused on important thematic issues:

- Current perceptions of entrepreneurship content and readiness to digitise.
- Applying digital and innovative pedagogies and tools.
- Barriers to curriculum renewal and digital inclusion.
- Implications for strategic repositioning of digital entrepreneurship education.

The interviews lasted between 40 and 60 minutes, face-to-face or via video, through tools like Zoom or Google Meet. Subject to their consent, all interviews were recorded with a digital recorder and transcribed verbatim.

Data Analysis

We conducted data analysis using **thematic analysis** according to Braun and Clarke's (2006) six-step model: Step 1.

1. **Becoming acquain**ted with the data through reading and re-reading the transcripts.
2. **First, coding** for patterns and recurring concepts.
3. **Looking for themes** according to research objectives.
4. **Analysis of themes** for coherence and relevance.
5. **Labeling and naming themes** to reflect deeper meaning.
6. **Compiling the report** by relating themes to research questions and literature.

The NVivo 12 program was utilized to facilitate coding and aid themes' development.

Results

Objective 1

To identify and analyze deficiencies in existing entrepreneurship curricula with regard to digital skills, tools, and competencies required in the modern entrepreneurial landscape.

Based on interviews conducted with a sample of 15 stakeholders—including university entrepreneurship lecturers, digital business experts, curriculum developers, and recent entrepreneurship graduates—the following key deficiencies were identified:

1. Inadequate Exposure to Real-World Digital Tools

"Most of our students graduate without ever using tools like Shopify, Google Analytics, or even basic project management platforms like Asana or Trello. The curriculum just doesn't go that far."— Lecturer, Department of Entrepreneurship, Federal University

- Interviewees across academic institutions consistently pointed out that students are taught theory without exposure to practical digital tools that are crucial in today's entrepreneurial world.
- Several recent graduates reported learning essential digital skills only after graduation, often through self-study or private courses.

2. Outdated Curriculum and Teaching Methods

"The content hasn't really changed in the past five years, despite how fast the business environment has evolved digitally." — Digital Start-up Founder, Warri

- Experts criticized the slow pace at which entrepreneurship curricula are updated, noting that emerging technologies such as artificial intelligence, digital marketing automation, and blockchain are barely mentioned.
- Teaching methods were also described as overly lecture-based, with little room for hands-on digital engagement.

3. Lack of Collaboration with the Digital Industry

"There's a major disconnect between academia and industry. We're not involved in helping shape what students are taught, and that's a missed opportunity."
— Business Incubator Manager, Asaba

- Industry experts expressed concern over the lack of partnership between universities and digital enterprises.
- Few institutions provide students access to mentorships, internships, or live projects that incorporate digital platforms and entrepreneurial tools.

4. Poor Emphasis on Digital Entrepreneurship Models

"They teach us how to write a business plan for a physical shop, but not how to run an online store or use Instagram to grow a business."— Recent Graduate, Entrepreneurship Program

- Many students and alumni shared that course content focuses more on brick-and-mortar business models, while digital business strategies, such as affiliate marketing, and influencer branding—are often overlooked or mentioned in passing.

5. Digital Literacy and Security Not Prioritized

"Cybersecurity, data privacy, and ethical online practices are rarely discussed. Yet, these are critical when you're building a digital brand."— Curriculum Consultant, National Education Board

- Educators acknowledged that digital literacy is not a formal part of most entrepreneurship programs, making students vulnerable to digital risks.
- A few suggested that modules on cybersecurity and online identity management should be made compulsory.

6. Limited Digital Soft Skills Development

"Students know how to pitch in person, but struggle in virtual environments. They need to learn how to manage teams remotely and use online collaboration tools." — HR Executive at a Tech Startup

- Interviewees emphasized the need to embed training on digital soft skills, such as remote communication, digital leadership, and adaptability to tech disruptions.

Result for Objective 2 (Interview Perspective):
To explore and evaluate innovative teaching approaches and digital learning tools that enhance the delivery and effectiveness of digital entrepreneurship education.

Through interviews with 15 key informants—including university lecturers, edtech consultants, digital startup founders, and final-year entrepreneurship students—the following innovative teaching approaches and digital tools were identified and evaluated for their impact on the quality of digital entrepreneurship education:

1. Adoption of Experiential and Project-Based Learning

"We've started integrating real startup projects into our classes. Students either launch a digital product or solve a real-world problem using technology." — Lecturer, University of Delta, Agbor

- Many educators reported a shift toward experiential learning, such as building prototype apps, launching social media campaigns, and creating business plans for online platforms.
- Project-based tasks were found to significantly improve student engagement, retention, and skill acquisition.

2. Integration of Digital Tools and Platforms

"Tools like Canva, WordPress, Google Workspace, and social media schedulers are now part of our teaching toolkit."— E-learning Facilitator, Private Innovation Hub

- Interviewees highlighted the effectiveness of integrating commonly used tools in the startup ecosystem.
- Specific tools mentioned include:
    - **Canva** for branding and pitch decks
    - **Google Analytics** for understanding user behaviour
    - **Trello and Slack** for digital project management
    - **Coursera/Udemy** for self-paced learning on digital marketing, coding, etc.

3. Flipped Classroom and Blended Learning Models

"We flipped the classroom. Students watch video lectures at home and use class time for hands-on sessions with mentors." — Head of Department, Entrepreneurship Studies

- Blended learning—combining online modules with in-person workshops—was widely praised.
- Flipped classrooms were especially effective in allowing deeper classroom engagement and personalised feedback.

4. Use of Virtual Incubation Platforms

"We now offer virtual incubation for students—where they pitch ideas, attend webinars, and get access to digital mentors via Zoom and WhatsApp." — Entrepreneurship Centre Director, University of Petroleum Resources, Effurun

- Several institutions are experimenting with virtual startup incubators that simulate real-world entrepreneurial ecosystems.
- Students participate in pitch competitions, digital product development sprints, and online mentoring sessions with entrepreneurs.

5. Gamification and Simulation-Based Learning

"Using business simulation games has changed everything. Students now understand market dynamics in a fun, risk-free environment."— Instructional Designer, EdTech Startup

- Simulated entrepreneurship environments like **Marketplace Live**, **BizCafe**, and **GoVenture** were reported to enhance decision-making and critical thinking skills.
- Gamification techniques—like digital badges, leaderboards, and challenges—helped maintain student interest and motivation.

6. Peer Learning and Digital Collaboration

"WhatsApp and Telegram groups are becoming peer learning hubs—students share YouTube tutorials, course materials, and even pitch ideas together."— Final-Year Student, Polytechnic Entrepreneurship Program

- Informal digital communities, often outside the formal LMS (Learning Management Systems), were praised for fostering collaborative learning and digital confidence.
- Group-based digital projects enhanced peer-to-peer feedback and teamwork skills.

7. Integration of AI and Emerging Technologies

"We've started using ChatGPT to teach idea generation and marketing content development. It helps students brainstorm faster." — Digital Entrepreneurship Lecturer, Dennis Osadebey University

- A few pioneering institutions are exploring artificial intelligence tools to teach market analysis, customer interaction simulations, and content automation.
- Augmented Reality (AR) and Virtual Reality (VR) are also being piloted in tech-savvy campuses for immersive pitch presentations.

Result for Objective 3 (Interview Perspective):

To develop strategic approaches for redesigning digital entrepreneurship curricula to align with technological advancements and industry expectations.

Interviews with 12 key stakeholders—including curriculum planners, tech entrepreneurs, business incubator managers, and digital skills trainers—revealed several strategic recommendations for aligning digital entrepreneurship curricula with evolving technologies and market needs:

1. Co-Design Curriculum with Industry Experts

"The fastest way to stay current is to involve tech entrepreneurs and digital marketers in curriculum design. They know what's changing."— Curriculum Consultant, National Universities Commission (NUC)

- Interviewees emphasized that curriculum revision must involve professionals who are actively engaged in the digital economy.
- Suggested approaches include forming advisory boards with representatives from startups, tech companies, and innovation hubs.

2. Modular and Flexible Curriculum Structure

"Digital skills change rapidly. A rigid four-year syllabus can't keep up. We need shorter, stackable modules." — Digital Skills Trainer, EdTech Academy

- Experts advocated for modular structures that allow for rapid updates and the integration of emerging technologies like AI, blockchain, and IoT.
- Short courses and digital certifications (e.g., Google Digital Garage, HubSpot Academy) could be embedded as electives or co-curricular options.

3. Emphasis on Competency-Based Learning

"It's no longer about how many hours a student sits in class. It's about what they can do with what they learn." — Innovation Hub Director, Warri

- Stakeholders recommended shifting towards outcome-driven, competency-based education, where students demonstrate mastery of specific digital tools and entrepreneurial tasks.
- Capstone projects, portfolios, and product-based assessments were proposed to replace traditional exams.

4. Embed Real-World Digital Tools in Course Delivery

"We must teach students to use the same tools digital entrepreneurs use daily—like Mailchimp, Canva, Shopify, and ChatGPT." — Founder, Online Business Academy

- Incorporating up-to-date software and platforms into both teaching and assignments was a unanimous recommendation.
- Continuous faculty training on digital tools was also identified as essential.

5. Integration of Emerging Technology Trends

"Students need foundational knowledge in tech trends—even if they're not coders. They must understand the digital context of entrepreneurship." — Technology Policy Analyst, Abuja

- Curricula should include introductory modules on:
    - Artificial Intelligence and automation
    - Blockchain and digital currencies
    - Data analytics and cloud computing
    - Cybersecurity and digital ethics

6. Partnerships with Tech Hubs and Incubators

"We should be placing students in digital startups during their industrial training—it's more relevant than traditional firms." — Entrepreneurship Lecturer, Federal Polytechnic

- Collaborations with tech hubs and incubators were suggested for internships, mentorship programs, hackathons, and pitch events.
- These partnerships would expose students to digital entrepreneurial ecosystems early on.

7. Continuous Curriculum Review Mechanisms

"We can't afford to revise the curriculum every 10 years anymore. We need a feedback loop that updates it annually." — Deputy Dean, Faculty of Management Sciences

- Institutions were advised to establish review committees that meet annually to evaluate digital content relevance and industry alignment.
- Feedback from alumni and employers should be systematically collected to inform updates.

8. Promote Digital Soft Skills and Entrepreneurial Mindset

"Teach them resilience, digital communication, remote collaboration—skills that define today's entrepreneurs." — HR Lead, Fintech Startup

- Digital entrepreneurship education must go beyond technical skills to include digital-era soft skills such as adaptability, problem-solving, critical thinking, and virtual leadership.

Discussion

The findings of this research will inform the condition and the potential development of digital entrepreneurship education. Interviews with key informants from a variety of stakeholders, namely curriculum professionals, digital professionals, innovation hub managers, and students, indicate the common understanding that existing entrepreneurship curricula in Higher Education Institutions (HEIs) establish a strong theoretical background within conventional business disciplines but fail to include commensurate preparation for the ever-changing digital entrepreneurial ecosystem. This 15-year lag is consistent with prior research by Giones and Brem (2017), who argued that the dynamism of digital entrepreneurship calls for more flexible and technology-driven educational frameworks than most universities have to offer now.

The Argument for a Curricular Revision in Digital Entrepreneurship

Participants stressed that contemporary entrepreneurs should be fluent in the language of business and technology, which are also prevalent in such digital tools, platforms, and spaces. Classical business planning, resource search, and organization construction are still essential but insufficient. Today, a successful entrepreneur must be able to work in an online marketplace, use social media analytics, run a digital marketing campaign, use artificial intelligence tools, and work with digital in a distributed manner across digital platforms. However, opportunities to learn these competencies in a focused way are currently scarce in most curricula (Ndou et al., 2018).

Profound curricular change became one of this context's most critical recurring topics. There was a strong demand for integrating modern digital tools (including Google Workspace, Canva, Trello, Shopify, and Mailchimp), today's experiential (hands-on) learning, closer industry-academic collaboration, and a mix of technical and digital soft skills focus. An echo of this requirement is consistently heard in Maritz and Brown (2013) that entrepreneurship education needs to be continually evaluated and recalibrated to the entrepreneurial realities of the time. By including practical, industry-

relevant content, a faculty member is doing more than taking a design approach; s/he is doing what needs to be done to maintain relevance.

Creative Teaching Practices in Digital Entrepreneurship Education

Nevertheless, it was observed from the interviews that some universities are now incorporating (although in small sporadic doses) alternative methods of teaching that accommodate the new requirements of digital entrepreneurship. These include "flipped classrooms," in which students work on video or online modules at home and engage in interactive, project-based activities in the classroom. This is consistent with the suggestions of Kirkwood and Price (2014), who emphasize the pedagogical value of learner-centred and technology-mediated learning environments in higher education.

Simulation-based learning, which uses digital platforms to simulate business environments and entrepreneurial decision-making, also helps students learn how market dynamics and business risk work without the price or pain of actual failure. BizCafe, SimVenture, and Marketplace Live succeeded in enhancing traditional classroom learning with experiential content. These approaches develop higher-level cognitive skills like strategic decision-making, critical thinking, and adaptability, which are key to successful digital economic operations (Fayolle & Gailly, 2015).

The emergence of virtual incubation platforms and online mentorship programs is a huge step ahead in connecting the dots between academic theory and know-how. Some schools have collaborated with tech hubs to provide virtual internships, digital startup challenges, and live pitch events. These programs emulate real-life entrepreneurial ecosystems and allow students to gain exposure to digital startup culture.

However , the spread of those innovations has been inconsistent. Data is a real issue for most institutions because faculty are often not experts in digital entrepreneurship, there is often no internet, computers may be antiquated, and the curriculum is often inflexible, making it difficult to add to it without going through committee." These barriers at the system level align with the concerns of Nabi et al. (2017) that pedagogical innovations in entrepreneurship education are frequently found to be limited in their scale and scope by institutional barriers.

Strategic Curriculum Redesign Toward Industry Relevance

Beyond pedagogical approaches, it comes through the emphasis on the importance of systematically reconfiguring digital entrepreneurship curricula responsive to the rapid pace of technological change and industry requirements. In consultation, stakeholders recommended that curricula be co-designed with industry players, such as entrepreneurs, technology companies, and hub coordinators. This means students graduate with the required skills and competencies in today's job market and within venture ecosystems. It is also aligned with the "entrepreneurial ecosystems" model from Neck, Greene, and Brush (2014), in which learning is situated in networks of practice and collaboration.

Also, some other broadly supported suggestions referred to modularity and flexibility in the curriculum. Rather than the inflexible course outlines that hadn't changed in some cases for years, stakeholders suggested a series of short, stackable modules that could be easily revised to keep pace with new techniques and tools. This modular approach enables us to incorporate short courses and certifications from global edtech platforms (Coursera, edX, Google Digital Garage, etc.), under which learners can earn recognized academic and industry credentials. It is also worth noting that curriculum responsiveness is critical to entrepreneurship education in the rapid digital era, where technologies change fast (Rideout & Gray, 2013).

Besides, future-proofing the curriculum with exposure to emerging technologies like AI, Blockchain, big data analytics, and digital currencies was important. You don't have to become a technologist in these areas, but there needs to be a basic level of knowledge of how these technologies are influencing industry models, consumer behavior, and market evolution. This form of digital literacy is particularly critical for entrepreneurial and intrapreneurial individuals who are employed in corporate innovation teams (Giones & Brem, 2017).

Soft Skills, Ongoing Feedback, And Learning for Life

Notably, it even included building digital soft skills such as remote collaboration, digital communication, online negotiation, and digital emotional Intelligence. These skills are frequently underrated, yet they are now more important as part of virtual teams and global digital initiatives. Remote management and working from home are now essential entrepreneurial skills (Neck et al., 2014).

Finally, participants emphasized the importance of continual curriculum review to ensure continued relevance. As opposed to the conventional approach that updates the curriculum every five or ten years, reviewers recommended an annual or bi-annual look at the curriculum based on student, alums, employers, and industry input. This feedback loop would enable organizations to keep agile and respond quickly to fast-moving technology and market trends (Ndou et al., 2018).

Conclusion

Ultimately, the conversation highlights an emerging agreement among all parties that entrepreneurship education must address the digital era's actual terrain more adequately. Old School pedagogies and fixed curricula are no longer enough to prepare students for the challenges of digital entrepreneurship. Educational institutions must abandon such fixed, static, irrelevant, and ivory towers and offer a holistic, practice-oriented education focusing mainly on practical digital skills and the business mindset. Through strategic redesign, cross-institutional collaboration, and continued innovation, digital entrepreneurship education can significantly transform how students are prepared to lead and compete in the global digital economy.

Recommendations

In light of the findings, the recommendations are presented as guidelines that will be useful for educators, curriculum developers, and policymakers (to consider when) redesigning entrepreneurship curricula for the digital age.

1. Curriculum designers need to incorporate principles around the platform economy in a more structured way in Bachelor's and Master's programs for entrepreneurship. Students should have a basic understanding of Multisided Platforms, Network effects, Data monetisation, and Digital business ecosystems.
2. Tertiary institutions need to integrate digital skills and tools into entrepreneurship education, for example, teaching how to use data analytics, digital marketing platforms, UI/UX design, low code development and agile product management.
3. Modular, stackable learning architectures–tracked through microcredentials or digital badges, for instance—through which students could develop new seemingly vital skill sets in, let's say, fintech, AI ethics, cybersecurity, and platform strategy, then add onto their prior micro qualifications with supplementary mini-credentials until collecting enough for a full degree.
4. Interdisciplinary challenge-based programs are proposed as the medium for delivering entrepreneurship education. These frameworks ought to involve business, technology, and design working together to solve problems holistically in a net-mediated context.
5. Institutional leaders should invest in faculty development opportunities centered on digital innovation and entrepreneurship pedagogy, including industry immersion, digital upskilling, and joint teaching with platform-based business practitioners.
6. Policymakers and accrediting bodies need to modify curriculum review structures to recognise the volatility of education in digital entrepreneurship and provide scope for flexible, responsive, and experimental programs.
7. Curriculum developers must build ethical, legal, and inclusive innovation principles into entrepreneurship education, such as responsible AI, digital rights, platform labour ethics, and bridging the digital divide.

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SUSTAINABILITY-CONSCIOUS FINANCIAL DECISION-MAKING FOR ENTREPRENEURIAL TRANSFORMATION IN NIGERIA

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Abstract

Entrepreneurship remains an important pathway for addressing unemployment, generating income and strengthening economic participation in Nigeria. However, the ability to start a business does not necessarily translate into the ability to sustain and grow it. Many entrepreneurial ventures operate in an environment characterised by limited capital, rising operating costs, uncertain markets, changing technology and increasing pressure to use resources responsibly. In such an environment, financial decisions can determine not only whether a business makes profit but also whether it survives, adapts and creates lasting value. This paper therefore advances the position that entrepreneurial transformation in Nigeria requires a shift from short-term and predominantly profit-oriented financial decisions towards sustainability-conscious financial decision-making. Sustainability-conscious financial decision-making refers to the ability of entrepreneurs to consider financial viability alongside environmental responsibility, social value, resource efficiency and long-term business resilience when making decisions about investment, financing, expenditure and resource allocation. The paper argues that financial competence and sustainability awareness should no longer be treated as separate entrepreneurial capabilities. Rather, they should be developed together, particularly through Business Education and Entrepreneurship Education. The paper examines the relationship between financial decision-making, sustainability and entrepreneurial transformation and highlights the implications for entrepreneurs, Business Education programmes, policymakers and entrepreneurship-support institutions in Nigeria. It concludes that Nigeria's entrepreneurial transformation will be more meaningful when entrepreneurs are equipped not merely to create businesses, but to make responsible financial decisions that enable those businesses to survive, innovate, create employment and generate value over the long term.

Keywords: Business Education, entrepreneurial transformation, entrepreneurship, financial decision-making, sustainability

Introduction

Entrepreneurship is often presented as one of the practical ways through which Nigeria can respond to unemployment, poverty, economic dependence and limited formal employment opportunities. This is understandable given the large number of Nigerians who depend on small businesses and entrepreneurial activities for their livelihoods. However, starting a business and sustaining one are two different challenges. An entrepreneur may have a promising idea, access start-up capital and even attract customers, yet still struggle when faced with poor cash-flow management, inappropriate borrowing, weak investment decisions, rising costs or unexpected changes in the business environment. This makes financial decision-making an important part of entrepreneurship. Every entrepreneur makes financial decisions, whether consciously or otherwise. Decisions about how much to borrow, what to spend, when to invest, what resources to conserve, whether to acquire new equipment, how to price products and how much profit to retain can have consequences that extend beyond the immediate financial outcome. In a difficult business environment such as Nigeria's, poor financial decisions can quickly weaken a promising enterprise, while prudent decisions can provide the flexibility needed to survive periods of uncertainty.

Philip (2025) reported a positive relationship between participation in financial-literacy training and sustainable entrepreneurial success among clients of LAPO Microfinance Institution. Ibitomi et al. (2024) found that financial literacy is relevant to the performance of small and medium enterprises in Abuja. These findings suggest that entrepreneurship development cannot be separated from the capacity of entrepreneurs to understand and manage financial resources effectively. However, financial competence alone may no longer be enough. The business environment is increasingly shaped by concerns about resource efficiency, environmental responsibility, social inclusion and long-term resilience. Nigerian small and medium enterprises are already experiencing challenges associated with environmental sustainability and circular-economy practices, suggesting that sustainability is not simply

an issue for large corporations or multinational companies. Consequently, entrepreneurs need to think about the longer-term consequences of their financial decisions rather than concentrating exclusively on immediate returns. This is where the idea of sustainability-conscious financial decision-making becomes important. The concept brings together two areas that are often discussed separately: financial decision-making and sustainability. It recognises that a financially attractive decision may not necessarily be the most beneficial decision for the long-term survival of a business or the wider society. For example, choosing the cheapest production input may reduce immediate costs, but excessive dependence on poor-quality or environmentally harmful inputs may create higher costs in the future. Similarly, taking a loan may provide the funds required for expansion, but excessive borrowing without realistic cash-flow projections can expose a small business to financial distress. The argument of this paper is therefore straightforward: Nigeria's entrepreneurial transformation should not be measured only by the number of businesses created, but also by the quality of decisions made within those businesses and their capacity to create sustainable economic and social value. Entrepreneurs need the financial knowledge to make sound decisions and the sustainability awareness to understand the wider consequences of those decisions. This position is particularly relevant to Business Education.

Business Education has an important role to play in preparing learners for the realities of the Nigerian business environment. Its purpose should extend beyond preparing students for employment to developing the knowledge, practical skills and confidence needed to start, manage and sustain enterprises. This is becoming increasingly important as entrepreneurs are faced with financial pressures and business decisions that can determine whether their ventures survive or fail. Alao, Mojekwu, and Opara (2024), in their study of Business Education in Nigeria, found that the existing curriculum did not provide enough innovative pedagogical strategies to adequately empower students for sustainability. Similarly, Babajide et al. (2023) found among small business owners in Lagos and Ogun States that financial literacy and financial capabilities were positively associated with sustainable business practices. These findings suggest that preparing future entrepreneurs requires more than teaching them how to start a business or make profit. They need to develop the ability to make informed financial choices while considering the long-term survival of the business, responsible use of resources and the wider consequences of those choices. It is against this background that this paper argues for greater attention to sustainability-conscious financial decision-making in Business Education as a means of preparing entrepreneurs who can create value, withstand changing business conditions and contribute meaningfully to Nigeria’s economic transformation.

The Changing Meaning of Entrepreneurial Transformation in Nigeria

Entrepreneurial transformation should mean more than an increase in the number of people who start businesses. Although business creation is important, the real contribution of entrepreneurship lies in the ability of enterprises to survive, grow, innovate, create employment and respond to emerging economic and social needs. This distinction is important in Nigeria because many people enter entrepreneurship not necessarily because they have identified a strong market opportunity, but because formal employment opportunities are limited. Entrepreneurship can therefore become a means of economic survival. While necessity-driven entrepreneurship has an important place in the Nigerian economy, it also creates a need to strengthen the capabilities that enable businesses to move from survival towards sustainable growth.

Adelowo and Henrico (2025) examined entrepreneurship propensity among young Nigerian graduates and raised important questions about the extent to which entrepreneurial intentions are translated into sustained entrepreneurial practice. This reinforces the need to look beyond entrepreneurial intention and business start-up towards the capabilities required to maintain an enterprise over time. From this perspective, entrepreneurial transformation involves a change in how entrepreneurs think, decide and create value. It requires entrepreneurs to become more deliberate about how they use scarce resources, respond to uncertainty, manage financial obligations, adopt technology, satisfy customers and consider the social and environmental consequences of their activities. Financial decision-making sits at the centre of many of these activities. An entrepreneur who cannot distinguish between business revenue and personal income, who invests without considering cash-flow implications, or who takes on debt without assessing repayment capacity may find it difficult to sustain the enterprise regardless of how innovative the original business idea may be. Conversely, an entrepreneur who understands financial information, evaluates risks and considers long-term consequences is better positioned to make decisions that support business resilience. The transformation being proposed in this paper is therefore not simply about more entrepreneurs, but about better-prepared entrepreneurs and better-quality entrepreneurial decisions. This requires a deliberate effort to connect financial capability with sustainability thinking.

Understanding Sustainability-Conscious Financial Decision-Making

Sustainability-conscious financial decision-making can be understood as the process through which entrepreneurs consider financial returns together with the long-term economic, environmental and social consequences of their financial choices. Traditional financial decision-making tends to ask questions such as: *How much will this cost? How much profit will it generate? Can the business afford it? How quickly will the investment pay back?* These questions remain important. However, sustainability-conscious decision-making extends the conversation by asking additional questions: *Will this decision strengthen the business in the long term? Does it encourage efficient use of resources? What effect will it have on employees, customers and the community? Can the business continue to operate if circumstances change?* This does not mean that entrepreneurs should ignore profit. Profit remains essential for business survival. Rather, the position of this paper is that profitability and sustainability should not be treated as opposing objectives. A business that continuously wastes resources, over-borrows, ignores employees, loses customer trust or fails to anticipate environmental and market changes may generate short-term returns but struggle to remain viable.

Sustainability-conscious financial decision-making can therefore be viewed through four interconnected considerations:

1. Financial prudence – making informed decisions about budgeting, cash flow, borrowing, investment, pricing and expenditure.
2. Resource efficiency – considering how financial decisions affect the efficient use of energy, materials, technology and other scarce resources.
3. Social responsibility – recognising the effects of business decisions on employees, customers, suppliers and the wider community.
4. Long-term resilience – prioritising decisions that strengthen the enterprise's capacity to withstand financial, technological, environmental and market disruptions.

Why Nigeria Needs Sustainability-Conscious Financial Decision-Makers

The Nigerian business environment presents entrepreneurs with conditions that make sound decision-making particularly important. Limited access to affordable finance, changing operating costs, infrastructure challenges, technological disruption and market uncertainty can place considerable pressure on small businesses. Under such conditions, entrepreneurs may be tempted to focus on immediate survival and postpone considerations about long-term sustainability. Yet it is precisely under difficult conditions that sustainability-conscious financial decisions become valuable. When resources are scarce, waste becomes more costly. When access to finance is difficult, poor investment decisions become harder to reverse. When markets are uncertain, excessive financial commitments can threaten business survival.

Financial literacy is therefore not simply a personal financial skill. For entrepreneurs, it can become a business survival capability. Recent Nigerian evidence continues to demonstrate the connection between financial literacy, financial inclusion and entrepreneurial outcomes. Kachalla and Gambo (2025), for example, reported significant relationships between financial literacy, financial inclusion and entrepreneurial success in Nigeria. Likewise, Sam-Abugu et al. (2025) found that financial literacy and FinTech innovation have important implications for sustainable financial inclusion in Nigeria. Entrepreneurs need to understand not only how to obtain financial resources but also how to allocate, monitor and protect those resources. They must be able to distinguish between expenditure that supports productive capacity and expenditure that merely creates short-term convenience. They must also be able to assess financial risks before committing scarce resources.

At the same time, sustainability awareness needs to become part of this financial reasoning. The entrepreneur who considers energy efficiency when purchasing equipment, evaluates the long-term cost of inputs, reduces unnecessary waste, maintains responsible relationships with workers and customers, and plans for possible disruptions is making financial decisions with a broader understanding of business sustainability. This is the kind of entrepreneurial thinking that Nigeria needs to encourage. The goal should not be to burden entrepreneurs with additional rules or expectations, but to help them understand that sustainability can itself become a source of efficiency, resilience, innovation and competitive advantage.

The Role of Business Education in Developing Sustainability-Conscious Financial Decision-Makers

Business Education has traditionally provided learners with knowledge and skills in areas such as accounting, finance, office practice, management, marketing and entrepreneurship. These areas

remain relevant, but the nature of business itself is changing. Today's entrepreneur is expected to operate in an environment where financial pressures exist alongside technological changes, environmental concerns, changing consumer expectations and growing demands for responsible business practices. This means that Business Education can no longer focus only on preparing learners to understand how businesses operate; it must also prepare them to make sound decisions within increasingly complex business environments. Financial literacy is an important part of this responsibility. A person may understand the meaning of profit, loss, assets, liabilities or cash flow and still struggle to make appropriate financial decisions when running a business. What entrepreneurs need is the ability to apply financial knowledge when confronted with real business choices. Recent evidence from Nigeria reinforces this point. Kachalla and Gambo (2025) found a significant relationship between financial literacy, financial inclusion and entrepreneurial success, while Philip (2025) reported that financial-literacy training was positively associated with sustainable entrepreneurial success among clients of LAPO Microfinance Institution.

This suggests that Business Education should place greater emphasis on decision-oriented financial learning. Students should not only learn how to prepare a cash budget; they should be able to use the information in that budget to decide whether a business can afford an expansion. They should not only learn about sources of finance; they should be able to compare the implications of equity, debt and internally generated funds before recommending a financing option. Similarly, learning about cost accounting should go beyond calculating costs to helping students understand how waste, inefficient resource use and poor purchasing decisions can affect both profitability and sustainability.

Business Education should therefore move from knowledge transmission to decision preparation. Students should encounter practical situations in which they have to decide whether to borrow, invest, save, expand, reduce costs, adopt a new technology, change suppliers or redesign a product. More importantly, such decisions should be examined from both financial and sustainability perspectives. For example, a Business Education student who is planning to establish a small food-processing enterprise should be encouraged to consider more than the initial purchase price of equipment. The student should examine energy consumption, maintenance costs, expected useful life, waste generation, financing arrangements and potential effects on production costs. A cheaper machine may appear financially attractive at the point of purchase but may become more expensive over time because of high energy consumption or frequent breakdowns. Conversely, an energy-efficient machine may require greater initial investment but provide better long-term value. This is the type of reasoning that sustainability-conscious financial decision-making requires. The same principle applies to working capital. An entrepreneur may increase sales by offering customers generous credit, but if receivables are not collected promptly, the business may experience cash-flow problems despite recording impressive sales. A sustainability-conscious entrepreneur therefore considers not only revenue growth but also liquidity and the ability of the business to continue meeting its obligations. In this sense, sustainability begins with everyday financial decisions.

Business Education is well positioned to develop these capabilities because of its multidisciplinary nature. Accounting can provide the financial foundation; economics can help students understand resource allocation and market forces; entrepreneurship can develop opportunity recognition and innovation; management can strengthen planning and decision-making; while information and communication technology can support financial analysis and digital business operations. Bringing these areas together can produce graduates who are better prepared to make informed entrepreneurial decisions. Alao, Mojekwu and Opara (2024) examined the Business Education curriculum in relation to students' empowerment and sustainability and emphasised the need for Business Education to contribute more directly to sustainable economic development. Adekunle et al. (2025) identified digital tools, experiential learning, industry partnerships and sustainability-focused curricula as important for preparing Business Education students for contemporary employment and sustainability demands. This means that the sustainability agenda should not be introduced into Business Education as another isolated topic added to an already crowded curriculum. It should be embedded in the way business decisions are taught. Financial accounting exercises, entrepreneurship projects, business plans, investment appraisal, budgeting and case studies can all be designed to require students to consider long-term financial, social and environmental consequences.

From Financial Literacy to Financial Decision-Making Competence

One of the positions advanced in this paper is that financial literacy should be treated as a foundation rather than the final goal of entrepreneurial financial education. Knowing financial concepts is valuable, but entrepreneurial transformation requires the ability to use those concepts when making

decisions. There is an important difference between knowing what cash flow means and being able to determine whether a business has sufficient cash to undertake an expansion. There is also a difference between knowing what a loan is and being able to determine whether the expected return from a proposed investment will justify the cost and risk of borrowing. This distinction is particularly important for Nigerian entrepreneurs. Limited financial resources mean that mistakes can be costly. An entrepreneur who commits scarce funds to an unproductive investment may not have enough resources to recover from the mistake. Likewise, excessive dependence on borrowed funds can create repayment pressures that undermine otherwise viable businesses. Kachalla and Gambo (2025) identified financial literacy and financial inclusion as important factors associated with entrepreneurial success, while Philip (2025) showed the value of financial-literacy training for sustainable entrepreneurial outcomes. These findings suggest that entrepreneurial education should go beyond helping learners understand financial terminology and move towards developing the ability to interpret financial information, evaluate alternatives and make responsible choices. A sustainability-conscious financial decision-maker should therefore be able to ask four basic questions before committing business resources:

1. Is the decision financially viable? The entrepreneur must consider cost, expected return, cash flow, affordability and financial risk.
2. Is the decision efficient in its use of resources? The entrepreneur should consider whether available resources are being used productively and whether unnecessary waste can be reduced.
3. What are the wider consequences of the decision? The entrepreneur should consider effects on employees, customers, suppliers, communities and the environment.
4. Will the decision strengthen the business in the long term? The focus should extend beyond immediate profit to resilience, adaptability and continued value creation.

These questions provide a practical bridge between financial management and sustainability.

Rethinking Entrepreneurship Education for Sustainable Enterprise Creation

The argument for sustainability-conscious financial decision-making also requires a rethink of what entrepreneurship education should achieve in Nigerian tertiary institutions. Entrepreneurship education is often centred on identifying business opportunities, developing business ideas, preparing business plans and encouraging students to consider self-employment. These are important starting points, but they are not enough to prepare learners for the realities of running a business. Once an enterprise begins, the entrepreneur is faced with decisions that have to be made repeatedly: whether to expand or remain at the current level, when to reduce unnecessary spending, how much stock to purchase, whether an investment in technology is worthwhile, when to employ additional workers and how to respond to changes in customers' needs and market conditions. The quality of these decisions can determine whether a promising business remains viable or gradually loses its capacity to survive. This is why entrepreneurship education should place greater emphasis on judgement, financial understanding and the ability to weigh alternatives rather than on simply knowing the steps involved in starting a business.

Oyinlola et al. (2024), in examining entrepreneurship and innovation in Nigerian universities, noted the need to strengthen the way entrepreneurship development and innovation activities are implemented in universities. Similarly, Kasimu and Jamilu (2024) found a positive relationship between financial literacy and entrepreneurial competencies among Business Education students in Nigerian Colleges of Education, particularly in areas such as identifying opportunities and managing business finances. These insights support a shift in emphasis from teaching students mainly how to establish a business to helping them understand how to make sound decisions after the business has been established. Entrepreneurship education should therefore develop learners who can read financial situations, consider the consequences of their choices, manage scarce resources and adjust their decisions as circumstances change. Such an orientation would make entrepreneurship education more relevant to the long-term survival and responsible growth of enterprises in Nigeria.

A Proposed Framework for Sustainability-Conscious Financial Decision-Making

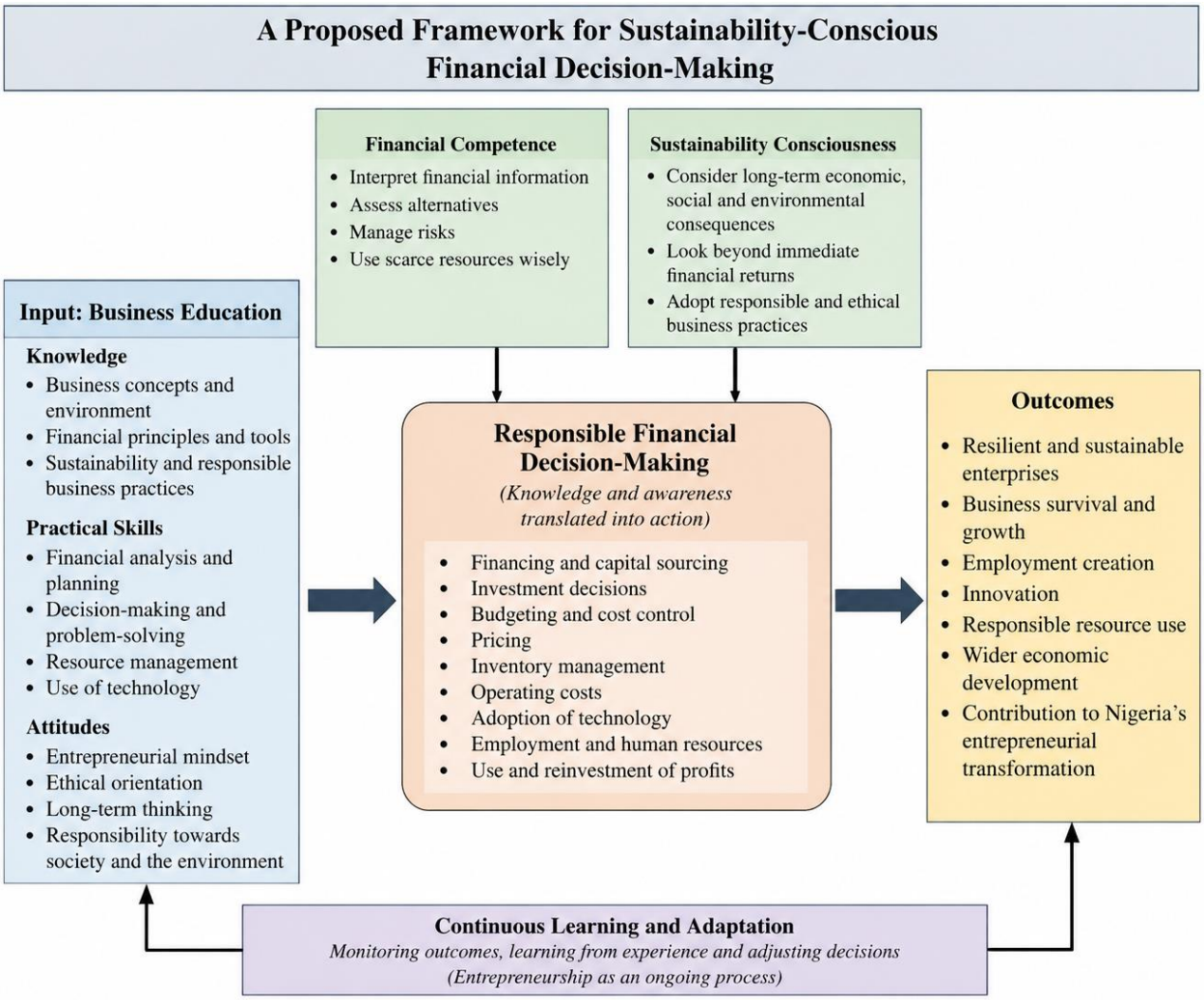


Fig. 1 A proposed framework for sustainability-conscious financial decision-making

Note: The framework illustrates how Business Education develops the knowledge, skills and attitudes that, together with financial competence and sustainability consciousness, inform responsible financial decision-making and lead to resilient enterprises and broader socio-economic benefits.

Entrepreneurial transformation in Nigeria requires more than encouraging people to start businesses; it requires developing entrepreneurs who can make sound decisions that support the survival and growth of their enterprises. Business Education provides the foundation for developing the knowledge, practical skills and attitudes needed to understand business situations and make informed choices. Financial competence enables entrepreneurs to interpret financial information, assess alternatives, manage risks and use scarce resources wisely, while sustainability consciousness encourages them to look beyond immediate financial returns and consider the longer-term economic, social and environmental consequences of their choices. This wider orientation is important for Business Education in Nigeria, as Alao, Mojekwu, and Opara (2024) highlighted the need for a stronger curriculum that can better empower learners for sustainability. In a related context, Babajide et al. (2023) found that financial literacy and financial capabilities were positively associated with sustainable business practices among small-business owners in Lagos and Ogun States.

The framework places responsible financial decision-making at the point where knowledge and awareness are translated into action. Entrepreneurs constantly make choices about financing, investment, budgeting, pricing, inventory, operating costs, technology, employment and the use of profits, and these choices can determine whether a business remains viable when conditions change. A resilient and sustainable enterprise is therefore not necessarily a large business; rather, it is one that manages its resources carefully, adapts to changing circumstances and continues to create value over time. When entrepreneurs develop this capacity, the benefits can extend beyond the survival of individual businesses to employment creation, innovation, responsible resource use and wider economic development. The framework thus views entrepreneurship as an ongoing process of making

and adjusting decisions rather than simply the act of establishing a business. It positions Business Education as a means of developing entrepreneurs who can combine financial understanding with an awareness of longer-term consequences, making their enterprises better equipped to survive, grow responsibly and contribute to Nigeria's entrepreneurial transformation.

Barriers to Sustainability-Conscious Financial Decision-Making among Nigerian Entrepreneurs

Although sustainability-conscious financial decision-making is desirable, expecting entrepreneurs to adopt it without addressing the realities of the Nigerian business environment would be unrealistic. Entrepreneurs make decisions within particular economic, institutional and social conditions. Where access to finance is limited, operating costs are high and business survival is uncertain, immediate financial pressures can easily take priority over longer-term sustainability considerations. One major barrier is limited financial capability among some small business owners. Financial decisions are sometimes based on experience, intuition or immediate business needs rather than systematic analysis of cash flow, risk, investment returns and financing costs. This becomes problematic when the entrepreneur is required to choose between competing uses of limited funds.

Another challenge is the pressure of short-term survival. An entrepreneur struggling with rent, electricity, transportation, wages, raw materials and other operating expenses may find it difficult to prioritise long-term sustainability. The decision that reduces today's cost may appear more attractive than one that produces greater benefits over several years. For example, investing in energy-efficient equipment may require substantial initial capital, even though it could reduce operating expenses over time. Without adequate financial planning, the entrepreneur may simply choose the cheaper immediate option. Limited access to appropriate finance also presents a challenge. Sustainability-conscious decisions often require investment. Energy-efficient equipment, cleaner production processes, digital technologies, staff development and improved waste-management systems may require capital that small businesses do not readily possess. When affordable long-term finance is unavailable, entrepreneurs may depend on short-term or relatively expensive sources of funds. This can encourage decisions driven by immediate cash requirements rather than long-term business value.

There is also the challenge of weak separation between personal and business finances. This is particularly relevant to micro and small enterprises where the owner and the business may operate almost as one financial unit. When personal and business funds are mixed, it becomes difficult to determine the actual financial position of the enterprise. It may also encourage entrepreneurs to withdraw funds that should have been retained for working capital or reinvestment. A sustainability-conscious entrepreneur needs sufficient financial discipline to recognise the business as an economic entity whose resources must be protected and reinvested strategically. Another barrier is limited awareness of the financial benefits of sustainability. Sustainability is sometimes perceived as an additional responsibility that increases business costs. This perception can discourage entrepreneurs from adopting practices such as energy conservation, waste reduction, recycling, responsible sourcing and employee development. However, sustainability can also generate economic benefits. Reducing material waste can lower production costs; improving energy efficiency can reduce operating expenses; maintaining good relationships with workers and customers can strengthen productivity and loyalty; and responsible business practices can improve reputation and market opportunities. Adesua-Lincoln (2025) found that Nigerian SMEs face significant barriers in adopting environmentally sustainable practices, including constraints related to knowledge, resources and the broader business environment. This is important because it shows that sustainability cannot simply be promoted through awareness campaigns. Entrepreneurs also need the capabilities, incentives and institutional support required to translate awareness into practice. Inadequate integration of sustainability into entrepreneurship and Business Education programmes is another problem. Where financial management and sustainability are taught as separate subjects, students may fail to recognise the relationship between the two. A student may learn investment appraisal in one course and environmental sustainability in another without being asked to consider how an investment decision can affect resource use, operating costs and long-term business resilience.

Repositioning Business Education for Sustainability-Conscious Entrepreneurship

Business Education needs to prepare learners for the decisions they will face in real businesses, not only for examinations or the initial stages of starting a venture. This means giving greater attention to the practical use of financial knowledge. Students should have opportunities to work with budgets, cash-flow records, costs, pricing decisions, financing options and investment choices in situations that resemble the realities of small businesses. The aim is not simply to teach students how to prepare financial statements or define financial terms, but to help them understand what those figures

mean when a business owner has to decide what to do next. Kasimu and Jamilu (2024), for example, linked financial literacy with entrepreneurial competencies among Business Education students in Nigerian Colleges of Education and argued for stronger financial literacy preparation within the programme. This supports the need for Business Education to place greater emphasis on the ability to interpret financial information and use it in making business decisions. At the same time, sustainability should not be presented as a separate topic that students encounter only in one course. Issues such as resource efficiency, responsible use of finance, waste reduction, long-term business survival and social responsibility can be discussed naturally within accounting, finance, entrepreneurship, management, marketing and business planning. Alao, Mojekwu, and Opara (2024) similarly identified the need to strengthen the Business Education curriculum in ways that can better empower learners for sustainability.

The way students learn these ideas also matters. Entrepreneurship cannot be fully understood through lectures and memorisation because many of the decisions entrepreneurs make involve uncertainty and competing choices. Students should therefore be exposed to case studies, simulations, business projects and other practical activities in which they have to decide how to respond to situations such as rising operating costs, limited capital, declining sales, excess inventory or the need to invest in technology. Such experiences allow students to see that a decision that looks attractive in the short term may create problems later. Opportunities to interact with entrepreneurs, accountants, financial institutions and other business practitioners can make this learning even more meaningful by allowing students to hear how financial and business decisions are actually made when resources are limited. Oyinlola (2024), in examining entrepreneurship and innovation in Nigerian universities, identified the need for stronger entrepreneurial development activities and pointed to innovative pedagogical approaches and university–industry partnerships as part of improving entrepreneurial outcomes. Similarly, Ogunwoye, Oladele, and Opatola (2024) found a significant relationship between sustainable entrepreneurship education and sustainable entrepreneurial intention among university students in Ogun, Osun and Oyo States. These experiences can help students move from simply knowing about entrepreneurship to developing the judgement required to deal with its uncertainties.

Business Education should also respond to the growing role of digital tools in everyday financial management. An entrepreneur entering today's business environment needs to be comfortable with digital bookkeeping, electronic payments, budgeting applications, cash-flow monitoring, financial analysis and other technologies that can support business decisions. Digital competence should therefore complement, rather than replace, sound financial judgement. Assessment should reflect this broader purpose. Instead of placing excessive emphasis on whether students can recall definitions or reproduce procedures, assessment can require them to examine a business situation, identify the financial issues involved, compare possible courses of action, justify their choice and explain the likely consequences. This would make the programme more closely connected to the realities of entrepreneurship. The direction is consistent with Oyinlola's (2024) observation that improving entrepreneurship education in Nigerian universities requires attention to how entrepreneurship and innovation activities are actually implemented. It also supports the position of Alao et al. (2024) that Business Education needs to be strengthened to better prepare learners for sustainability. Repositioning the programme in this way would allow Business Education to contribute not only to the creation of new businesses, but also to the development of entrepreneurs who can manage those businesses responsibly, adapt to changing conditions and make financial decisions that support long-term value creation.

Conclusion

Nigeria needs entrepreneurship that goes beyond business creation. The country needs enterprises that can survive uncertainty, manage scarce resources, respond to changing markets and create value that extends beyond immediate financial returns. Achieving this requires entrepreneurs who are capable of making sound financial decisions while remaining conscious of the longer-term economic, social and environmental consequences of those decisions. This paper has argued that sustainability-conscious financial decision-making provides a useful way of bringing these concerns together. It does not require entrepreneurs to choose between profit and sustainability. Instead, it encourages them to recognise that responsible financial decisions can contribute to profitability, resilience, resource efficiency and long-term enterprise survival. The paper further argues that Business Education has an important role in this transformation. Its responsibility should extend beyond teaching students how businesses are established and managed to preparing them to make informed decisions in complex and uncertain environments. Financial competence, sustainability consciousness, digital capability and entrepreneurial judgement should therefore be developed as interconnected capabilities.

The central position of this paper is that Nigeria's entrepreneurial transformation will be more meaningful when the focus shifts from creating more entrepreneurs to developing entrepreneurs who can make responsible decisions and build enterprises capable of creating lasting value. Business Education can contribute significantly to this shift by placing sustainability-conscious financial decision-making at the centre of entrepreneurial preparation.

Suggestions

Based on the position advanced in this paper, the following suggestions are made:

1. Business Education programmes should integrate sustainability-conscious financial decision-making across relevant courses, particularly accounting, financial management, entrepreneurship, economics and business planning.
2. Entrepreneurship education should emphasise practical financial decision-making, using business cases and simulations that expose students to real-world financing, investment, cash-flow and resource-allocation decisions.
3. Financial literacy programmes for entrepreneurs should move beyond basic financial knowledge to include financial analysis, risk assessment, cash-flow management and long-term investment decision-making.
4. Digital financial tools should be incorporated into Business Education and entrepreneurship training to strengthen students' ability to manage and interpret real-time financial information.
5. Government and entrepreneurship-support agencies should provide sustainability-oriented financial and technical support that enables small businesses to invest in resource-efficient technologies and sustainable business practices.
6. Universities and other tertiary institutions should strengthen partnerships with practising entrepreneurs, financial institutions and industry professionals to expose students to actual entrepreneurial financial decisions and sustainability challenges.
7. Entrepreneurial success should be assessed beyond business start-up and immediate profitability, with greater attention to enterprise survival, resilience, innovation, employment creation, resource efficiency and long-term value creation.

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HOW BUSINESS EDUCATION CAN EQUIP INFORMAL TRADERS WITH THE SKILLS TO ADOPT MOBILE MONEY, E-COMMERCE AND DIGITAL RECORD KEEPING.

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Abstract

The informal sector plays an important role in African economies, providing a large share of employment and retail services. However, despite the rapid growth of technology across the continent, many informal traders remain unable to fully participate in the digital economy because they lack basic digital and financial skills. This study examined how business education can equip informal traders with the skills needed to adopt mobile money, e-commerce platforms and digital record-keeping tools. The study adopted a descriptive survey research design, and data were collected from 50 informal traders selected from local markets using a structured questionnaire. The instrument, developed on a four-point Likert-type scale, elicited respondents' views on their current digital and financial skill levels, the barriers limiting their adoption of digital tools, and the extent to which targeted business education training could address these barriers. Data collected were analysed using mean and standard deviation to answer the research questions. The findings revealed that fear of technology, the perceived difficulty of using digital tools, and limited access to practical, locally relevant training were the major barriers preventing informal traders from adopting mobile money, social commerce platforms such as WhatsApp Business, and digital record-keeping applications. The results further showed that conventional business education programmes, as currently structured, do not adequately meet the practical needs of informal traders, and that respondents strongly favoured simple, accessible, mobile-based and short-term learning programmes built around actual business activities. The study concludes that when business education is designed around the real needs of informal traders, it can make digital tools easier to understand and use, improve business efficiency and promote financial inclusion. It is recommended that policymakers, educational institutions and educational technology providers collaborate to design and deliver inclusive, practical training programmes that support the digital transformation and growth of informal businesses across Africa.

***Keywords**: Informal Economy, Digital Transformation, Business Education, Mobile Money, E-commerce, Micro-Entrepreneurship, , Financial Inclusion.*

Introduction

Across Africa, many people earn a living outside the formal economy. They sell goods and services in local markets, along roadsides, and within their communities without being formally registered or taxed like big companies. This is called the informal economy, and it plays a very important role in African life (International Labour Organization [ILO], 2018). It provides jobs for millions of people who cannot find work in the formal sector. It also brings goods closer to ordinary people, especially in places where big shops and supermarkets are hard to find. Market women, roadside sellers, and small traders form a large and important part of everyday economic life. Even as African economies grow and change, the informal sector has not disappeared. In fact, it continues to grow, showing that it is not just a passing stage but a lasting part of how business is done in many African communities.

In recent years, more people in Africa now own smartphones and have access to the internet. This has changed the way many informal traders do business. One of the biggest changes is the growth of mobile money, which allows people to send and receive money using their phones instead of visiting a bank. Traders can also now sell their goods online through e-commerce platforms and social media apps such as WhatsApp Business, reaching more customers than before. Digital tools also help traders advertise their products and keep records of their sales, expenses, and stock instead of writing everything by hand in notebooks. These digital tools can make business easier, faster, and more

organised. They can also help traders manage their money better and even access loans or savings services that were once out of reach.

However, simply having access to a phone or the internet does not mean a trader automatically knows how to use these tools well. Many informal traders still struggle to take full advantage of digital business tools. Some traders do not fully understand how to operate digital applications. Others do not understand basic financial ideas connected to mobile money, such as transaction fees or how digital savings work. Many traders are also afraid of technology, especially if they have never used it before, and they may see it as complicated or risky. There is also fear of losing money through fraud or mistakes when using digital tools. On top of this, many traders simply do not have access to any form of training that could help them learn these skills in a simple and practical way, based on the type of business they run.

This is where Business Education can help. Business Education is not only about what is taught in schools and universities. At its heart, Business Education is about helping people gain the knowledge and skills they need to run a business well. This means Business Education can also be designed for people who never had the chance to attend formal schools, including informal traders. If done properly, Business Education can teach traders how to use mobile money, sell through e-commerce and social media, keep digital records, manage customers, and stay safe from online fraud.

For Business Education to truly help informal traders, it cannot look like the usual classroom teaching found in schools. Traders need something practical, not something full of theory. Training should be simple enough to follow on a mobile phone, since many traders will not have time to sit in long classes. Short lessons that fit into a trader's busy day are more likely to be useful than long courses. It also helps when training uses real business examples that traders can relate to, explained in simple language rather than technical terms.

Based on this background, the present study looked at how well informal traders currently understand and use digital tools, the problems stopping them from using these tools more, and the kind of Business Education support that could help them improve. The study focused on three specific tools: mobile money, e-commerce and social commerce (such as WhatsApp Business), and digital record keeping. Fifty informal traders operating in local markets took part in the study.

Statement of the Problem

Digital tools such as mobile money, e-commerce platforms and digital record-keeping applications have the potential to make life easier for informal traders across Africa. Yet, many informal traders are still not using these tools effectively, even where phones and internet access are available. Traders often lack the confidence, knowledge and practical skills needed to adopt these tools, and existing Business Education programmes, which are mostly designed for formal classroom learners, do not appear to meet the specific and practical needs of informal traders. Without training that is simple, practical and suited to their daily business realities, many informal traders may continue to be left out of the benefits that digital transformation can bring. The problem, therefore, is that there is limited understanding of the actual digital skill levels of informal traders, the specific barriers preventing them from adopting digital tools, and the kind of Business Education approach that would genuinely help them close this gap.

Purpose of the Study

The purpose of this study was to examine how Business Education can help informal traders acquire the digital and financial skills needed to adopt mobile money, e-commerce and digital record-keeping tools. Specifically, the study sought to:

1. determine the level of digital and financial competencies among informal traders;
2. identify the barriers affecting informal traders' adoption of digital business technologies; and
3. identify the forms of Business Education that can effectively support informal traders' adoption of digital technologies.

Research Questions

The study was guided by the following research questions:

1. What is the level of digital and financial competencies among informal traders?
2. What barriers affect informal traders' adoption of digital business technologies?
3. What forms of Business Education can effectively support informal traders' adoption of digital technologies?

Significance of the Study

This study is expected to be useful to several groups. Informal traders stand to benefit directly, as the findings can guide the design of training that genuinely fits their needs, helping them earn more, manage their money better, and grow their businesses. Educational institutions and Business Education providers may find the study useful in designing simple, practical training programmes for people outside the formal school system. Policymakers and government agencies involved in financial

inclusion and digital economy initiatives may use the findings to design better support programmes for informal traders. Developers of educational technology and mobile learning tools may also find useful insight into the kind of features and content that would genuinely help this group of learners. Finally, the study adds to the growing body of knowledge on digital inclusion and informal entrepreneurship in Africa, and may serve as a reference for future researchers interested in this area.

Review of Related Literatures

Informal businesses and digital technology do not change overnight; the change happens slowly and in small steps. A trader who used to accept only cash may start receiving mobile money payments. A trader who depended only on people walking past their stall may begin advertising on WhatsApp status. These changes usually do not replace the old way of doing business completely. Instead, traders mix old and new methods together, creating a kind of "half-traditional, half-digital" way of trading. This is important to understand, because any training or support given to traders should meet them where they are now, not expect them to jump straight into fully digital business overnight.

To take part in the digital economy well, traders need certain skills. Digital literacy simply means knowing how to use digital devices and apps. Digital financial literacy goes a bit further — it means understanding how digital money tools work, including transaction charges, safety, and the risks involved. For informal traders, three skills matter most: knowing how to send, receive and save money using mobile money; knowing how to sell and market products using platforms like WhatsApp Business; and knowing how to keep digital records of sales, expenses and stock instead of writing everything by hand. These three skills are the main focus of this study.

Business Education is usually seen as something taught only in schools and colleges. But this idea is too narrow. At its core, Business Education is simply about helping people gain the knowledge and skills needed to run a business well — and this does not have to happen inside a classroom. This means Business Education can also reach people who never attended formal school, including informal traders. Seen this way, Business Education becomes a practical tool that can support traders' growth, improve their livelihood, and help bring them into the formal financial system.

Several things commonly stop small and informal traders from using digital tools. Some traders feel nervous or afraid of using digital devices, especially if they have never tried before. Others assume, without even trying, that digital tools will be too hard to use. Many traders also do not have access to any training that could help them learn these skills. Cost is another big issue — smartphones, internet data and transaction charges can be expensive, especially for traders who already work on small profits. Poor network or unstable electricity can also make it hard to use digital tools regularly. Lastly, some traders simply do not trust digital systems, especially because of the fear of fraud or losing money through mistakes.

This study is guided by the Technology Acceptance Model (TAM), developed by Davis (1989). TAM says that whether a person accepts and uses a technology depends mainly on two things: whether they believe the technology will be useful to them, and whether they believe it will be easy to use. These two beliefs shape how a person feels about the technology, which then affects whether they will actually use it.

TAM helps explain how informal traders relate to digital business tools. If a trader believes that WhatsApp Business or mobile money is difficult to use, or does not see how it will benefit their business, they are unlikely to adopt it — even if the technology is available to them. This is where good Business Education can help. Practical training can make digital tools feel easier to use by building traders' hands-on skills and confidence. At the same time, showing traders clear benefits, like faster transactions, more customers, or better financial records — can help them see the tools as useful. In this way, Business Education can influence both beliefs that shape technology adoption, according to TAM.

Many studies have already looked at digital financial inclusion and technology adoption among small and informal businesses, mostly focusing on how many people use these tools and why. However, fewer studies have looked closely at the role Business Education can play in deliberately building these digital and financial skills. Most existing research treats digital literacy as something to be measured, rather than something that can be actively taught and developed. This study fills that gap by looking at the real barriers informal traders face in adopting mobile money, e-commerce and digital record-keeping tools, and by identifying the kind of Business Education that can genuinely help them overcome these barriers.

METHODOLOGY

Research Design

The study adopted a descriptive survey research design. This design was considered appropriate given the study's objective of describing informal traders' current digital and financial competency levels, the barriers limiting their adoption of digital tools, and their preferences regarding Business Education support, without manipulating any of the study variables.

Participants/Sample

The population of the study comprised informal traders operating in local markets. A sample of 50 informal traders was selected for the study using a convenience sampling technique, given the practical difficulty of establishing a formal sampling frame for informal, often unregistered, market traders. Respondents were drawn from traders engaged in the direct sale of retail goods and services within their local market environment.

Instrument

Data were collected using a structured questionnaire developed on a four-point Likert-type scale. The instrument was organised around three substantive sections corresponding to the study's research questions: digital and financial competencies, barriers to digital adoption, and Business Education needs and preferences.

Data Analysis

Data collected were analysed using mean and standard deviation to answer the research questions. A criterion mean of 2.50 was adopted for interpreting results, obtained by summing the four response values (4 + 3 + 2 + 1) and dividing by four. Item and grand mean scores of 2.50 and above were interpreted as indicating a high level of competency, barrier significance, or endorsement, depending on the section, while scores below 2.50 were interpreted as indicating a low level.

Results

Research Question One: What is the level of digital and financial competencies among informal traders?

Table I: Response on the level of digital and financial competencies among informal traders

S/N	Item	VHE	HE	LE	VLE	Mean	SD	Remark
1	am able to use mobile money or digital payment platforms to receive payments from customers	28	20	4	1	3.42	0.71	High Extent
2	I am able to use WhatsApp Business or similar social commerce platforms to promote my products or services.	22	25	5	1	3.28	0.71	High Extent
3	I am able to use WhatsApp Business or similar social commerce platforms to promote my products or services.	21	18	12	2	3.09	0.88	High Extent
4	I am able to use WhatsApp Business or similar social commerce platforms to promote my products or services.	25	24	3	1	3.38	0.68	High Extent
5	I am able to use digital technologies to manage, market and improve my business activities	24	21	7	1	3.28	0.76	High Extent
	Grand Mean					**3.29**	**0.75**	

Source: Field work, 2026

As shown from this table, responses to the five items scored above the 2.50 middle point, with a grand mean of 3.29, showing that informal traders already rate their own digital and financial skills as high. The strongest area is receiving payments through mobile money (mean = 3.42), suggesting traders are most comfortable with this activity since it directly involves earning and collecting money. The item with the lowest mean (3.09) also has the widest spread (SD = 0.88), meaning not everyone agrees equally, some traders are far more skilled at using WhatsApp Business than others, so ability levels are not the same across the group. Overall, the results suggest traders already have a reasonable skill base to build on, rather than starting from zero.

Research Question Two What barriers affect informal traders' adoption of digital business technologies?

Table II: Response on barriers that affect informal traders' adoption of digital business technologies

S/N	Item	VHE	HE	LE	VLE	Mean	SD	Remark
1	Fear of making mistakes or losing money discourages me from using digital technologies in my business.	7	17	20	9	2.42	0.93	Low Extent
2	I find some digital business tools difficult to understand and use	8	15	21	9	2.42	0.95	Low Extent
3	Lack of practical and locally relevant training limits my ability to use digital technologies.	5	18	24	6	2.42	0.82	Low Extent
4	Limited access to smartphones, reliable internet services or other digital facilities prevents me from using digital business tools effectively.	7	15	19	12	2.32	0.98	Low Extent
5	The cost of internet services, devices and other digital services limits my adoption of digital technologies.	11	17	16	9	2.57	1.00	Low Extent
	Grand Mean					**2.43**	**0.94**	

Source: Field work, 2026

Responses from table II show a grand mean of 2.43, sitting just below the 2.50 middle point, the overall data suggests that fear, perceived difficulty, lack of training and poor access are **not** the main things stopping traders from adopting digital tools, a result that is worth highlighting because it goes against the common assumption that these "soft" fears are the biggest obstacles. The one item that does cross into "High Extent" is cost (mean = 2.57), the price of data, devices and digital services, making it the clearest and most agreed-upon barrier in the entire table. The very high standard deviations across all five items (0.82 to 1.00) also matter: they show that traders are quite divided in their opinions, meaning these barriers affect some traders strongly while barely affecting others, rather than affecting everyone the same way. This spread suggests the traders sampled are not a uniform group — some may already be confident digital users, while others are still struggling, and any future training programme may need to be designed with this mixed skill level in mind.

Research Question Three: What forms of Business Education can effectively support informal traders' adoption of digital technologies?

Table III: Response on forms of Business Education that can effectively support informal traders' adoption of digital technologies

S/N	Item	VHE	HE	LE	VLE	Mean	SD	Remark
1	Practical training on mobile money and digital payment systems would improve my ability to conduct digital transactions.	26	21	5	1	3.36	0.74	High Extent
2	Training on WhatsApp Business and other social commerce platforms would improve my ability to market and sell my products online.	29	23	1	0	3.53	0.54	High Extent
3	Practical training on digital record-keeping applications would improve my ability to manage sales, expenses and business records.	24	26	3	0	3.40	0.60	High Extent
4	Short-term, simple and mobile-based Business Education programmes would make it easier for me to acquire and apply digital business skills.	28	21	4	0	3.45	0.64	High Extent
5	Business Education programmes based on my actual business activities would increase my willingness and ability to adopt digital technologies.	31	19	3	0	3.53	0.61	High Extent
	Grand Mean					**3.45**	**0.63**	

Source: Field work, 2026

Table 3 shows that all five forms of Business Education had a grand mean of 3.45, meaning informal traders agree, to a high extent, that these forms can support their adoption of digital technologies.

Training on WhatsApp Business/social selling and training based on traders' real business activities ranked highest (mean = 3.53 each). This was followed by short, simple, mobile-based training (3.45), digital record-keeping training (3.40), and mobile money/digital payment training (3.36).

Overall, the results show that Business Education is most effective when it is practical, short, mobile-friendly, and closely tied to traders' actual business activities.

Discussion of Findings

The three tables show a clear pattern. Informal traders already have some digital skills (Table 1, grand mean 3.29), but soft factors like fear, difficulty, and lack of training are not their biggest problem (Table 2, grand mean 2.43), cost is. What they say would truly help them is practical, short, mobile-based training tied to their real business (Table 3, grand mean 3.45).

This matches recent studies. Research in Okere District, Ghana found that informal entrepreneurs already use mobile phones for communication, marketing, and money transactions, but they still need training that is practical and tailored to their sector, not generic digital lessons since digital tools remain underused mainly because of infrastructural, educational and economic challenges, even though mobile phones are already widely used for communication, marketing, and financial transactions, with training in digital literacy being one of the key needs identified.

On barriers, a South African study of informal businesses in Cape Town similarly identified financial constraints, low digital literacy and limited infrastructure as the main things stopping traders from using technology effectively, supporting the current finding that cost, not fear, is the clearest barrier.

On training design, a study on digital skills training for small firms found that short, structured business-app training programmes can meaningfully improve entrepreneurs' digital skills and business performance, supporting this study's finding that short, simple, mobile-based Business Education is what traders want most. Likewise, a South African study on informal women traders found that social media and digital communication training helped traders promote, advertise, and interact with clients, which helped sustain and grow their businesses, matching the current finding that WhatsApp Business/social commerce training was the most preferred form of training.

Conclusion

Informal traders are not starting from zero, they already have basic digital skills and are not strongly held back by fear or lack of confidence. Their biggest barrier is cost, and what they want most is short, practical, mobile-friendly training built around WhatsApp/social selling and their real daily business activities.

Recommendations

Here is each recommendation, explained in very simple words:

1. Design short, mobile-based courses: Traders are busy every day selling their goods. So training should be short and done on their phones, not long classes that take them away from work.
2. Focus on WhatsApp Business/social commerce and digital record-keeping. Traders already like using WhatsApp and want to learn how to keep records digitally. Training should teach these two things well, since they are what traders want most.
3. Base training on traders' real business activities, using hands-on, practical examples. Training should use the trader's own business as the example. For example, teach them using their own products and prices, not made-up examples. This makes it easier to understand and use.
4. Reduce cost barriers, subsidize data, devices, or offer low-cost/free training and devices. Money is the biggest problem for traders. Government or organizations should help by giving free or cheap phones, internet data, and training, so cost does not stop them from learning.
5. Government and NGOs should partner to fund and deliver these targeted, low-cost training programmes. Government and NGOs have money and people to organize training. If they work together, they can provide cheap, useful training that reaches many traders at the same time.

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DIGITAL TRANSFORMATION AND SKILLS ACQUISITION FOR TECHNOPRENEURSHIP BY BUSINESS EDUCATION UNDERGRADUATES IN RIVERS STATE UNIVERSITIES

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Abstract

The increasing digitalization of the business environment has heightened the need for Business Education undergraduates to acquire technopreneurship skills that can enhance their readiness for technology-driven employment and self-employment. This study examined the relationship between digital transformation and skills acquisition for technopreneurship among Business Education undergraduates in Rivers State Universities. Three research questions and three null hypotheses guided the study. The study adopted a correlational research design and was conducted in Rivers State, Nigeria. The population comprised 544 final-year (400-level) Business Education undergraduates in the 2025/2026 academic session from Ignatius Ajuru University of Education and Rivers State University. Census sampling was adopted because the population was manageable and accessible. Data were collected using a structured 30-item questionnaire titled*:* Digital Transformation and Skills Acquisition for Technopreneurship by Business Education Undergraduates (DTSATBEU)*.* The instrument was validated by three experts and yielded Cronbach's alpha reliability coefficients of 0.77, 0.81 and 0.80 for the three clusters, with an overall reliability coefficient of 0.79. Out of the 544 questionnaires distributed, 527, representing 97%, were retrieved and found usable for analysis. Pearson Product Moment Correlation was used to answer the research questions and test the null hypotheses at the 0.05 level of significance using SPSS version 26. The findings revealed a strong and significant positive relationship between digital infrastructure and skills acquisition for technopreneurship, a moderate and significant positive relationship between administrative automation and skills acquisition, and a strong and significant positive relationship between digital pedagogical transformation and skills acquisition for technopreneurship. The study concluded that effective digital transformation is important for enhancing the acquisition of skills for technopreneurship by Business Education undergraduates in Rivers State Universities. It was therefore recommended that university management should provide adequate and functional digital infrastructure, including computers, reliable internet facilities, relevant software and electricity, to create greater opportunities for students to develop the technological and entrepreneurial skills required for technopreneurship.

Keywords: *Digital transformation, technopreneurship, skills acquisition, Business Education Undergraduate*

Introduction

The world of work is becoming increasingly digital, dynamic and innovation-driven. Across sectors, digital technologies are changing the way organizations communicate, create value, solve problems, serve customers and compete. Technologies such as artificial intelligence (AI), cloud computing, big data, machine learning, robotics and the Internet of Things are becoming integral parts of modern business operations (Jiao et al., 2025). This rapidly changing environment is also reshaping the knowledge and competencies expected from graduates of university education. Beyond possessing theoretical knowledge, graduates are increasingly expected to be digitally competent, innovative, adaptable, creative and capable of identifying and exploiting emerging opportunities. In agreement, Apata et al. (2025) observed that technological changes associated with the Fourth Industrial Revolution (4IR) are fundamentally transforming business, education and the nature of work. As a result, universities have a significant responsibility to prepare graduates who are not only employable but are also capable of creating value and entrepreneurial opportunities within the digital economy.

Presently, digital transformation in education has become a topic of discourse among researchers due to its impact on educational quality, accessibility, and preparing students for a highly

technological work environment. Pkhaladze (2026) defined digital transformation as a strategic and continuous process through which digital technologies become embedded in institutional structures, processes, services and value-creation activities. Ponsignon et al. (2019) explained that meaningful digital transformation involves restructuring internal processes, encouraging collaborative ways of working and developing the digital capabilities required for continuous adaptation. Similarly, Morze and Strutynska (2021) described digital transformation as the application of modern technologies to improve processes and activities across society. Thus, digital transformation is both technological and organizational because it changes not only the tools people use but also how institutions function, communicate, teach, learn and make decisions.

The Nigerian university environment occupies a strategic position in digital transformation because it prepares the human capital required for national development. According to Tang et al. (2025), digital technologies can make university education more accessible, flexible and collaborative by extending learning beyond the conventional classroom through digital platforms, virtual learning environments and emerging technologies. These technologies also support personalised learning, student engagement and innovative learning experiences (Zou et al., 2025). Beyond teaching and learning, digital transformation can strengthen institutional administration through automation, real-time data analysis and evidence-based decision-making, thereby improving the efficiency of academic and administrative processes (Silva Carmo et al., 2025).

Digital skills are increasingly essential for inclusive and future-ready education. However, the transformation of Nigerian universities remains constrained by inadequate digital infrastructure, unreliable electricity and internet connectivity, limited funding, insufficient staff development, weak digital competencies and resistance to institutional change (Amesi & Allison, 2022; Ogwunte et al., 2023; Ukata & Worgu, 2025). Similarly, the digital divide and unequal access to technological resources continue to create barriers to meaningful participation in digitally enabled education (Antonopoulou et al., 2023; Babalola & Genga, 2024). These realities suggest that successful digital transformation requires more than the provision of technology; it also depends on supportive institutional structures, competent staff, strategic leadership and purposeful integration of digital technologies into teaching, learning and administration.

Digital transformation in universities involves digital infrastructure, digital literacy, learning technologies, institutional automation, digital communication, collaboration, data analytics and digitally transformed pedagogy (Mabotha & Ngcamu, 2026). Other components, according to EDUCAUSE (2026), include learning management systems, data analytics, administrative automation, integrated student information systems, AI, and cloud computing technologies, supporting institutional efficiency and evidence-based decision-making. Similarly, Nadkarni and Prügl (2021) enumerated transformative leadership, managerial and institutional culture, work environment, and institutional change. The present study focused on digital infrastructure, administrative automation and digital pedagogical transformation because these dimensions provide direct opportunities for university Business Education undergraduates to access and use digital technologies in the acquisition of technopreneurship skills.

Digital infrastructure represents the essential technological foundation of transformation and includes computers, internet facilities, electricity, software, learning management systems and other digital resources.

When these facilities are available and functional in Nigerian universities, undergraduates are better positioned to develop competencies in information processing, digital communication, online research, spreadsheet applications, database management and other technology-supported business activities, which are important for employability and entrepreneurial preparedness.

However, Ogwunte et al. (2023) found that digital resources for entrepreneurship skills acquisition were not adequately available and utilized in universities, suggesting that poor infrastructure can limit meaningful digital transformation. Administrative automation is another important dimension, involving digital technologies for routine activities such as student registration, records management, communication, fee payment, scheduling and information processing, thereby making university operations faster, more accurate and accessible while exposing students to digital workflows. Digital pedagogical transformation focuses on technology-enabled teaching and learning through learning management systems, virtual classrooms, blended learning, digital assessment, simulations, online collaboration and emerging technologies such as AI and IoT. These tools can make learning more interactive, practical and student-centred, with Azeez and Ajayi (2026) and Ndom-Uchendu (2026) highlighting the growing importance of technology-supported teaching and learning in Nigerian Business Education programmes.

Business Education is positioned to benefit from digital transformation because of its vocational, entrepreneurial and business-oriented nature (Ukata & Nmehille, 2025; Ukata & Amadi, 2025). Ubulom and Enyekit (2019) defined Business Education as a skill-based education designed to equip students with the knowledge, skills, attitudes and competencies needed for employment, entrepreneurship, management and effective participation in economic activities. It equips learners with the knowledge and skills required to function effectively in the business environment. Its objectives extend to gainful employment and entrepreneurship (Musa & Auwalu, 2024). These objectives are increasingly significant because the modern business environment is no longer predominantly paper-based or dependent on conventional office practices. Instead, it is increasingly digital, connected and innovation-oriented.

The changing nature of business has heightened the need to reposition Business Education towards flexible, student-centred and technology-supported learning (Musa & Auwalu, 2024). As Okolo (2024) noted, innovation and emerging workplace skills are increasingly important, while Ikeanyionwu and Nzegwu (2024) identified digital literacy, financial management, communication, marketing, decision-making, leadership and problem-solving as essential skills for Business Education undergraduates. Bassey and Ebieme (2026) similarly positioned the programme as preparation for careers in accounting, office technology and management (OTM), marketing, entrepreneurship and related occupations. This need becomes more evident in technopreneurship, which Carter et al. (2019) describe as the strategic use of technology to identify, develop and commercialize innovative business opportunities. Ratten (2023) stated that technopreneurship encompasses innovation, technology adoption and entrepreneurial action.

A skill can be referred to as the learned ability and competence to perform a task effectively. Skills acquisition, on the other hand, is the process through which learners develop the knowledge, abilities, attitudes and practical competencies required to perform activities effectively. Skills acquisition for technopreneurship involves developing the knowledge, abilities, attitudes and practical competencies required to use technology effectively in identifying opportunities, solving problems, creating value and managing sustainable business activities. Abubakari and Kalinaki (2024) opined that higher education can support this development through entrepreneurship education, practical and experiential learning, technology-supported activities and industry engagement. Barrientos-Báez et al. (2022) and Saad et al. (2019) contended that key skills for technopreneurship include information and data literacy, digital communication, content creation, and problem-solving. Musa et al. (2025) listed skills required for technopreneurship as opportunity recognition, innovative thinking, creative problem-solving and effective use of digital resources. Others are digital marketing, e-commerce, data analytics, digital communication, financial management, online collaboration, decision-making and business management (Pennetta et al., 2024).

Universities in Nigeria provide important platforms for undergraduates to develop their relevant skills through entrepreneurship education, digital learning, practical projects, experiential activities and industry engagement (Nabi et al., 2021; Ahmad et al., 2023; Abubakari & Kalinaki, 2024). However, evidence from Nigeria suggests that students' acquisition of technopreneurial skills remains uneven. Ekoh-Nweke and Ikpeama (2023) found that digitalization significantly influenced entrepreneurial and managerial skills acquisition among Business Education students, while Osiesi et al. (2024) highlighted the growing importance of technopreneurial skills among Nigerian undergraduates.

Similarly, Iwuoha et al. (2025) emphasized the need for effective curriculum implementation to develop technopreneurship skills of university undergraduates.

In Rivers State, universities offering Business Education programmes operate in an environment that increasingly demands technological adaptability and skills for self-reliance. Studies have shown the need for greater practical exposure to skills for digital entrepreneurship (Amesi & Allison, 2022). However, inadequate digital infrastructure for entrepreneurship training negatively affects skills acquisition by Business Education undergraduates (Ogwunte et al., 2023). Ordu and Onyemekara (2023) reported a positive relationship between digital infrastructure and students' acquisition of skills for entrepreneurship.

Nmerukini et al. (2026) linked digital transformation to students' acquisition of digital entrepreneurship skills. This study therefore investigated digital transformation and skills acquisition for technopreneurship among Business Education undergraduates in Rivers State Universities

Statement of the Problem

The contemporary business environment is increasingly technology-driven, and Business Education undergraduates are expected to possess more than traditional academic and office skills. They are required to use digital technologies to identify business opportunities, communicate with customers, analyze information, market products, manage financial transactions, collaborate with

others, solve problems, innovate, and create digital businesses. This expectation places particular responsibility on Business Education programmes in universities because the programme is designed to prepare students for employment, entrepreneurship, and effective participation in the business environment. The NUC's CCMAS further emphasizes digital literacy, creative and innovative skills, problem-solving, adaptability, and other twenty-first-century skills in Business Education.

Despite this expectation, there are indications that Business Education undergraduates in Nigerian universities may not be acquiring relevant skills for technopreneurship at the level required by the digital economy. The problem may not be attributed solely to undergraduates' unwillingness to learn, but also to the digital environment within which learning occurs. Digital infrastructure may be inadequate, administrative processes may remain partly manual, reducing undergraduates' exposure to the digitally automated workflows that characterize contemporary university education; teaching and learning may not sufficiently exploit digital technologies through which undergraduates can acquire skills for technopreneurship. The main problem of this study is that although universities are increasingly expected to transform teaching, administration, and learning environments through digital technologies, there is insufficient empirical evidence showing whether specific components of such transformation contribute to Business Education undergraduates' acquisition of skills for technopreneurship in Rivers State Universities. Existing studies have tended to investigate digital resources, digital skills, entrepreneurship skills, employability, self-reliance, or wealth creation separately. Consequently, it remains unclear whether the availability of digital infrastructure, the automation of administrative processes, and the transformation of pedagogical practices are significantly related to skills acquisition needed to create and manage technology-driven businesses. Specifically, the study determined: (1) the relationship between digital infrastructure and skills acquisition for technopreneurship by Business Education undergraduates in Rivers State Universities; (2) the relationship between administrative automation and skills acquisition for technopreneurship by Business Education undergraduates in Rivers State Universities; and (3) the relationship between digital pedagogical transformation and skills acquisition for technopreneurship by Business Education undergraduates in Rivers State Universities.

Objectives of the Study

The following are the objectives of the study:

1. Examine the relationship between digital infrastructure and technopreneurship skills acquisition among Business Education undergraduates in Rivers State Universities.
2. Evaluate the relationship between administrative automation and technopreneurship skills acquisition among Business Education undergraduates in Rivers State Universities.
3. Determine the relationship between digital pedagogical transformation and technopreneurship skills acquisition among Business Education undergraduates in Rivers State Universities.

Research Questions

The following research questions guide the study:

4. What is the relationship between digital infrastructure and technopreneurship skills acquisition among Business Education undergraduates in Rivers State Universities?
5. What is the relationship between administrative automation and technopreneurship skills acquisition among Business Education undergraduates in Rivers State Universities?
6. What is the relationship between digital pedagogical transformation and technopreneurship skills acquisition among Business Education undergraduates in Rivers State Universities?

Research Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

H_{01}: There is no significant relationship between digital infrastructure and skills acquisition for technopreneurship among Business Education undergraduates in Rivers State Universities.

H_{02}: There is no significant relationship between administrative automation and skills acquisition for technopreneurship among Business Education undergraduates in Rivers State Universities.

H_{03}: There is no significant relationship between digital pedagogical transformation and skills acquisition for technopreneurship among Business Education undergraduates in Rivers State Universities.

Methods

The study adopted a correlational research design. It was conducted in Rivers State, Nigeria. The population of the study consisted of 544 final-year (400 level) Business Education undergraduates in the 2025/2026 academic session from Rivers State Universities in Nigeria offering the Business Education programme. Ignatius Ajuru University of Education has 444 final-year undergraduates, while Rivers State University (RSU) has 110 final-year undergraduates (Source: Business Education Department of various universities, 2nd September, 2026). The study used all 544 final-year Business Education undergraduates as the population since it was manageable and accessible to the researcher and the research assistants; thus, adopting a census sampling method. The instrument for data

collection was a structured questionnaire developed by the researcher and titled “Digital Transformation and Skills Acquisition for Technopreneurship by Business Education Undergraduates (DTSATBEU)”. The instrument was divided into two sections: A and B. Section A covered personal information of the respondents, such as gender and name of institution, while Section B was divided into three clusters, B_1 to B_3. Section B_1 contained 10 items on digital infrastructure and skills acquisition for technopreneurship, Section B_2 contained 10 items on administrative automation and skills acquisition for technopreneurship, and Section B_3 had 10 items on digital pedagogical transformation and skills acquisition for technopreneurship. The questionnaire items were structured on four points rating scale of Strongly Agree (SA) – 4, Agree (A) – 3, Disagree (D) – 2, and Strongly Disagree (SD) – 1.

The validity of the instrument was ascertained through the face and content method by three experts: two experts in Business Education and one expert from Measurement and Evaluation. The reliability of the instrument was established using the trial-testing method, and the data collected were analyzed using the Cronbach alpha formula, with reliability coefficients of 0.77, 0.81 and 0.80 obtained for clusters B_1 to B_3, respectively, with an overall coefficient value of 0.79 obtained. The researcher administered copies of the questionnaires to the respondents in their universities with the help of four research assistants in their universities. Of the 544 copies of the questionnaire distributed, 527, representing 97 per cent, were retrieved and found useful for data analysis. Data collected for the study were analyzed using the Pearson product-moment correlation coefficient to answer the research question and test the null hypothesis. The research question was based on the coefficient (r), and the size of the correlation was interpreted using the interpretation of a correlation coefficient by Bryman and Bell (2011): In testing the null hypothesis, when the p-value is less than or equal to 0.05 ($P < 0.05$), the null hypothesis was rejected; otherwise, the null hypothesis was accepted. The computations were done using Special package for the Social Sciences (SPSS) version 26.

Result, Analysis and Discussion

Table 1: Pearson Product Moment Correlation (PPMC) Between Digital Infrastructure and Skills Acquisition for Technopreneurship by Business Education Undergraduates

Variables	N	R	Remarks
Digital Infrastructure (X)			
	527	0.68**	Strong Positive Relationship
Skills Acquisition for Technopreneurship (Y)			

Table 1 results show a correlation coefficient of r = 0.68 for 527 undergraduates**,** indicating a strong positive relationship between digital infrastructure and skills acquisition for technopreneurship. This implies that Business Education undergraduates' access to functional digital infrastructure is associated with higher levels of technopreneurial skills acquisition. In other words, as the availability and accessibility of digital infrastructure improve, the acquisition of skills for technopreneurship tends to increase correspondingly among Business Education undergraduates in Rivers State Universities.

Table 2: Pearson Product Moment Correlation (PPMC) Between Administrative Automation and Skills Acquisition for Technopreneurship by Business Education Undergraduates

Variables	N	R	Remarks
Administrative Automation (X)			
	527	0.59**	Moderate Positive Relationship
Skills Acquisition for Technopreneurship (Y)			

Table 2 results show a correlation coefficient of r = 0.59 for 527 undergraduates, indicating a moderate positive relationship between administrative automation and skills acquisition for technopreneurship by Business Education undergraduates in Rivers State Universities. This means that increased exposure to automated administrative processes is associated with a corresponding increase in technopreneurial skills acquisition among the Business Education undergraduates.

Table 3: Pearson Product Moment Correlation (PPMC) Between Digital Pedagogical Transformation and Skills Acquisition for Technopreneurship by Business Education Undergraduates

Variables	N	R	Remarks

Digital Pedagogical Transformation (X)			
	527	0.62**	Strong Positive Relationship
Skills Acquisition for Technopreneurship (Y)			

Table 3 results show a correlation coefficient of r = 0.62 for 527 undergraduates, indicating a strong positive relationship between digital pedagogical transformation and skills acquisition for technopreneurship by Business Education undergraduates. This means that greater integration of technology into teaching and learning is associated with higher levels of technopreneurial skills acquisition by Business Education undergraduates in Rivers State Universities.

Table 4: Significance of Pearson Product Moment Correlation on Digital Infrastructure and Skills Acquisition for Technopreneurship among Business Education Undergraduates

Variables	N	R	Sig. (2-tailed)	Decision
Digital Infrastructure (X)	527			
		0.68**	0.001	Significant
Skills Acquisition for Technopreneurship(Y)	527			

****** Correlation is significant at the 0.01 level (2-tailed).

Table 4 results show a strong positive correlation between the two variables (r = 0.68), with a significance value of p < .001. Since the p-value is less than the 0.01 level of significance, the null hypothesis is therefore not accepted. This means that there is a significant relationship between digital infrastructure and skills acquisition for technopreneurship by Business Education undergraduates in Rivers State Universities.

Table 5: Pearson Product Moment Correlation (PPMC) Between Administrative Automation and Skills Acquisition for Technopreneurship by Business Education Undergraduate*s*

Variables	N	R	Sig. (2-tailed)	Decision
Administrative Automation (X)				
	527	0.59**	0.001	Significant
Skills Acquisition for Technopreneurship (Y)				

****** Correlation is significant at the 0.01 level (2-tailed).

Table 5 results show a strong positive correlation between the two variables (r = 0.68), with a significance value of p < .001. Since the p-value is less than the 0.01 level of significance, the null hypothesis is therefore not accepted.

This means that there is a significant relationship between administrative automation and skills acquisition for technopreneurship by Business Education undergraduates in Rivers State Universities.

Table 6: Pearson Product Moment Correlation (PPMC) Between Digital Pedagogical Transformation and Skills Acquisition for Technopreneurship by Business Education Undergraduates

Variables	N	R	Sig. (2-tailed)	Decision
Digital Pedagogical Transformation (X)	527			
		0.62**	0.000	Significant
Skills Acquisition for Technopreneurship (Y)	527			

****** Correlation is significant at the 0.01 level (2-tailed).

Table 6 results show a correlation coefficient of r = 0.62 for 527 undergraduates, indicating a strong positive relationship between digital pedagogical transformation and skills acquisition for technopreneurship.

The significance value of p < .001 is less than the 0.01 level of significance, indicating that the relationship is statistically significant. Therefore, the null hypothesis is not accepted. This means that there is a significant relationship between digital pedagogical transformation and skills acquisition for technopreneurship among Business Education undergraduates in Rivers State Universities.

Discussion of Findings

The finding of the study revealed a strong and significant positive relationship between digital infrastructure and skills acquisition for technopreneurship among Business Education undergraduates in Rivers State Universities. This suggests that improved access to functional computers, internet connectivity, software, electricity and other digital resources is associated with greater acquisition of

technopreneurial skills. The finding agrees with Amesi and Allison (2022)**,** who reported that the availability of digital infrastructure in Business Education departments enhanced students' acquisition of skills for self-reliance. Similarly, Ogwunte et al. (2023) reported that adequate availability and utilization of digital infrastructure in universities influenced digital entrepreneurship skills acquisition among undergraduates, highlighting the importance of adequate digital infrastructure. Ordu and Onyemekara (2023) also established a positive relationship between digital resource development and students' self-employability skills. In the same vein, Ekoh-Nweke and Ikpeama (2023) found that digitalization highly influenced entrepreneurial skills acquisition among Business Education undergraduates. Furthermore, Koko and Uweh (2025) reported that digital infrastructure contributed to employability skills development among Business Education undergraduates.

The finding revealed a moderate and significant positive relationship between administrative automation and skills acquisition for technopreneurship among Business Education undergraduates in Rivers State Universities. This indicates that digitally automated processes such as online registration, electronic records, digital communication, financial transactions and information management can expose students to the technology-driven workflows common in modern businesses. The finding is consistent with Osiesi et al. (2024), who found moderate entrepreneurial digital skills among Business Education undergraduates in Nigeria and recommended stronger institutional support and compulsory digital education. Similarly, internationally, Zhukabayeva et al. (2025) noted that digital automation of administrative processes in higher education involves the strategic renewal of institutional processes and students' skills. Nadkarni and Prügl (2021) emphasized the importance of institutional capabilities and work environments in digital transformation.

The finding revealed a strong and significant positive relationship between digital pedagogical transformation and skills acquisition for technopreneurship among Business Education undergraduates in Rivers State Universities. This suggests that the integration of e-learning, virtual classrooms, digital assessment, simulations, collaborative platforms and other technology-supported teaching approaches can strengthen students' technological, creative and entrepreneurial skills. The finding agrees with Abdulkarim and Danagogo (2023), who found that adoption of digital technologies in teaching Business Education courses increased students' acquisition of digital entrepreneurial skills. Similarly, Ukata and Nmehielle (2023) reported that technology-supported teaching of Business Education courses enhanced students' development of relevant skills for self-employment. In another Nigerian study, Hassan and Ajayi (2026) linked technology-based entrepreneurial pedagogies with self-employment readiness of students. Tang et al. (2025) and Zou et al. (2025) emphasized the value of digital learning technologies in instructional delivery in developing relevant student skills for self-employment.

Conclusion

The need for Business Education undergraduates to acquire skills for technopreneurship has become necessary due to the changing nature of the business environment driven by digital technologies. The findings of this study revealed significant positive relationships between digital infrastructure, administrative automation, digital pedagogical transformation and skills acquisition for technopreneurship among Business Education undergraduates in Rivers State Universities. Based on these findings, the study concludes that effective digital transformation is important for enhancing the acquisition of technopreneurship skills among Business Education undergraduates in Rivers State Universities.

Recommendations

Based on the findings and conclusion of this study, the following recommendations are made:

1. Management of Rivers State Universities should provide adequate and functional digital infrastructure such as computers, reliable internet facilities, relevant software, electricity and other digital resources for Business Education departments. This will provide undergraduates with greater opportunities to access, practice and develop the technological and entrepreneurial skills required for technopreneurship.
2. Heads of Department (HoDs) of Business Education in Rivers State Universities should promote the use of automated administrative systems such as online registration, electronic records management, digital communication and electronic financial services. This will expose undergraduates to technology-driven business processes and strengthen their ability to apply digital tools in entrepreneurial activities.
3. Heads of Department (HoDs) of Business Education should integrate digital pedagogical approaches into teaching and learning. Business Education lecturers should regularly use learning management systems, virtual classrooms, digital assessment, simulations and online collaborative

platforms to provide undergraduates with practical and interactive learning experiences that can enhance their technopreneurship skills.

4. Management of Rivers State Universities should organize regular digital skills and technopreneurship training for Business Education lecturers and undergraduates. The training should focus on the practical application of digital technologies, online business tools, digital marketing, e-commerce, data analysis and other technology-based entrepreneurial activities to strengthen students' ability to convert digital knowledge into viable business opportunities.
5. Management and HoDs of Business Education in Rivers State Universities should establish an integrated digital transformation strategy for the programme. Such a strategy should connect digital infrastructure, automated administrative services and technology teaching and learning, while providing continuous monitoring and support to ensure that digital technologies are effectively used to improve undergraduates' acquisition of skills for technopreneurship.

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DIGITAL TECHNOLOGY SKILLS REQUIRED BY BUSINESS EDUCATION STUDENTS FOR EFFECTIVE ENTREPRENEURIAL OPERATIONS IN EBONYI STATE

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Abstract

The study investigated the digital technology skills required by business education students for effective entrepreneurial operations in Ebonyi State. A descriptive survey design was adopted for the study. Two research questions and two hypotheses guided the study. The population of the study comprised 47 business education educators in all tertiary institutions offering business education programmes in Ebonyi State. The entire population was used for the study because it was manageable. A structured questionnaire based on a four-point rating scale was used for data collection. Mean and standard deviation were employed to answer the research questions, while the independent samples t-test was used to test the hypotheses at the 0.05 level of significance. The findings revealed that digital financial management skills and e-commerce skills are required for effective entrepreneurial operations. Based on the findings, it was recommended that business education students should be adequately trained in digital financial management skills, including the use of electronic payment systems, online banking, digital budgeting, financial record keeping, and financial applications. The study concluded that digital financial management and e-commerce skills are important for improving the efficiency, accuracy, and sustainability of entrepreneurial operations.

Keywords: Digital technology skills, business education, entrepreneurial operations.

Introduction

The digital era has brought about significant changes across a wide range of social and economic sectors, including education, manufacturing, accounting, office occupations, and entrepreneurship. As technology continues to advance, educational institutions must adapt their approaches to ensure that students acquire the fundamental digital literacy and technological skills required for success in the contemporary digital world and modern entrepreneurial environment. The modern world of entrepreneurship is increasingly digitally driven, and only digitally equipped students are likely to cope effectively with the demands of establishing and operating businesses after graduation. Ndubuisi, Ezeani, and Okoli and Okolo (2022) noted that the world is becoming increasingly digital, creating a need for business education students to acquire appropriate digital skills for future use. This is vital because such skills can enable students and graduates to establish and manage business enterprises and maximize profitability.

Okute, Enang, and Etoma (2022) noted that digital skills are often characterized by competence in basic computing, hardware, software, and networking. They include basic information and communication technology (ICT) skills, which involve the use of computers to retrieve, store, produce, present, and exchange information, as well as to communicate and participate in collaborative networks through the internet. Udeme and Akpan (2023) noted that the acquisition of digital skills includes computer-related competencies that enable individuals to manage content and use computer applications effectively.

Digital skills refer to the ability to find, evaluate, use, share, and create content through digital devices such as computers and smartphones. Uzoka and Okoli (2022) viewed digital skills as a set of competencies that enable individuals to perform tasks effectively and efficiently using new technologies

in a digital environment. Digital skills entail knowledge and competence in the use of digital technologies for communication, collaboration, and professional development, particularly in the context of effective entrepreneurial operations.

Business education students are expected to possess digital technology skills that will enable them to engage effectively in entrepreneurial activities. Individuals equipped with relevant digital skills are better positioned to compete with their counterparts and remain relevant in the contemporary digital era. The future success of students in the contemporary world depends, to a large extent, on how effectively they are equipped with marketable skills that will enable them to establish and operate entrepreneurial ventures. The acquisition of digital technology skills by business education students will enable them to fit into and contribute meaningfully to the twenty-first-century economy, where technological competence is increasingly important for human development and entrepreneurial operations.

The effectiveness of graduates in entrepreneurial operations depends substantially on the level of competence they acquire during their educational programmes. Oko and Wagbara (2022) defined digital skills as the capacity and ability to use digital devices, communication applications, and networks to access information. One of the essential competencies acquired through business education programmes is digital technology skills. Digital devices enable individuals to create and share digital content, communicate and collaborate, and solve problems for effective and creative self-fulfilment in life, learning, work, and social activities.

Contemporary entrepreneurial operations require specialized digital skills that enable entrepreneurs to stand out, particularly in the utilization of digital technologies. Okoye and Ubaka (2025) concurred that skills acquisition in relevant areas can enable business education students to become self-reliant, independent, and productive members of society. Digital technologies have paved the way for new pedagogical approaches in which students are expected to play a more active role than before. However, this development is not without challenges. Many business education students are still unfamiliar with some of these emerging skills because of inadequate practical training in the classroom.

It is therefore imperative to engage business education students in the acquisition of various digital technology skills, including digital financial management, e-commerce, digital communication, digital business marketing, digital information management, and social media management. Business education students who acquire digital skills will not only become more employable but will also be better prepared for future career opportunities by understanding digital technology as a channel for economic and entrepreneurial advancement.

Business education, as an integral component of vocational education, is aimed at equipping students with entrepreneurial and occupational skills that will enable them to function effectively in society. Business education focuses on skills acquisition in different areas, including Office Technology and Management, Management Information Systems, Management, Marketing, Digital Marketing, Entrepreneurship, Cooperative Studies, Insurance, and Accounting (Ukata & Amini, 2022).

According to Charles-Odili (2024), business education is concerned with the acquisition and development of skills, competencies, attitudes, and attributes necessary for efficiency within the economic system. In the context of this study, business education is defined as a programme of study designed to equip its beneficiaries with the skills, competencies, attitudes, and knowledge required to become relevant and productive members of society and succeed in entrepreneurial operations. Ogwunte, Agburuga, and Abung (2023) defined business education as a means through which individuals develop the understanding and skills required to enter the business world and become self-reliant. In view of the importance of business education in skills acquisition, students of the programme are expected to acquire digital technology skills that will enable them to venture into entrepreneurial operations.

Entrepreneurial operations are the systematic activities and operational decisions involved in identifying and exploiting business opportunities, organizing and allocating resources, managing production and service processes, interacting with customers, adopting appropriate technologies, and adapting business activities to create value and achieve sustainable business performance. Long, Wood, and Bennett (2023) explained entrepreneurial organizing activities in terms of how entrepreneurs allocate scarce resources and make decisions regarding staffing and organizational functions in ways that influence the performance of emerging ventures. This perspective demonstrates that entrepreneurial operations involve organizing and deploying resources to support venture performance.

Zhang (2024) identified entrepreneurial operations as involving distinctive operational characteristics, including continuous learning and adoption, direct founder involvement in operational decisions, resource constraints, and changing operational priorities as a venture develops.

For effective entrepreneurial operations, business education students should be equipped with digital technology skills that enable them to utilize computers, digital communication tools, mobile phones, social media networks, and other digital resources to analyse, create, communicate, and use information within a digital context. This also includes the use of web tools, digital media tools, programming tools, and software applications (Tinya, 2023).

Digital technology skills, in this context, refer to the abilities, competencies, knowledge, and attitudes possessed by business education students to effectively use digital technologies and tools such as computers, smartphones, social media platforms, and digital communication tools to perform entrepreneurial activities and achieve effective entrepreneurial operations.

Digital technology skills include digital communication skills, digital marketing skills, digital financial management skills, e-commerce skills, online business skills, and digital information management skills. For the purpose of this study, attention was given to two major areas of digital technology skills required for entrepreneurial operations: digital financial management and e-commerce.

Digital financial management refers broadly to the knowledge and abilities required to plan, obtain, allocate, control, and utilize financial resources effectively to achieve business objectives. Offer (2025) described financial management skills as the competencies required by entrepreneurs and managers to effectively manage the financial aspects of their businesses.

Orah and Umoru (2024) regarded financial management as one of the important entrepreneurial skills utilized by business education graduate entrepreneurs in entrepreneurial ventures. Their study specifically examined the utilization of financial management skills alongside innovative-thinking skills among business education graduate entrepreneurs.

The Organisation for Economic Co-operation and Development (OECD) defines an e-commerce transaction as the sale or purchase of goods or services conducted over computer networks using methods specifically designed for receiving or placing orders. Williams (2024) described e-commerce as business conducted electronically, involving economic exchanges between businesses, businesses and consumers, or individuals and consumers.

For business education students to effectively use digital technologies and tools such as computers, smartphones, social media platforms, and digital communication tools in performing entrepreneurial activities and achieving effective entrepreneurial operations, it is imperative that they possess relevant digital competencies. However, some graduates of tertiary institutions may enter the business environment without adequate practical digital skills, resulting in ineffective entrepreneurial operations. Osiesi et al. (2024) observed that students may possess knowledge of digital technologies without having sufficiently developed practical entrepreneurial digital skills. This supports the need to examine the digital technology skills required by business education students for effective entrepreneurial operations.

STATEMENT OF THE PROBLEM

The rapid advancement of digital technology has significantly changed the way entrepreneurial activities are conducted. Contemporary entrepreneurs increasingly depend on digital technologies such as computers, smartphones, electronic payment systems, digital communication tools, social media platforms, and e-commerce platforms to promote products, communicate with customers, conduct business transactions, manage business records, and improve business operations.

Business education students are expected to acquire relevant digital technology skills that will enable them to function effectively in the contemporary business environment. This is one of the reasons why business education programmes are designed to prepare students to acquire practical skills, attitudes, understanding, and knowledge relating to employability and decent work in various sectors of the economy.

Despite the objectives of business education programmes and the increasing importance of digital technology in entrepreneurial operations, some business education graduates leave tertiary institutions without adequate skills to effectively utilize available digital technologies for business purposes. Some students experience difficulties in areas such as computer operation, digital communication, social media marketing, e-commerce, and other digital business activities.

The inability of some business education graduates to effectively utilize digital technologies may limit their capacity to establish, manage, and sustain entrepreneurial ventures in the contemporary economy. This situation therefore necessitated the present study to determine the digital technology skills required by business education students for effective entrepreneurial operations in Ebonyi State.

PURPOSE OF THE STUDY

The main purpose of the study was to examine the digital technology skills required by business education students for effective entrepreneurial operations in Ebonyi State.
Specifically, the study sought to determine:

1. The financial management skills required by business education students for effective entrepreneurial operations.
2. The e-commerce skills required by business education students for effective entrepreneurial operations.

RESEARCH QUESTIONS

The following research questions guided the study:

1. What are the financial management skills required by business education students for effective entrepreneurial operations?
2. What are the e-commerce skills required by business education students for effective entrepreneurial operations?

RESEARCH HYPOTHESES

The following null hypotheses were tested at the 0.05 level of significance:

Ho1: There is no significant difference between the mean ratings of male and female business education educators on the financial management skills required by business education students for effective entrepreneurial operations.

Ho2: There is no significant difference between the mean ratings of male and female business education educators on the e-commerce skills required by business education students for effective entrepreneurial operations.

METHOD

A descriptive survey design was adopted for the study because the study sought to obtain the opinions of respondents regarding the digital technology skills required by business education students for effective entrepreneurial operations in Ebonyi State. The study was conducted in all tertiary institutions offering business education programmes in Ebonyi State. These institutions are Ebonyi State University, Ebonyi State College of Education, Ikwo, and Alex-Ekwueme Federal University, Ndufu-Alike, Ikwo.

The population of the study comprised 47 business education educators in all the tertiary institutions offering business education programmes in Ebonyi State. Since the population was manageable, no sampling was conducted. The entire population of 47 business education educators was therefore used for the study. The instrument used for data collection was a structured questionnaire titled Digital Technology Skills Required by Business Education Students Questionnaire (DTSRBESQ). The questionnaire items were generated from the research questions. The instrument was validated by experts before it was administered to the respondents. The instrument was further subjected to reliability testing to determine its internal consistency.

Mean and standard deviation were used to analyse the data and answer the research questions, while the independent samples t-test was used to test the null hypotheses at the 0.05 level of significance.

RESULTS

Research Question 1: What are the financial management skills required by business education students for effective entrepreneurial operations?

Table 1: Mean Ratings and Standard Deviation of Responses on financial management skills required by business education students for effective entrepreneurial operations.

S/N	ITEM STATEMENT	N	X	STD	DECISION
1	Preparing budget by the use of digital tools	47	2.99	.25	Agree
2	Monitoring income and expenditure electronically	47	3.47	.49	Agree
3	Using spreadsheet in budgeting	47	3.17	.28	Agree
4	Recording business transactions electronically	47	3.34	.52	Agree
5	Preparing digital financial statements	47	3.12	.49	Agree
6	Use accounting software	47	3.32	.58	Agree
7	Monitoring cash inflows and outflows digitally	47	3.31	.51	Agree
8	Managing business liquidity using digital tools	47	3.45	.65	Agree
9	Use of mobile banking and internet	47	3.35	.53	Agree
10	Receiving customers payments electronically	47	3.44	.64	Agree

11	Analyzing digital financial records	47	3.28	.47	Agree
12	Calculating profit and loss using digital tools	47	3.32	.54	Agree
13	Interpreting financial reports	47	3.26	.53	Agree
14	Protecting financial reports	47	3.34	.56	Agree
15	Detecting fraudulent digital transactions	47	3.31	.50	Agree
16	Safeguarding customers' and business financial information	47	3.25	.59	Agree
	Grand Mean		**3.30**		**Agree**

Table 1 above shows that 1 to 16 are the financial management skills required of business education students for effective entrepreneurial operations. This is because each of the items attained a mean score above 2.50. The grand mean of 3.30 is an indication that financial management skills are skills required of business education students for effective entrepreneurial operations.

Research Question 2: What are the E-commerce skills required by business education students for effective entrepreneurial operations?

Table 2: Mean Ratings and Standard Deviation of Responses on the E-commerce skills required by business education students for effective entrepreneurial operations.

S/N	ITEM STATEMENT	N	X	STD	DECISION
17	Creating online advertisements	47	3.28	.48	Agree
18	Promoting products through social media	47	3.31	.53	Agree
19	Using email marketing	47	3.11	.50	Agree
20	Creating digital marketing content	47	3.60	67	Agree
21	Managing online sales transactions	47	3.09	.49	Agree
22	Tracking sales electronically	47	3.38	.58	Agree
23	Communicating with customers through online platforms	47	3.33	.54	Agree
24	Responding promptly to customers enquiries	47	3.28	.56	Agree
25	Building customer relationships online	47	3.30	.49	Agree
26	Using mobile payment platforms	47	3.30	.50	Agree
27	Processing electronic payments	47	3.14	.47	Agree
28	Creating online store	47	3.34	.52	Agree
29	Maintaining basic website security	47	3.20	.50	Agree
30	Coordinating product delivery information to customers	47	3.29	.62	Agree
31	Tracking customers' orders	47	3.22	.50	Agree
	Grand Mean		**3.28**		**Agree**

The results of data analysis as presented in table 2 revealed the E-commerce skills required by business education students for effective entrepreneurial operations. These E-commerce skills include: creating online advertisement, promoting products through social media, using email marketing, creating digital marketing content, managing online sales transactions, tracking sales electronically, building customer relationships online, using mobile payment platforms, processing electronic payments, creating online store, maintaining basic website security, coordinating product delivery information to customers and tracking customers' orders. The grand mean of 3.28 further validated this.

Hypotheses

HO_1: There is no significant difference between the mean ratings of male and female business education students on the financial management skills required for effective entrepreneurial operations.

Table 3: t-test of difference in the mean responses of business education students on the financial management skills required for effective entrepreneurial operations.

Items	Gender	N	X	STD	Df	t-cal	Alpha	t-crt	Decision
1	Male	21	2.95	.50	45	-.58	0.05	.56	Not
	Female	26	3.03	.20					Significant
2	Male	21	3.71	.46	45	-.35	0.05	.73	Not
	Female	26	3.76	.43					Significant
3	Male	21	3.19	.40	45	1.08	0.05	.29	Not
	Female	26	3.15	.37					Significant
4	Male	21	3.29	.56	45	.46	0.05	.07	Significant
	Female	26	3.38	.50					
5	Male	21	3.33	.48	45	.08	0.05	.97	Not
	Female	26	3.34	.49					Significant
6	Male	21	3.29	.46	45	1.38	0.05	.23	Significant
	Female	26	3.38	.57					
7	Male	21	3.38	.59	45	-1.34	0.05	.19	Not
	Female	26	3.26	.45					Significant
8	Male	21	3.33	.48	45	-1.03	0.05	.31	Not
	Female	26	3.54	.51					Significant
9	Male	21	3.38	.50	45	.19	0.05	.85	Not
	Female	26	3.31	.45					Significant
10	Male	21	3.43	.51	45	.54	0.05	.60	Not
	Female	26	3.46	.58					Significant
11	Male	21	3.29	.56	45	.41	0.05	.68	Not
	Female	26	3.27	.45					Significant
12	Male	21	3.33	.48	45	-.93	0.05	.36	Not
	Female	26	3.31	.54					Significant
13	Male	21	3.29	.46	45	.34	0.05	.73	Not
	Female	26	3.23	.51					Significant
14	Male	21	3.38	.50	45	-.99	0.05	.33	Not
	Female	26	3.30	.47					Significant
15	Male	21	3.43	.50	45	-.33	0.05	.19	Not
	Female	26	3.19	.49					Significant
16	Male	21	3.19	.51	45	.30	0.05	.77	Not
	Female	26	3.31	.54					Significant
	Average					**0.64**		**0.49**	**Significant**

The result of the t-test analysis presented in table 3 above indicated that there is significant difference in the mean responses of participants on the financial management skills required for effective entrepreneurial operations. This is because from the table, the average t-calculated value of 0.64 was greater than the critical value of 0.49.

HO_2: There is no significant difference between the mean ratings of male and female business education students on the financial management skills required for effective entrepreneurial operations.

Table 4: t-test of difference in the mean responses of business education students on the financial management skills required for effective entrepreneurial operations.

Items	Gender	N	X	STD	Df	t-cal	Alpha	t-crt	Decision
17	Male	21	3.29	.64	45	.65	0.05	.52	Significant
	Female	26	3.27	.53					
18	Male	21	3.43	.50	45	.19	0.05	.85	Not
	Female	26	3.19	.63					Significant
19	Male	21	3.24	.44	45	1.14	0.05	.26	Significant
	Female	26	3.08	.48					
20	Male	21	3.48	.60	45	.83	0.05	.41	Significant
	Female	26	3.73	.81					

21	Male	21	3.14	.57	45	.06	0.05	.96	Not
	Female	26	3.04	.59					Significant
22	Male	21	3.38	.50	45	.06	0.05	.96	Not
	Female	26	3.38	.50					Significant
23	Male	21	3.29	.46	45	-.95	0.05	.35	Not
	Female	26	3.12	.51					Significant
24	Male	21	3.38	.58	45	-.83	0.05	.41	Not
	Female	26	3.19	.56					Significant
25	Male	21	3.33	.58	45	.66	0.05	.52	Significant
	Female	26	3.27	.53					
26	Male	21	3.38	.50	45	-.50	0.05	.62	Not
	Female	26	3.23	.51					Significant
27	Male	21	3.05	.50	45	.36	0.05	.07	Significant
	Female	26	3.23	.51					
28	Male	21	3.33	.48	45	.08	0.05	.07	Significant
	Female	26	3.35	.56					
29	Male	21	3.10	.53	45	.90	0.05	.37	Significant
	Female	26	3.31	.61					
30	Male	21	3.23	.60	45	.45	0.05	.34	Significant
	Female	26	3.32	.56					
31	Male	21	3.05	.59	45	.20	0.05	.33	Significant
	Female	26	3.12	.67					
	Average					**0.57**		**0.46**	**Significant**

The result of t-test analysis presented in Table 4 above indicated that there is significant difference in the mean responses of business education students on the financial management skills required for effective entrepreneurial operations. This is because from the above table, the cumulative calculated value of 0.57 is greater than the critical value of 0.46.

DISCUSSION OF FINDINGS

The findings presented in Table 1 revealed that digital financial management skills are required by business education students for effective entrepreneurial operations. All the 16 items recorded mean scores above the criterion mean of 2.50, with a grand mean of 3.30, indicating agreement among the respondents. The findings therefore suggest that business education students require a broad range of digital financial management skills, including preparing budgets using digital tools, monitoring income and expenditure electronically, using spreadsheets for budgeting, recording business transactions electronically, preparing digital financial statements, using accounting software, monitoring cash inflows and outflows, managing business liquidity, using mobile and internet banking services, receiving customer payments electronically, analysing digital financial records, calculating profit and loss, interpreting financial reports, protecting financial reports, detecting fraudulent digital transactions, and safeguarding customers' and business financial information.

This finding is supported by Li *et al*. (2024), who found that financial literacy contributes to entrepreneurial behaviour by helping entrepreneurs analyse market conditions, formulate business plans, undertake cost accounting, and manage financial risks. Their study therefore supports the present finding that financial management competence is fundamental to effective entrepreneurship. Similarly, research reported in Finance Research Letters in 2024 found that digital transformation improves entrepreneurial performance and that financial literacy strengthens this relationship. The study explained that digital transformation can improve access to information, expand market reach, and enhance management efficiency. This supports the present finding that students should acquire the ability to combine financial knowledge with digital tools in managing entrepreneurial activities.

The findings presented in Table 2 revealed that e-commerce skills are required by business education students for effective entrepreneurial operations. All 15 items recorded mean scores above the criterion mean of 2.50, while the grand mean was 3.28, indicating agreement among the respondents. The identified skills include creating online advertisements, promoting products through social media, using email marketing, creating digital marketing content, managing online sales transactions, tracking sales electronically, communicating with customers through online platforms, responding promptly to customers' enquiries, building customer relationships online, using mobile

payment platforms, processing electronic payments, creating online stores, maintaining basic website security, coordinating product delivery information, and tracking customers' orders.

The finding agrees with the OECD (2024), which reported that digitalisation enables small and medium-sized enterprises (SMEs) to expand their customer reach and access wider markets through e-commerce platforms. The OECD further noted that digital platforms can help SMEs improve communication, information sharing, and the performance of various business functions. The finding also agrees with the OECD (2025) report on SME digitalisation, which identified digital marketing and search-engine optimisation, digitalisation of day-to-day operations, and data analytics among the urgent digital training needs reported by SMEs. This is particularly relevant to the present finding because digital marketing, electronic sales tracking, online customer communication, and online business operations constitute major components of the e-commerce skills identified by the respondents.

CONCLUSION

The study concluded that digital technology skills are relevant competencies required by business education students for effective entrepreneurial operations in Ebonyi State. The effective use of digital technologies enables business education graduates to perform business activities more efficiently, communicate with customers, manage financial transactions, market products and services, and participate effectively in e-commerce.

Specifically, digital financial management and e-commerce skills were identified as important competencies for improving the efficiency, accuracy, and sustainability of entrepreneurial operations. Equipping business education students with these skills can therefore enhance their preparedness for self-employment and entrepreneurial participation in the contemporary digital economy.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations were made:

1. Business education students should be adequately trained in digital financial management skills, including electronic payment systems, online banking, digital budgeting, financial record keeping, and the use of financial applications.
2. Business education departments should provide practical training centres and digital financial tools that will enable students to develop competence in managing business income, expenses, cash flow, and financial records electronically.
3. Business education students should be trained in e-commerce skills such as online product marketing, online customer service, electronic ordering, digital payment processing, and online sales management.
4. Business education programmes should incorporate practical e-commerce activities into their curricula, allowing students to create and manage online business platforms and practise selling products or services electronically.

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UTILIZATION OF DIGITAL TRANSFORMATION SKILLS BY BUSINESS EDUCATION STUDENTS IN COLLEGES OF EDUCATION SOUTH EAST NIGERIA.

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Abstract
This study assessed the digital transformation skills utilized by Business Education students in Colleges of Education in South East Nigeria. Specifically, the study examined the extent to which digital communication skills and advanced technical skills are utilized by Business Education students. A survey research design was adopted. The population comprised 83 respondents (lecturers and administrators) from federal and state Colleges of Education in South Eastern Nigeria. The entire population was studied without sampling due to its manageable size. Data collection was carried out using a structured questionnaire titled 'Digital Transformation Skills Required of Business Education Students (DITSBES)', which was validated by three experts from Michael Okpara University of Agriculture, Umudike. The instrument demonstrated high internal consistency with a Cronbach's alpha reliability coefficient of 0.71. Mean was utilized to answer the research questions; standard deviation was used to determine the closeness or homogeneity of the respondents' responses while Analysis of Variance (ANOVA) was used to test the null hypotheses at a 0.05 level of significance. Findings revealed that Business Education students possess a moderate to low extent of acquisition in both digital communication and advanced technical skills. Based on the findings, it was recommended among others that curriculum planners integrate practical-oriented digital skills modules into Business Education programs to enhance graduate employability and self-reliance.
Keywords: Digital transformation, skills, Business Education, advanced technical, digital communication.

Introduction
In today's world, where digitalization is accelerating day by day, learner profiles and learning methods are undergoing a profound transformation. While information resources are expanding and constantly being updated the speed of access to information compels educators to reassess not only existing teaching methods but also learning environment and pedagogical understandings. In the face of rapidly evolving students' needs, transforming teaching methods has become not a preference but an inevitable necessity. The transformation in instructional technologies is fundamentally core dynamics and philosophies of education. The immediate access demands of generations and their expectations for individualized learning experiences, and their tendencies, towards interactive methods are challenging traditional education models and directing educators towards more flexible, student-centered and data-driven approaches, (Babican, 2025).
An ideal and sustainable economy is one which provides greatest amount of general well-being with the least number of resources use and environmental harm. Many graduates in diverse disciplines are experiencing an ever hill in the labour market, and Business Education graduates are not exempted.

The needs to teach Business Education students the relevant skills acquisition necessary to enable them alleviate economic pressures arises. One of the ways of doing this is to engage and inspire their participation in digital transformation skills acquisition, tutorial and webinar to acquire new digital skills and stay current with emerging technologies. Digital skills acquisitions therefore appear to be the answer to this predicament.

Ekoh-Nweke, Ezeabii, and Ikpeama, (2022) described digital transformation skills as range of abilities to use digital devices, communication applications, and network to access and manage information. The digital devices enable people to create and share digital content, communicate and collaborate and solve problems for effective and creative self-fulfillment in life, learning work and social activities. Today's job seekers require specialized skills to help them stand out from the crowd, especially in the areas of utilizing digital technologies. Okoye and Ubaka (2025) contented that skills acquisition in the areas that will be useful to Business Education students will enable them to become self- reliant, independent, and productive citizens in the society. The need then is to explore and experiment with different digital tools and platforms to find what works best for the individual needs in 21st century. Digital skills acquisition also includes digital literacy, data management collaboration work, communication, security and ability to solve problems in virtual environment. Digital skills acquisition is imperative because they aid in facilitating the adoption of new strategies, and processes that are vital for an organizational digital growth. Iwuoha and Emeasoba (2025) affirmed that digital transformation skill contributes greatly to the elimination of joblessness in Nigeria, the development of a positive attitude towards work, the development of entrepreurial ability, the building of self and the reduction of poverty and crimes rates in the country. The digital Era therefore calls for continuous acquisition of new skills and updating of existing ones in order to align with global trends. Digital skills also include the tools and software one can use in daily economic structure and or transaction. These are the tools used in jobs or studies, as well as tools used in spare-time such as social media. Aruah (2024) stated that digital skills is a general understanding of basic technology to complete work tasks or abilities that relates to a specific industry like software development hence business education students need skills for effective business collaboration. Another transformation skills that can be utilized by Business Education students is communication skills.

Communication skills are attribute of all living things, and the source of all human interactions. Communication skills can be defined as the ability to effectively use digital tools and technologies to communicate, collaborate, and share information with others. It is the communication which uses electronic media to transmit the information or message using computers, email, telephone, video calling, fax machine among others. Azubuike (2023) emphasized that it is the ability to use digital tools, such as computers, smartphones, and the internet, to communicate effectively. Communication skills are set of abilities required to effectively use technology to communicate, collaborate, and share information online. This can be developed by sharing data like images, graphics, sound, pictures, maps, software, and many things. Musa and Auwalu (2024) opined that digital communication skills allow lecturers and students to access the classroom from anywhere and anytime. In recent times, communication has greatly changed due to the way public interact and communicate with each other for different purposes like personal business, by using this it is very simple to communicate with the world. In order to meet up with the trend of event in this global age. Business Education students need to utilize advance technical skills for effective performance in their various place of work.

Advance technical skills can be referred to as skills, which a head of unit possesses and uses to enhance professional knowledge and attitudes of teachers so that they might, in turn improve the learning on students. Technical skills are attributes and qualities which enable one to perform the task within a particular occupation to a defined standard. Technical skills which are sometimes referred to as functional skills which relates to the competencies and knowledge that are essential in order for a person to do a particular job appropriately. In this regard, technical skills are knowledge of accounting skills which has to do with mastery of subject contents. To produce competitive students, educational institutions required qualified teachers with world class technical skills. Ganiu, Ayodeji and Akinnodi, (2025) expressed that as a matter of fact, university Business Education graduate's ought to possess the needed technical skills for effective teaching in colleges of education. Unfortunately, many Business Education graduates who are prospective teachers of business subject seem to lack skills needed to accomplish effective instruction, most of them often run away from teaching especially that of financial accounting after graduation. They prefer to teach simple subjects. Business Education students need to embrace these skills in order to meet up with 21st century goal.

Business Education is a skill-oriented programme directed towards equipping the recipient with relevant skills for success in paid or self-employment. It is an aspect of Vocational Education which involves acquisition of skills, knowledge and competencies which makes the recipients proficient in the area of

business. Ndom-Uchendu (2026) asserted that Business Education is a programme of instruction designed to empower students with skills for world of work and create for them empowerment opportunities. Aruah (2024) stated that Business Education is a form of Vocational Education that is directed towards developing the learner to become productive in learning paid employment and self-employment. Business Education is a part of the overall educational program that equips the recipient with the knowledge, skills, understanding and attitude required to perform well in the business world as a producer or consumer of goods and services. Musa and Auwalu (2024) opined that Business Education is the phase of education that prepares students to teach business courses. Business Education is an important component of Vocational Education, which is taught at both the secondary a higher level of education. Moreover, Business Education aims to prepare graduates to satisfy the needs of a rapidly growing society. It is against this background that the need arises to determine digital transformation skills utilized by Business Education students in colleges of education in South-East Nigeria.

Statement of problem

The advent of information and communication technology in every sphere of human endeavor has greatly transformed and improved the mode of operation especially in education. The introduction of digital transformation skills in education, business organization, marketing administration using digital based instruction also becomes imperative. In order to achieve these, objectives, digital based instruction need to be adequately utilized to facilitate effective teaching. The consequence of not acquiring digital transformation and advance technical skills for effective teaching and learning in this digital era have affected the level and quality of Business Education graduates' engagement and involvement in internet and modern technology in business. These trends are affecting the composition of employment, the nature of task carried out at work, and the skill required in the labour market. Though technological advances in digital skills are high, but their utilization in most tertiary institutions like colleges of education seems to be very scanty and underutilized. Therefore, the problem of this study was to ascertain the extent of digital transformation skills utilized by Business Education students in colleges of education in South East-Nigeria.

Purpose of the study

The main purpose of the study was to determine the extent of digital transformation skills utilization by Business Education students in colleges of education in South-East Nigeria. The study sought to:

iii. Determine the extent digital communication skills are utilized by Business Education students in colleges of education.
iv. Determine the advanced technical skills are utilized by Business Education students in colleges of education.

Research questions

The following research questions guided the study

3. To what extent does digital Communication skills are utilized by Business Education students in colleges of education in South East Nigeria.
4. To what extent does advance technical skills are utilized by Business Education students in colleges of education in South East Nigeria.

Research Hypotheses

The following null hypotheses were tested at 0.05 level of significance

1. A significant difference does not exist between the mean ratings of Business Educators and students on digital communication skills utilization by Business Education students in colleges of education in south east Nigeria.
2. There is no significant difference among the mean ratings of Business Educators and students on advanced technical skills utilization by Business Education students in colleges of education south east Nigeria.

Methodology

This study adopted a survey research design. Two research questions and two hypotheses guided the study. The population of the study comprised 83 respondents from federal and State colleges of education south eastern part of Nigeria. The entire population was used for the study since it was manageable. The instrument for data collection was a structured questionnaire designed by the researcher titled digital transformation skills required of Business Education students (DITSBES) the instrument was validated by three experts, two from Agricultural and Vocational Education (Business Education Unit) and one in measurement and evaluation all from Michael Okpara University of Agriculture Umudike, Abia State. The reliability of instrument was determined using

Cronbach Alpha which yielded 0.71, mean was used to answer the research questions and standard deviation was used to determine the homogeneity or closeness of the respondents' responses while analysis of variance (ANOVA) was used to test the hypotheses at 0.05 level of significance.

Results

Research Question One

To what extent are digital communication tools utilized by Business Education students in colleges of education south east Nigeria?

Table 1: Mean scores and Standard Deviations of the respondents on the extent of utilization of digital communication tools

S/N	Indicate the extent utilization of the following digital communication tools;	Business Educators			Students			Overall		
		$\bar{X}$	SD	Rms	$\bar{X}$	SD	Rms	X	SD	Decision
1	Zoom	2.42	0.70	LE	2.40	0.88	LE	2.42	0.75	LE
2	Google Classroom	2.29	0.66	LE	2.15	0.78	LE	2.25	0.69	LE
3	Microsoft Teams	2.37	0.88	LE	2.30	0.75	LE	2.37	0.88	LE
4	WhatsApp	3.12	0.81	HE	3.20	0.80	HE	3.14	0.70	HE
5	Email platforms	2.60	0.76	HE	2.55	0.52	HE	2.09	0.81	HE
6	Google Meet	2.32	0.99	LE	2.10	1.06	LE	2.26	0.90	LE
7	OneDrive	2.13	1.01	LE	2.08	0.90	LE	2.03	1.01	LE
8	Digital whiteboards	2.30	0.99	LE	2.25	0.98	LE	2.28	0.09	LE
9	PowerPoint	2.60	0.83	HE	2.51	0.90	HE	2.56	0.83	HE
10	Telegram	2.11	0.70	LE	2.08	0.80	LE	2.13	0.70	LE
	Cluster means and standard deviation	**2.43**	**0.83**	**LE**	**2.36**	**0.84**	**LE**	**2.35**	**0.74**	**LE**

Note: X = Mean, SD = Standard Deviation

The result presented in Table 1 showed that the respondents were of the view that digital communication skills are utilized to a low extent by Business Education students in colleges of education South East Nigeria. This is evidenced by the overall cluster mean scores of 2.35 which is below the criterion mean of 2.50. The overall cluster standard deviation score of 0.74 also indicated that the respondents were consistent in their opinions.

Hypothesis One

There is no significant difference in the mean scores of Business Educators and Business Education students on the extent of utilization of digital communication tools by Business Education students in colleges of education south east Nigeria

Table 2: Summary of t-test Analysis of mean scores of the respondents on the extent of utilization of digital communication skills by Business Education students

Group	N	X	SD	df	Sig	t-value	p-value	Decision
Business Educators	39	2.43	0.83					
Students	44	2.36	0.84	81	0.05	0.38	0.70	NS

DF = 81, S = Significant, NS = Not Significant

Data presented in table 2 reveal that the p-value obtained (0.70) is greater than the chosen alpha of 0.05 at 81 degrees of freedom. This indicates that Business Educators and Business Education students on the extent of utilization of digital Communication skills by Business Education students in colleges of education south east Nigeria. Therefore, the null hypothesis (H_{o1}) is not rejected.

Research Question Two

To what extent are advanced technical skills utilized by Business Education students in colleges of education south east advanced technical skills Nigeria?

Table 3: Mean scores and Standard Deviations of the respondents on the extent of utilization of advanced technical skills

S/N	Indicate the extent utilization of the following advanced technical skills;	Business Educators $\bar{X}$	SD	Rms	Students $\bar{X}$	SD	Rms	Overall X	SD	Decision
1	Tableau	1.70	0.52	LE	1.67	0.62	LE	1.69	0.57	LE
2	Lucid chart	1.10	0.40	LE	1.02	0.56	LE	1.75	0.48	LE
3	Docebo	1.51	0.62	LE	1.55	0.59	LE	1.53	0.61	LE
4	Adaptive learning platform	1.58	0.60	LE	1.40	0.85	LE	1.49	0.82	LE
5	Kaltura Learning	1.64	0.61	LE	1.50	0.72	LE	1.57	0.79	LE
6	Virtual reality simulation	1.65	0.55	LE	1.57	0.67	LE	1.61	0.61	LE
7	Coursera for Business	1.70	0.64	LE	1.55	0.78	LE	1.63	0.71	LE
8	Microsoft Power BI	1.33	0.60	LE	1.23	0.55	LE	1.28	0.71	LE
9	Advanced Excel	2.16	0.56	LE	2.10	0.70	LE	2.13	0.83	LE
10	Moodle	2.14	0.61	LE	2.11	0.58	LE	2.12	0.70	LE
	Cluster means and standard deviation	**1.65**	**0.57**	**LE**	**1.57**	**0.66**	**LE**	**1.68**	**0.68**	**LE**

The result presented in Table 3 showed that the respondents were of the view that advanced technical skills are utilized to a low extent by Business Education students in colleges of education South East Nigeria. This is evidenced by the overall cluster mean scores of 1.68 which is below the criterion mean of 2.50. The overall cluster standard deviation score of 0.68 also indicated that the respondents were consistent in their opinions.

Hypothesis Two

There is no significant difference in the mean scores of Business Educators and Business Education students on the extent of utilization of advanced technical skills by Business Education students in colleges of education south east Nigeria

Table 4: Summary of t-test Analysis of mean scores of the respondents on the extent of utilization of utilization of advanced technical skills by Business Education students

Group	N	X	SD		df	Sig	t-value	p-value	Decision
Business Educators	39	1.65	0.57						
Students	44	1.57	0.66		81	0.05	0.59	0.56	NS

Data presented in table 4 reveal that the p-value obtained (0.56) is greater than the chosen alpha of 0.05 at 81 degrees of freedom. This indicates that Business Educators and Business Education students on the extent of utilization of advanced technical tools by Business Education students in colleges of education south east Nigeria. Therefore, the null hypothesis (H_{o2}) is not rejected.

Discussion of the Findings

The findings of this study revealed that digital communication skills such as zoom, google classroom, Microsoft teams, telegram, google meet, and OneDrive are utilized to a low extent by Business Education students in Colleges of Education in South East Nigeria. The corresponding hypothesis indicated that Business Educators and Business Education students on the extent of utilization of digital Communication skills by Business Education students in colleges of education south east Nigeria. This finding suggests that, despite the global shift toward digitally mediated teaching, learning, and collaboration, Business Education students in the study area have not sufficiently embraced these platforms as functional tools for academic and professional engagement. This low level of utilization could be attributed to inadequate ICT infrastructure, poor internet connectivity, limited digital literacy training, and insufficient exposure to real-world applications of these tools within the curriculum. This finding aligns with the position of Ekoh-Nweke, Ezeabii and Ikpeama (2022), who found that Business Educators in universities in South East Nigeria adopted digital skills strategies only to a limited extent in teaching Business Education during the "new normal," largely due to inadequate digital competence and infrastructural constraints among staff and students. Similarly, Ademiluyi (2023) reported that ICT facilities were barely available, grossly inadequate, and largely underutilized for teaching business-related subjects, even where such facilities were nominally provided by government intervention. These convergent findings underscore a systemic pattern across Nigerian educational institutions, where the mere existence of digital communication skills does not translate into meaningful

or consistent utilization by students, largely because of gaps in access, training, and institutional support. The implication is that Business Education students may graduate without the collaborative and virtual communication competencies that are increasingly demanded in modern, digitally distributed workplaces, thereby widening the gap between curriculum content and industry expectations.

In addition, evidence from analysis of research question two revealed that advanced technical skills such as tableau, lLucidchart, docebo, Coursera for business, adaptive learning platforms, Moodle, and advanced excel are equally utilized to a low extent by Business Education students in the Colleges of Education studied. The corresponding hypothesis indicated that Business Educators and Business Education students on the extent of utilization of advanced technical tools by Business Education students in colleges of education south east Nigeria. This finding indicates a significant deficiency in students' exposure to and mastery of specialized, industry-relevant digital applications that support data analysis, process visualization, e-learning management, and advanced business computation. Given that these tools are central to data-driven decision-making and modern business operations, their underutilization signals a critical skills gap that could hinder graduates' competitiveness in contemporary labour markets. This finding is consistent with the work of Obi and Arhueremu (2020), who found that ICT resources for teaching Business Education programmes in Colleges of Education in Delta State were available and utilized only to a limited extent, a situation they attributed to inadequate funding, poor maintenance culture, and insufficient technical know-how among both lecturers and students. It also corroborates the findings of Ubaka (2025), who established that business education students required, but had not sufficiently acquired, digital skills necessary for self-reliance and sustainable economic ventures, noting that advanced digital competencies remained largely underdeveloped among students in Colleges of Education in Anambra State. Thus, these findings suggest that the underutilization of advanced technical tools is not peculiar to the present study area but reflects a broader national challenge rooted in infrastructural deficits, inadequate staff capacity to model the use of such tools, and curricula that have not fully integrated contemporary digital business applications.

Conclusion

Based on the findings made, the following conclusion was drawn. It can be concluded that both categories of digital transformation skills are utilized to a low extent among Business Education students in the area studied. Digital communication tools such as Zoom, Google Classroom, Microsoft Teams, Telegram, Google Meet, and OneDrive, which are essential for collaborative learning, virtual engagement, and workplace communication, remain underutilized. Similarly, advanced technical tools such as Tableau, Lucidchart, Docebo, Coursera for Business, Adaptive Learning Platforms, Moodle, and Advanced Excel, which support data analysis, digital instruction, and modern business operations, are also poorly utilized by students. The study further revealed that business educators and Business Education students ranked low on the extent of utilization of digital communication and advanced technical tools by Business Education students in colleges of education south east Nigeria.

Recommendations

Based on the findings and conclusion of this study, the following recommendations were made:

1. Colleges of Education should organize regular digital skills training workshops to expose Business Education students to the practical use of digital communication tools such as Zoom, Microsoft Teams, Google Classroom, and Google Meet, thereby improving their competence and confidence in using these platforms for learning and collaboration.
2. Government and relevant education agencies should provide adequate funding for the procurement and maintenance of ICT infrastructure, including reliable internet connectivity, computers, and software licenses, to support the effective utilization of both digital communication and advanced technical tools in Colleges of Education.
3. Lecturers in Colleges of Education should undergo continuous professional development and retraining programmes in digital transformation tools, as their own proficiency directly influences their ability to model and teach these skills effectively to students.
4. Institutions should establish functional ICT and e-learning centres equipped with adaptive learning platforms and business intelligence software, giving students hands-on access and practice opportunities beyond the classroom.

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TRANSFORMING PROFESSIONAL IDENTITY: ENHANCING INTERPERSONAL AND COMMUNICATION COMPETENCE IN OFFICE TECHNOLOGY AND MANAGEMENT STUDENTS FOR THE DIGITAL WORKPLACE

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Abstract

This study investigated the impact of shifting perspectives through transformative teaching approaches on building the interpersonal and communication competence of OTM students in preparing them for the global workplace. A survey research design was adopted for the study. The population comprised 323 OTM lecturers and final-year HND students across four Federal Polytechnics, from which a sample of 175 (40 lecturers, 135 students) was drawn using simple random sampling based on the Krejcie and Morgan table. Data were gathered using a validated structured questionnaire titled "Transformative Teaching and Competence Scale" (TTCS). The internal consistency of the instruments was calculated using Cronbach's alpha which yielded a Cronbach's alpha reliability coefficient of 0.84. The null hypothesis, which stated that shifting perspectives through transformative teaching does not significantly enhance the interpersonal and communication competence of OTM students, was tested using the Pearson Product Moment Correlation Coefficient (PPMCC) at a 0.05 level of significance. The findings revealed that perspective-shifting pedagogical approaches exert a statistically significant positive effect on the development of students' interpersonal and communication abilities. Consequently, the null hypothesis was rejected. Exposure to transformative learning environments successfully catalysed a shift from a passive student mindset to an active, globally-oriented professional identity. The study concludes that OTM education must transcend technical instruction to remain relevant in the digital era; it must actively foster professional identity transformation. It is recommended that OTM educators intentionally integrate transformative strategies such as reflective journaling and collaborative workplace simulations into curriculum implementation to cultivate communicative and globally competitive graduates.

Keywords: Transformative Teaching, OTM Students, Professional Identity, Interpersonal Competence, Digital Transformation.

Introduction

The contemporary global economic landscape is undergoing an unprecedented paradigm shift driven by digital acceleration and entrepreneurial disruption. In the opinion of Asiru and Oladipo (2023), this transformation is reshaping corporate operational structures, redefining administrative workflows, and placing new demands on human capital. Historically, higher education programs in Office Technology and Management (OTM), formerly known as Secretarial Studies, primarily focused on equipping students with technical and hard skills, such as advanced word processing, shorthand, and basic data management (Ezenwafor & Okeke, 2022). In its contemporary iteration, the OTM programme is a specialized educational curriculum designed to replace these localized secretarial studies with a comprehensive, technology-driven approach to workplace administration (Iheukwumere, Uteh & Nkemjika, 2023). Akintola and Akintola (2023) note that, governed by modern vocational and technical education standards, the primary objective of the OTM curriculum is to equip students with a blend of advanced information and communication technology (ICT) competencies, electronic office

applications, and critical socio-psychological work attributes. However, Ndidi (2026) argues that in an era characterized by automated administrative processes, cloud computing, and artificial intelligence, technical literacy alone is no longer a differentiator for career readiness. This explains why Nwokike, Okechukwu, and Udoudo (2024) assert that the contemporary digital workplace requires OTM professionals who can seamlessly navigate cross-cultural communication, manage complex digital relations, and exhibit superior emotional intelligence. Consequently, global workplace readiness has increasingly come to depend on interpersonal and communication competence. Moreover, the digital and entrepreneurial transformation sweeping across the globe demands that Office Technology and Management (OTM) graduates possess robust soft skills alongside technical skills. While traditional business education heavily emphasizes technical proficiency, global workplace readiness increasingly hinges on soft skills. Transformative teaching, which triggers a shift in students' professional identity perspective, offers a critical pedagogical pathway to bridge this gap.

Despite the critical nature of these interpersonal soft skills, traditional office management education instructional models in higher education institutions remain rigidly didactic and tech-centric. This conventional framework, as confirmed by Aina and Olanipekun (2025), creates a structural disconnect in that students graduate with technical certifications but lack the communicative flexibility required to thrive in fast-paced, digital, and entrepreneurial business environments. To remedy this skills gap, scholars have advocated for a pedagogical pivot away from rote technical instruction toward transformative teaching approaches. Rooted in Mezirow's (1991, 1997) Transformative Learning Theory, transformative teaching involves intentionally designing learning environments that trigger a "disorienting dilemma" such as a complex, unscripted workplace simulation that forces students to critically reflect on their embedded assumptions, values, and mindsets. Cranton and Taylor (2012) declare that rather than simply adding new facts to an existing cognitive framework, transformative teaching changes how students think, behave, and perceive themselves.

Central to this transformative pedagogical paradigm is the concept of professional identity transformation. Academic journeying is frequently restricted to a "student identity" characterized by passive reception, compliance, and localized performance tracking. Jarvis-Selinger, Pratt, and Regehr (2012) believe that, in contrast, the globalized digital economy demands that OTM graduates undergo an internal psychological shift, shedding their passive student mindsets to adopt an active, globally-oriented professional identity before entering the workforce. When OTM educators introduce perspective-shifting pedagogical strategies such as deep reflective journaling, multi-tiered collaborative peer projects, and high-fidelity digital client simulations, they actively bridge the gap between classroom theory and corporate reality. This psychological maturation from a novice student to a strategic administrative collaborator has been theorized to naturally accelerate the acquisition of advanced communication and interpersonal competencies (Trede, Macklin & Bridges, 2012).

While the theoretical link between transformative education and identity construction is well-documented in teacher education literature, its empirical application within business education particularly within the OTM discipline remains significantly under-researched. Many institutions continue to evaluate OTM readiness purely through a technical lens, disregarding the socio-linguistic and relational adjustments necessitated by digital and entrepreneurial transformation. To address this gap, this study investigates how shifting perspectives through transformative teaching approaches build interpersonal and communication competence among OTM students. By examining these structural interactions, this paper aims to provide business education stakeholders, curriculum designers, and policy-makers with an empirical blueprint for modernizing OTM programmes to meet the fluid demands of the digital frontier.

Statement of the Problem

The traditional educational model for Office Technology and Management (OTM) programs in Nigerian tertiary institutions is facing a critical crisis of relevance. Historically engineered to produce administrative personnel with high technical and mechanical proficiency, the current curriculum remains heavily biased toward technical skills. However, the sweeping digital and entrepreneurial transformation across the nation's corporate landscape has fundamentally altered the role of the modern office manager. Technical workflows are increasingly automated, shifting the human value proposition in the workplace from routine execution to advanced relational management, strategic communication, and cross-cultural digital collaboration (Asiru & Oladipo, 2023).

Despite this shift, a stark disconnect persists between higher education outcomes and corporate realities. OTM graduates are entering the globalized workforce with high technical certifications but a critical deficit in interpersonal and communication competence as confirmed by Aina and Olanipekun (2025). This soft skills gap manifests in an inability to navigate high-stakes professional

negotiations, manage workplace conflicts, or communicate adaptively across digital platforms. This deficiency is structurally rooted in the psychological framing of the educational experience itself; students are trained in a rigid, passive, and compliance-driven "student identity" rather than being guided to internalize an active, globally-minded "professional identity."

While transformative teaching strategies using perspective-shifting, reflective practices, and high-fidelity simulations to catalyze professional identity transformation have successfully bridged the gap in other global professional disciplines, their empirical application within OTM education remains largely ignored. Existing research continues to evaluate OTM competencies through a purely hard-skills lens, leaving a glaring gap regarding how pedagogical shifts can cultivate relational competencies. Without a deliberate shift toward transformative learning paradigms, OTM programs risk producing technically literate but interpersonally incompetent graduates who are structurally ill-equipped for the fluid, communicative, and entrepreneurial demands of the modern digital frontier. This study explicitly addresses this challenge by evaluating the extent to which perspective-shifting through transformative teaching builds the interpersonal and communication competence necessary to secure global workplace readiness for OTM students.

Research Question

In what ways can shifting perspective in transformative teaching approach build interpersonal and communication competence in OTM students?

Hypothesis

Ho: Shifting perspectives in transformative teaching does not significantly enhance the interpersonal and communication competence of OTM students in preparing them for the global workplace.

Method

The study adopted a descriptive survey research design. This design is appropriate as it allows for the collection of data from a large group of OTM students and lecturers to describe current teaching practices and their perceived impact on employability skills without manipulating the environment. The area of the study was Federal Polytechnics in South East Nigeria that offer Office Technology and Management (OTM) programme. These institutions are the primary hubs for vocational and technical training aimed at immediate labour market entry. They are Akanu Ibiam Federal Polytechnic, Unwana; Federal Polytechnic, Oko; Federal Polytechnic, Nekede; and Federal Polytechnic, Isuochi. The population comprised all final-year HND (Higher National Diploma) students and OTM lecturers within the chosen institutions. Final-year students were selected because they had undergone the majority of the curriculum and were transitioning into the workforce. The total number of the population was 323 which was made of 48 lecturers and 275 HND II students. A sample size of 175, made up of 40 lecturers and 135 students, was used. This number was based on the approved table developed by Krejcie and Morgan cited by Igwe (2018). Sampling was by simple random sampling.

The primary instrument for data collection was a structured questionnaire titled "Transformative Teaching and Competence Scale" (TTCS). The questionnaire was designed on a 4-point Likert Scale (e.g., Strongly Agree to Strongly Disagree) and was divided into sections covering: Shifting perspectives and interpersonal/communication competence. The instrument was subjected to face and content validity by three experts in the field of Business Education and Measurement and Evaluation The reliability of the instrument was ensured using the Cronbach Alpha method with a reliability coefficient of 0.886. Data was collected through both physical administration of the questionnaire and online Google Forms to ensure maximum reach. Descriptive Statistics: Mean and standard deviation were used to answer the research questions. A mean score of 2.50 (the midpoint of the 4-point scale) was the benchmark for agreement. Pearson Product Moment correlation Coefficient (PPMCC) was used to test the null hypotheses at a 0.05 level of significance meaning that the higher the correlation coefficient, the stronger the association between the two variables. The correlation coefficient could be either positive or negative, depending on the direction of the relationship between two variables.

Findings

Research Question: In what ways can shifting perspective in transformative teaching approach build interpersonal and communication competence in OTM students?

Table 1: Mean and standard deviation of responses on how shifting perspective in transformative teaching approach builds interpersonal and communication competence in OTM students.

S/N	Variables	Mean	SD	REMARK
1.	Teaching methods successfully shift the student's identity from a "support clerk" to a "strategic business partner."	3.7	1.923	Agree
2.	Collaborative projects with diverse teams improve students' cross-cultural communication abilities.	3.5	1.871	Agree
3.	Role-playing exercises are used to develop emotional intelligence (EQ) for navigating difficult office politics.	3.3	1.816	Agree
4.	Students are trained to use virtual collaboration tools (Zoom, Teams, Slack) to lead professional meetings.	3.8	1.949	Agree
5.	Transformative feedback from lecturers helps students build the confidence to interact with international clients.	3.7	1.923	Agree
	Grand mean and Standard Deviation	**3.6**	**1.896**	

In Table 1, the results indicate that all the items were rated as “Agree” by the respondents. The standard deviation which ranged from 1.816-1.949 reveals the closeness of the respondents’ views. The findings reveal that respondents strongly agreed that transformative teaching approach builds interpersonal/communication skills in OTM students.

Hypothesis

Shifting perspectives in transformative teaching does not significantly enhance the interpersonal and communication competence of OTM students in preparing them for the global workplace.

Table 2: Correlation Result of Shifting Perspective and Interpersonal and communication competence of OTM Students.

		Shifting Perspective	Interpersonal/communi-cation competence of OTM Students
Shifting Perspective	Correlation Coefficient	1.000	.865
	Sig. (2-tailed)	.	.000
	N	175	175
Interpersonal/communication competence of OTM students	Pearson Correlation	.865	1.000
	Sig. (2-tailed)	.000	.
	N	175	175

Correlation is significant at the 0.01 level (2-tailed). Null hypothesis is therefore rejected.

Discussion of Findings

The empirical data presented in Table 1 demonstrates that shifting perspectives within a transformative teaching approach substantially builds robust interpersonal and communication skills among Office Technology and Management (OTM) students. This is statistically validated by a grand mean score of 3.6 and a grand standard deviation of 1.896, indicating strong agreement and narrow variance in the respondents’ viewpoints. The findings establish that modern interpersonal competence is significantly improved when instructors consciously transition students away from legacy mindsets toward contemporary workplace realities. This is in congruence with the assertions of Benson (n.d.) and Troop (n.d.).

The data analysis highlights three critical pillars through which a perspective shift drives interpersonal growth: virtual leadership and modern collaboration tools, professional identity transformation, and emotional intelligence and cross-cultural competence. These prove that training

students to lead professional meetings via virtual collaboration tools (e.g., Zoom, Teams, Slack) builds immense communication competence. This is in agreement with Carter (n.d.), who observes that in an increasingly digitalized global economy, mastery over these platforms represents more than just a technical skill; it forms the baseline for modern team management. By stepping into leadership roles within simulated digital frameworks, students shift their frames of reference from passive participants to proactive organizational leaders. It also shows that successful pedagogical interventions alter a student's self-perception from a traditional "support clerk" to a "strategic business partner," while transformative feedback gives them the confidence to engage with international clients. This shift directly supports Mezirow's (1997) foundational Transformative Learning Theory, which states that adult education achieves its highest efficacy when learners experience a deep structural shift in their mental models and professional identities (as cited in Benson, n.d.; Macharaga & Mukeredzi, 2023).

The results also show that engaging in collaborative projects within diverse teams, and using role-playing exercises to navigate workplace politics, advances relational skills. This is in line with Latusek (n.d.) and Macharaga and Mukeredzi (2023), who argue that by forcing students to process complex relational "grey areas" and diverse corporate viewpoints, these methods build the emotional intelligence, empathy, and situational awareness necessary for corporate conflict resolution and intercultural workplace settings. The overall metrics confirm that communication and interpersonal skills within Office Technology and Management programmes cannot be effectively taught through simple lectures or passive observation. Preparing future-proof OTM professionals requires a transformative pedagogical framework that deliberately restructures the student's identity, leverages collaborative technologies, and demands ongoing critical perspective changes.

Conclusion

Based on the empirical findings of this study, it is concluded that technical literacy alone is no longer the definitive benchmark for graduate readiness in an era defined by digital and entrepreneurial transformation. The rejection of the null hypothesis proves that shifting student perspectives via transformative teaching methodologies yields a statistically significant positive effect on the development of critical soft skills.

When business educators transition from rigid, didactic instructional models to reflective, transformative pedagogical strategies, it triggers a fundamental shift from a passive student mindset to an active, globally-competitive professional identity. This internal psychological evolution directly enhances the interpersonal and communication competencies of Office Technology and Management (OTM) students. Ultimately, cultivating these relational soft skills is vital for transforming graduates from mere mechanical operators into strategic, adaptive communicators capable of navigating the complex demands of the modern corporate landscape.

Recommendations

To ensure OTM programmes remain relevant amidst continuous digital disruptions, the following recommendations are proposed:

1. Business education curriculum planners should intentionally restructure OTM syllabi to transition away from purely technical instruction. Curricula must systematically embed perspective-shifting activities such as experiential learning projects, cross-cultural digital client simulations, and consistent reflective journaling to make soft-skill development an explicit learning outcome.
2. Tertiary institution administrators should establish targeted professional development and training workshops for OTM lecturers. These programs should equip educators with the facilitation skills necessary to design "disorienting dilemmas," manage collaborative peer learning spaces, and assess identity-driven competencies rather than relying strictly on traditional rote testing.
3. Institutional administrators should invest in modern administrative simulation hubs that mirror contemporary, agile, and entrepreneurial workplace environments. Exposing students to these unscripted, high-stakes corporate scenarios before graduation forces the critical cognitive adjustments required to internalize a professional identity.
4. OTM departmental board must establish active partnerships with regional digital entrepreneurs and corporate leaders. These collaborations will ensure that classroom simulations and communication modules adapt in real-time to the shifting relational demands and sociolinguistic expectations of the global marketplace.

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DIGITAL BUSINESS EDUCATION SKILLS AND STARTUP CREATION AMONG BUSINESS EDUCATION GRADUATES OF FEDERAL COLLEGE OF EDUCATION, ABEOKUTA, OGUN STATE, NIGERIA

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Abstract

This paper investigated the impact of digital business education skills on startup creation among graduates of Federal College of Education, Abeokuta, Ogun State, Nigeria. The increasing digitization of business processes and the expansion of the digital economy have heightened the need for business education programmes to equip graduates with relevant digital competencies that enhance entrepreneurial outcomes. Despite the efforts of curriculum planners on curriculum reforms which is aimed at integrating digital components into business education, evidence on how such competencies translate into actual startup formation among graduates remains limited. The study adopted a descriptive survey research design. The target population comprised Business Education graduates of Federal College of Education, Abeokuta who graduated between 2019 and 2024, from which a sample of 300 respondents was selected using stratified random sampling. Data were collected through a structured questionnaire measuring digital business education skills, as well as startup creation. Data were analysed using descriptive statistics, Pearson Product Moment Correlation and multiple regression analysis at the 0.05 level of significance. Findings revealed a significant positive relationship between digital business education skills and startup creation. Digital marketing and e-commerce competencies emerged as the strongest predictors of venture initiation and early business sustainability. The study concludes that acquisition of practical digital business skills substantially enhances graduates' capacity to identify opportunities, establish ventures and manage emerging businesses in the digital economy. It recommends continuous strengthening of the Business Education curriculum, experiential digital entrepreneurship training, practical e-commerce and digital marketing laboratories, fintech training, and stronger partnerships between institutions and industry to promote sustainable startup development among Business Education graduates.

Keywords: Digital business education skills, digital marketing, e-commerce, fintech literacy, startup creation, Business Education graduates, digital entrepreneurship.

Introduction

Businesses increasingly depend on digital platforms, electronic payment systems, social media, e-commerce applications, data analytics and other technology-enabled tools to identify customers, develop products, market offerings and manage business operations. Consequently, the ability to combine conventional business knowledge with digital competencies has become increasingly important for entrepreneurs and graduates seeking to establish sustainable ventures. Digital entrepreneurship represents an important dimension of this transformation. Nambisan (2017) explains that digital technologies have altered entrepreneurial processes and outcomes by changing how opportunities are identified, resources are mobilised and ventures are developed. Digital technologies make entrepreneurial processes less geographically bounded and provide entrepreneurs with new ways of creating and delivering value. Similarly, digital entrepreneurship involves ventures that make huge use of digital products, services, workplaces and computer-mediated communication. The growing relevance of digital entrepreneurship is particularly important in developing economies such as Nigeria, where graduate unemployment, underemployment and the need for self-employment remain significant socioeconomic concerns. The World Bank (2019) identifies digital infrastructure, digital platforms, digital financial services, digital entrepreneurship and digital skills as important pillars of Nigeria's digital economy. The report further observes that strengthening digital skills and entrepreneurship can create new economic opportunities, support job creation and contribute to economic transformation.

Business Education has an important role in this context. Traditionally, Business Education has been concerned with developing knowledge and practical competencies in areas such as accounting, office technology, marketing, management, entrepreneurship and business communication. However, the digital transformation of business requires Business Education to move beyond conventional competencies toward digitally enabled entrepreneurial capabilities. Digital business education skills can be understood as the combination of business knowledge and technological competencies required to identify, establish and manage business opportunities through digital technologies. Such competencies include digital marketing, e-commerce management, financial technology literacy, business analytics, social media management, online customer relationship management and digital communication. Evidence from Nigerian studies supports the increasing importance of these competencies. Enang (2024) argues that Business Education students need digital entrepreneurial competencies to remain relevant in the twenty-first-century digital economy and recommends their systematic integration into Business Education curricula. Falobi (2023) in his study of Business Education students in universities in Lagos State also found that digital entrepreneurship competencies require further development, particularly in areas such as digital marketing and e-content development. Otamiri and Enendu (2023) examined digital skills and entrepreneurial behaviour among Business Education postgraduate students in selected South-South Nigerian universities. Their correlational study reported a strong positive relationship between digital skills and entrepreneurial behaviour.

Ediagbonya, Bupo and Edionwe (2024) investigated digital entrepreneurship education and entrepreneurial self-efficacy as predictors of digital entrepreneurial intention among Business Education students in Edo State. Their results showed that digital entrepreneurship education significantly predicted students' digital entrepreneurial intention, while entrepreneurial self-efficacy also had a significant influence. Zubair, Olawepo and Adegbenjo (2026) examined entrepreneurship education and digital skills acquisition in selected federal tertiary institutions in Osun State. Their findings revealed a substantial positive association between entrepreneurship education and digital skills, although curriculum gaps, inadequate infrastructure and insufficient lecturer training constrained the development of digital competencies. More recently, Zubair, Olawepo and Adegbenjo (2026) reported a positive relationship between entrepreneurship education and digital skills among students in selected federal tertiary institutions in Osun State, although they identified gaps in digital marketing, e-commerce and data analytics within existing programmes.

The relevance of these competencies extends beyond employability to actual business creation. Digital platforms can reduce some of the barriers traditionally associated with starting a business. An entrepreneur can use social media to promote products, electronic payment platforms to receive payments, e-commerce platforms to reach customers and data analytics to monitor customer behaviour. Therefore, graduates with relevant digital business competencies may have greater capacity to convert business ideas into actual ventures. Recent evidence also demonstrates the importance of digital capabilities for business performance in Nigeria. Ayokunmi, Abu Seman and Rashid (2026), for example, examined e-commerce implementation and social media marketing among Nigerian SMEs and highlighted their relevance to enterprise performance in the digital era. However, possessing digital knowledge does not automatically result in startup creation. There may be a gap between acquiring digital skills in an educational institution and applying those skills to create an operational business. Ore and Hassan (2023) found that Business Education curriculum content in public universities in Lagos State did not adequately equip students with the entrepreneurial skills required for self-reliance, recommending regular curriculum enrichment and updating. This gap provides justification for examining whether the digital business skills acquired through Business Education actually translate into startup creation after graduation. The present study therefore focuses specifically on graduates of Federal College of Education, Abeokuta, Ogun State, with emphasis on graduates from 2019 to 2024.

Concept of Digital Business Education Skills

Digital business education skills refer to the integrated technological, managerial, entrepreneurial and business competencies required to conduct business activities effectively in a digitally connected economy. They involve the capacity to use digital tools to identify business opportunities, communicate with customers, market products, receive payments, analyse information and manage business processes. The concept goes beyond basic computer literacy. A graduate may know how to operate a computer without necessarily possessing the ability to use digital technology to establish and grow a business. Digital business skills therefore require the application of technology to actual business functions. Nambisan (2017) observes that digital technologies have changed entrepreneurial processes and outcomes. Digital tools influence opportunity recognition, venture creation, innovation and market development. In Business Education, digital competencies should consequently be integrated with traditional business competencies. A graduate should be capable of combining marketing knowledge

with social media advertising, accounting knowledge with digital financial platforms, entrepreneurial knowledge with e-commerce, and management knowledge with business analytics.

Digital Marketing Skills: Digital marketing refers to the use of internet-based and electronic technologies to promote products, communicate with customers and generate sales. Digital marketing skills include search engine marketing, social media advertising, content creation, email marketing, online customer engagement, digital branding and performance monitoring. For startups, digital marketing can be particularly valuable because it enables small businesses to reach potential customers without the substantial advertising expenditure associated with traditional media. Graduates who possess digital marketing competencies may therefore be better positioned to identify target markets, build customer relationships and promote newly established ventures. The relevance of digital marketing is supported by recent Nigerian evidence. Ayokunmi, Abu Seman and Rashid (2026) identify social media marketing as an important dimension of SME performance in Nigeria's digital business environment.

E-Commerce Operational Skills: E-commerce involves buying, selling and exchanging products or services through electronic networks, particularly the internet. E-commerce operational skills include online store development, product listing, digital payment integration, order management, customer service, online logistics coordination and electronic transaction management

Financial Technology Literacy: Financial technology literacy refers to the ability to understand and effectively use technology-enabled financial services. It includes knowledge of electronic payments, mobile banking, digital wallets, online transfers, payment gateways, transaction security and basic digital financial management. Fintech literacy is important for startup development because modern businesses increasingly depend on electronic payment and financial management systems. Graduates who understand digital financial services can facilitate transactions, monitor cash flows and provide convenient payment channels for customers. The World Bank's Nigeria Digital Economy Diagnostic identifies digital financial services as one of the key foundations of Nigeria's digital economy.

Business Analytics Skills: Business analytics involves the systematic use of data to support business decision-making. For startup entrepreneurs, analytics can help determine customer preferences, sales trends, advertising effectiveness, inventory requirements and financial performance. The increasing availability of digital data means entrepreneurs can make decisions based on customer behaviour rather than intuition alone. Consequently, Business Education programmes should provide graduates with practical exposure to spreadsheets, dashboards, basic statistical applications and digital business intelligence tools.

Social Media Management Skills: Social media management involves planning, creating, publishing and evaluating content across social networking platforms. For startups, social media provides opportunities for brand development, customer interaction, market research, product promotion and relationship management. Social media can also facilitate entrepreneurial networking by connecting entrepreneurs with customers, suppliers, investors and other entrepreneurs. Thus, social media management is not merely a communication skill but a strategic entrepreneurial competence.

Startup Creation

Startup creation refers to the process through which an individual transforms a business idea or opportunity into an operating business venture. It may involve identifying an opportunity, developing a business model, mobilising resources, launching the business, registering the enterprise and developing an initial customer base. In this study, startup creation is operationalised through four major indicators: business initiation, formal registration, digital presence and early-stage performance. Business initiation represents the actual commencement of commercial activity. Formal registration reflects the extent to which the enterprise has been legally recognised where applicable. Digital presence includes the use of websites, social media pages, online stores or other digital channels. Early-stage performance relates to the venture's ability to attract customers, generate sales and maintain operations during its initial period. The distinction between entrepreneurial intention and startup creation is important. Intention represents a person's willingness or plan to establish a business, whereas startup creation reflects the translation of entrepreneurial aspirations into actual business activity.

Theoretical Framework

Human Capital Theory

The study is partly anchored on Becker's (1993) Human Capital Theory. Human capital theory proposes that education and training constitute investments that increase an individual's knowledge, skills and productive capacity. Becker conceptualises education and training as forms of investment that can generate future economic returns. Applied to this study, Business Education represents an investment in human capital. When graduates acquire digital marketing, e-commerce, fintech, analytics and social media skills, they increase their capacity to identify and exploit entrepreneurial opportunities. Such

competencies can enhance their ability to create and manage businesses. The theory therefore provides an explanation for why graduates with stronger digital business competencies may have greater capacity for startup creation.

Theory of Planned Behaviour

The study is also supported by Ajzen's (1991) Theory of Planned Behaviour (TPB). According to the theory, behaviour is influenced by behavioural intentions, while intentions are shaped by attitudes, subjective norms and perceived behavioural control. Ajzen explains that perceived behavioural control can also contribute directly to actual behaviour. In the context of the present study, digital business education skills can enhance graduates' perceived behavioural control by increasing their confidence in their ability to undertake entrepreneurial activities. A graduate who understands how to market products online, operate an e-commerce platform, receive digital payments and analyse business information may perceive startup creation as more achievable. The TPB therefore provides a useful explanation of how skills may contribute to the transition from entrepreneurial intention to entrepreneurial action.

Empirical Review

Existing empirical evidence increasingly demonstrates the relationship between digital competencies and entrepreneurial outcomes among Nigerian students and graduates. Falobi (2023) examined skills acquired by Business Education students in Lagos State for exploring digital entrepreneurship opportunities. The study used a descriptive research design and surveyed students from the University of Lagos and Lagos State University. The findings indicated the need for further development of skills, particularly in digital marketing and e-content writing.

Otamiri and Enendu (2023) examined digital skills and entrepreneurial behaviour among Business Education postgraduate students in selected South-South Nigerian universities. Their correlational study reported a strong positive relationship between digital skills and entrepreneurial behaviour.

Ediagbonya, Bupo and Edionwe (2024) investigated digital entrepreneurship education and entrepreneurial self-efficacy as predictors of digital entrepreneurial intention among Business Education students in Edo State. Their results showed that digital entrepreneurship education significantly predicted students' digital entrepreneurial intention, while entrepreneurial self-efficacy also had a significant influence. Zubair, Olawepo and Adegbenjo (2026) examined entrepreneurship education and digital skills acquisition in selected federal tertiary institutions in Osun State. Their findings revealed a substantial positive association between entrepreneurship education and digital skills, although curriculum gaps, inadequate infrastructure and insufficient lecturer training constrained the development of digital competencies.

Ore and Hassan (2023) examined Business Education curriculum content and entrepreneurial skills development among students in public universities in Lagos State. Their findings indicated that existing curriculum content did not adequately equip students with the entrepreneurial skills needed for self-reliance, leading the authors to recommend regular curriculum enrichment. Amuda, Zubairu, Ibrahim and Maitala (2019) examined the impact of entrepreneurship education on entrepreneurial intention among Nigerian entrepreneurship students. Their comparison of final-year and second-year students found no significant difference in entrepreneurial intentions, suggesting that simply offering entrepreneurship education may not automatically produce the desired entrepreneurial outcomes and that curriculum revision may be necessary.

Baba and Audu (2024) examined entrepreneurship education and self-efficacy among undergraduate students at a Nigerian university. Their regression findings indicated that entrepreneurship education and self-efficacy were positively related to entrepreneurial intention.

The reviewed studies provide substantial support for the relevance of digital competencies and entrepreneurship education. However, many focus on students' entrepreneurial intention rather than actual startup creation. The present study therefore extends the literature by investigating actual startup-related outcomes among graduates of a College of Education.

Statement of the Problem

The Nigerian economy is experiencing rapid digital transformation, with businesses increasingly using social media, e-commerce, mobile payment systems, digital advertising and data-driven decision-making. This transformation has created opportunities for graduates to establish businesses with relatively lower entry barriers. Nevertheless, graduate unemployment and limited capacity for sustainable self-employment remain important challenges.

Business Education is expected to prepare graduates for employment and entrepreneurship by equipping them with relevant business knowledge and practical skills. However, there is concern that some Business Education programmes may not sufficiently reflect the rapidly changing digital business environment. Where digital components are treated mainly as theoretical subjects rather than practical

entrepreneurial competencies, graduates may complete their programmes without being sufficiently prepared to establish and sustain digital-enabled ventures.

The problem is therefore not simply whether graduates have been exposed to digital technologies, but whether their digital business education skills can be translated into actual startup creation. Skills in digital marketing, e-commerce, fintech, business analytics and social media management could potentially enhance opportunity identification, market access, customer engagement and operational efficiency. Yet empirical evidence linking these specific skills to startup creation among Business Education graduates in the Nigerian College of Education context remains limited.

The present study addresses this gap by moving beyond intention and examining startup creation among graduates. Specifically, it investigates whether digital marketing, e-commerce operations, fintech literacy, business analytics and social media management contribute to the actual initiation and early development of startups established by Business Education graduates of Federal College of Education, Abeokuta.

Purpose of the Study

The main purpose of this study was to investigate the impact of digital business education skills on startup creation among Business Education graduates of Federal College of Education, Abeokuta, Ogun State.

1. determine the level of digital business education skills possessed by Business Education graduates;
2. determine the contributions of digital business education skills to startup creation among the graduates.

Research Questions

The following research questions guided the study:

1. What is the level of digital business education skills possessed by Business Education graduates of Federal College of Education, Abeokuta?
2. To what extent do digital business education skills predict startup creation among Business Education graduates of Federal College of Education, Abeokuta?

Methodology

The study adopted a descriptive survey research design. The design was considered appropriate because the study sought to obtain information directly from Business Education graduates concerning their digital business education skills and startup creation experiences. The population comprised Business Education graduates of Federal College of Education, Abeokuta who graduated between 2019 and 2024. A sample of 300 Business Education graduates will be selected through simple random sampling. Data were collected using a structured questionnaire titled “Digital Business Education Skills and Startup Creation Questionnaire (DBESSCQ).” The questionnaire which contained 20 items arranged on a 4 likert scale ranging from Strongly Agree to Strongly Disagree. The instrument was reviewed by experts in Business Education, Entrepreneurship Education, Educational Technology, and Measurement and Evaluation**.** A pilot test was conducted among graduates who are not included in the main study. Cronbach's alpha coefficicent of 0.70 was obtained to determine the internal consistency of the items. Data collected were analyzed using descriptive statistics of mean and standard deviation to answer the research questions. A decision rule of 2.50 was set as the benchmark, such that any item with a mean score equal to or above 2.50 was considered “Agreed,” while any item below 2.50 was regarded as “Disagreed.”

Results

Research Question 1

What is the level of digital business education skills possessed by Business Education graduates of Federal College of Education, Abeokuta?

S/N	Item	Mean	SD	Decision
1	I can develop and implement digital marketing campaigns for a business using online platforms.	3.18	0.71	High extent
2	I can create and manage business pages on social media platforms to promote products or services.	3.25	0.68	High extent
3	I can set up and manage an online store or other e-commerce platform for selling products or services.	3.04	0.76	High extent
4	I can process and manage business transactions through digital payment and financial technology platforms.	3.11	0.73	High extent
5	I can use spreadsheets and other digital applications to analyse sales, customer and financial information.	2.96	0.81	High extent

S/N	extent of digital business education skills predict startup creation among graduates of Federal College of Education, Abeokuta	Mean	SD	Decision
1	My digital marketing skills enable me to identify target customers and promote a new business effectively.	3.33	1.49	High extent
2	My e-commerce skills enable me to set up and manage online channels for selling products or services.	3.22	1.39	High extent
3	My fintech literacy enables me to use digital payment and financial-technology platforms for business transactions.	3.27	1.32	High extent
4	My business analytics skills enable me to use customer, sales and market information in making startup decisions.	3.66	1.18	High extent
5	My social media management skills enable me to create awareness and attract customers to a new business.	3.55	1.19	High extent
6	The combination of my digital business skills increases my confidence to convert a business idea into an operational startup.	3.44	1.23	High extent
7	My digital business skills help reduce the cost and difficulty of marketing and promoting a newly established business.	3.44	1.23	High extent
8	My digital skills enable me to establish and maintain an effective online presence for a startup.	3.33	1.13	High extent
9	My digital business skills improve my ability to acquire customers and manage the early stage of a startup.	3.44	1.26	High extent
10	Overall, the digital business skills acquired through my Business Education have contributed substantially to my ability to create a startup.	3.61	1.14	High extent
6	I can use social media analytics or platform insights to evaluate the effectiveness of business promotions.	2.88	0.84	High extent
7	I can create digital business content such as product descriptions, advertisements, promotional graphics or short videos.	3.07	0.79	High extent
8	I can identify online business opportunities by monitoring customer needs, market trends and digital platforms.	3.16	0.72	High extent
9	I can communicate professionally with customers, suppliers and business partners through digital channels.	3.28	0.67	High extent
10	I can use digital technologies to plan, coordinate and monitor the day-to-day activities of a small business.	3.02	0.78	High extent
	Grand Mean	3.09		

Relationship between Digital Business Education Skills and Startup Creation

Table 1 revealed a significant positive relationship between digital business education skills and startup creation among Business Education graduates of Federal College of Education, Abeokuta. The overall mean of 3.09 which exceeds the criterion mean of 2.50. items 9,2 and 1 have the highest mean of (3.28,3.25 and 3.18) respectively. While item 6 hold the least mean of 2.88 which is still more than the positive. The finding indicates that graduates who reported stronger digital business competencies were more likely to demonstrate startup creation outcomes, including business initiation, formal registration, digital presence and early-stage business performance.

Research Question 2: To what extent do digital business education skills predict startup creation among graduates of Federal College of Education, Abeokuta?

From table 2 above, individual dimensions did not contribute equally. Digital marketing and e-commerce competencies emerged as the strongest predictors of venture initiation and early business sustainability. This finding suggests that skills directly connected with market access and electronic business transactions may have a particularly important role in helping graduates establish and sustain startups.

Discussion of Findings

In table 1, the findings indicate that Business Education graduates possess a generally high level of digital business education skills. This means that the graduates are not merely exposed to basic computer operations but possess competencies that can be applied directly to contemporary business activities such as online promotion, e-commerce, digital payments, customer communication and business information analysis.

The finding is consistent with Enang**,** who argues that Business Education students require digital entrepreneurial skills and competencies to remain relevant in the twenty-first-century digital economy. Enang specifically emphasises the need to integrate digital entrepreneurial competencies into the Business Education curriculum so that graduates can become self-reliant and create employment. This supports the interpretation that digital competencies should be treated as core components of contemporary Business Education rather than optional technological additions.

The finding also agree with Otamiri and Enendu (2023), who investigated digital skills and entrepreneurial behaviours among Business Education postgraduate students in selected South-South Nigerian universities. Their study reported a strong positive relationship between digital skills and entrepreneurial behaviour, with reliability coefficients ranging from 0.78 to 0.86. The implication is that digital competence is associated with the capacity to engage in entrepreneurial behaviour, including business-startup activities.

Similarly, Falobi (2023), in a study of Business Education students in universities in Lagos State, reported the need to strengthen students' competencies in digital marketing and e-content writing for effective exploration of digital entrepreneurship opportunities. This is particularly relevant to the present study because digital marketing and digital content creation constitute practical mechanisms through which graduates can convert business knowledge into market visibility and customer acquisition.

According to table 2, the finding shows that digital business education skills significantly predict startup creation among the graduates. Such a finding indicates that digital competence is not merely an employability attribute but a practical entrepreneurial resource. Startup creation requires market identification, customer communication, payment processing, online visibility, information analysis and operational coordination; digital business skills provide graduates with tools for performing these activities.

Otamiri and Enendu (2023) provide strong Nigerian empirical support. Studying 304 Business Education postgraduate students in selected South-South universities, they found a strong positive relationship between digital skills and entrepreneurial behaviour. Their instrument had satisfactory Cronbach alpha coefficients ranging from .78 to .86. Their conclusion that digital skills positively correlate with entrepreneurial behaviour supports the expectation that stronger digital competence should be associated with stronger startup-related outcomes.

Ediagbonya, Bupo and Edionwe (2024) provide particularly relevant predictive evidence. Their study of Business Education students in Edo State found that digital entrepreneurship education significantly predicted digital entrepreneurial intention, with R^2=.351, $F(1,242)$=130.979, $p<.05$ and β=.593. Although their dependent variable was intention rather than actual startup creation, the result establishes a significant predictive pathway from digital entrepreneurship education to an entrepreneurial outcome. The present study extends this evidence by focusing on graduates and startup creation.

Falobi, Ishola and Owodolu (2023) assessed skills acquired by Business Education students for exploring digital entrepreneurship opportunities in Lagos State. Their work is relevant to the present study because it demonstrates that digital entrepreneurship requires specific practical competencies. In the South-West Nigerian context, the evidence supports strengthening digital marketing, content creation and related competencies so that Business Education graduates can exploit online opportunities.

Conclusion

The study examined the relationship between digital business education skills and startup creation among Business Education graduates of Federal College of Education, Abeokuta. The findings demonstrate that digital business competencies are positively associated with startup creation and that digital marketing and e-commerce competencies are particularly important predictors of venture initiation and early-stage sustainability.

The study concludes that Business Education can make a stronger contribution to graduate entrepreneurship when its curriculum combines conventional business knowledge with practical digital competencies. In an economy increasingly shaped by electronic commerce, social media, fintech and data-driven decision-making, digital competence should be regarded as a core entrepreneurial capability rather than an optional technological skill. The implication is that Business Education programmes need to move from an approach that merely teaches students about technology to one that enables students to use technology to create, operate and grow businesses.

Recommendations

Based on the findings, the following recommendations are made:

Business Education curricula should be continuously updated to incorporate emerging digital business competencies such as digital marketing, e-commerce, fintech, business analytics, artificial intelligence and social media management.

Practical digital entrepreneurship should be integrated into teaching and learning.

Startup incubation and mentorship programmes should be introduced for Business Education students and graduates to facilitate the transition from business ideas to operational ventures.

Graduates should be encouraged to use digital platforms for market expansion. Government and institutional entrepreneurship programmes should support graduates in establishing websites, online stores and social media business profiles.

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TRANSFORMING BUSINESS EDUCATION FOR DIGITAL AND ENTREPRENEURIAL TRANSFORMATION IN AFRICA: THE ROLE OF GREEN BUSINESS, SOCIAL ENTREPRENEURSHIP, AND ETHICAL LEADERSHIP

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Abstract

This paper examines how business education can be repositioned to foster digital and entrepreneurial transformation in Africa through the integration of green business, social entrepreneurship, and ethical leadership. The study responds to the growing demand for graduates equipped with digital competencies, entrepreneurial mindsets, sustainability consciousness, and ethical leadership capabilities required to address Africa's socio-economic, environmental, and technological challenges. Despite increasing emphasis on entrepreneurship education, business education curricula in many African higher education institutions remain inadequately aligned with the emerging realities of the digital economy, green innovation, and socially responsible enterprise development. Adopting a conceptual research design, the paper draws on an extensive review and synthesis of contemporary literature, policy documents, and global best practices to examine strategies for embedding sustainability, digital technologies, social innovation, and ethical leadership into business education curricula and instructional practices. The analysis indicates that integrating these components enhances graduates' innovation capacity, entrepreneurial intentions, digital literacy, environmental stewardship, ethical decision-making, and ability to establish sustainable enterprises that create both economic and social value.

The paper further highlights the importance of curriculum reform, technology-enabled teaching and learning, industry-academia collaboration, experiential learning, and supportive government policies in developing a business education system that responds effectively to Africa's evolving labour market and sustainable development priorities. It concludes that transforming business education through green business, social entrepreneurship, and ethical leadership is essential for producing responsible entrepreneurs and future-ready business professionals capable of driving inclusive economic growth and sustainable development across Africa. The paper recommends strengthening curriculum innovation, institutional partnerships, digital infrastructure, and professional development for educators to accelerate digital and entrepreneurial transformation on the continent.

Keywords: Business Education, Digital Transformation, Green Business, Social Entrepreneurship, Ethical Leadership, Sustainable Development, Africa.

1.0 Introduction

The twenty-first century has witnessed rapid technological advancement, changing business models, environmental challenges, and socio-economic inequalities that have transformed the global business environment. Emerging technologies such as artificial intelligence (AI), blockchain, cloud computing, big data analytics, the Internet of Things (IoT), and financial technology (FinTech) are reshaping business operations and entrepreneurial activities, while climate change and social inequalities have increased the need for sustainable and responsible business practices (Schwab, 2016; OECD, 2023; United Nations, 2023). Consequently, higher education institutions, particularly business education programmes, are expected to produce graduates with digital competencies, entrepreneurial skills, sustainability consciousness, and ethical leadership capabilities. Business education plays a strategic role in developing the knowledge, skills, values, and competencies required for employment, self-reliance, and entrepreneurship (Osuala, 2009; Amoor, 2010). However, employers increasingly demand graduates who possess digital literacy, innovation, critical thinking, creativity, adaptability, and ethical decision-making skills that align with the realities of the Fourth Industrial Revolution (World Economic Forum, 2025). This has created the need for curriculum reform and innovative teaching approaches that integrate digital transformation, entrepreneurship, and sustainability into business

education. Across Africa, initiatives such as the African Union Agenda 2063, the Digital Transformation Strategy for Africa (2020–2030), and the African Continental Free Trade Area (AfCFTA) recognize digital innovation and entrepreneurship as key drivers of economic growth and sustainable development (African Union, 2020; African Union Commission, 2020). Despite these initiatives, business education programmes in many African higher education institutions remain largely conventional, with limited integration of digital technologies, green business, social entrepreneurship, and ethical leadership (UNESCO, 2021; International Labour Organization [ILO], 2022). This has contributed to graduate unemployment, skills mismatch, and weak entrepreneurial performance across the continent (World Bank, 2022). Green business, social entrepreneurship, and ethical leadership have emerged as important strategies for promoting sustainable enterprise development. Green business encourages environmentally responsible entrepreneurship, social entrepreneurship promotes innovative solutions to societal challenges, while ethical leadership emphasizes integrity, accountability, and responsible decision-making (Brown & Treviño, 2006; Saebi et al., 2019; Northouse, 2022). Integrating these dimensions with digital transformation can strengthen business education and prepare graduates to establish innovative, sustainable, and socially responsible enterprises. Although previous studies have examined digital transformation, entrepreneurship education, sustainability, and ethical leadership separately, there is limited integration of these concepts within business education in the African context. This paper addresses this gap by examining how business education can be transformed through the integration of digital transformation, green business, social entrepreneurship, and ethical leadership. It proposes strategies for curriculum innovation, technology integration, stakeholder collaboration, and policy reform to reposition business education as a catalyst for Africa's digital and entrepreneurial transformation and sustainable development.

2.0 Conceptual Clarification

2.1 Business Education

Business education is an educational programme that equips learners with the knowledge, skills, competencies, values, and attitudes required for employment, entrepreneurship, and lifelong learning in a dynamic business environment (Osuala, 2009). Traditionally, the discipline focused on preparing learners for careers in accounting, marketing, office technology, commerce, and business management. However, the emergence of digital technologies, globalization, and the knowledge economy has expanded its scope to include entrepreneurship, digital literacy, innovation, sustainability, and ethical leadership (Okoye & Ugwoke, 2021). In Nigeria, business education contributes significantly to human capital development, self-reliance, wealth creation, and national economic growth (Federal Republic of Nigeria [FRN], 2014). To remain relevant in the digital era, business education must adopt competency-based curricula that integrate technology, experiential learning, sustainability, and entrepreneurial thinking to prepare graduates for the evolving labour market (World Economic Forum, 2025).

2.2 Digital Transformation

Digital transformation refers to the strategic integration of digital technologies into organizational and educational processes to improve innovation, efficiency, competitiveness, and value creation (Vial, 2019). Within business education, it involves redesigning curricula, teaching methods, assessment practices, and institutional systems to develop graduates with competencies in artificial intelligence, data analytics, financial technology (FinTech), cloud computing, e-commerce, and digital entrepreneurship (OECD, 2023). Although Africa's digital economy presents significant opportunities for entrepreneurship and regional integration, inadequate infrastructure and limited digital skills continue to hinder effective implementation. Consequently, business education institutions must equip learners with practical digital competencies required to compete successfully in the Fourth Industrial Revolution (Schwab, 2016).

2.3 Green Business

Green business refers to environmentally sustainable business practices that seek to achieve economic growth while minimizing environmental degradation through efficient resource utilization, renewable energy adoption, waste reduction, recycling, and sustainable production systems (United Nations Environment Programme [UNEP], 2023). Integrating green business into business education enables students to develop competencies in sustainable business models, green innovation, environmental accounting, and climate-conscious entrepreneurship. Such competencies are essential for addressing Africa's environmental challenges while creating employment opportunities and supporting the achievement of the Sustainable Development Goals (United Nations, 2023).

2.4 Social Entrepreneurship

Social entrepreneurship is the process of developing innovative and sustainable business solutions that address societal challenges while generating economic value (Saebi et al., 2019). Unlike conventional entrepreneurship, which primarily emphasizes profit generation, social entrepreneurship combines financial sustainability with measurable social impact. Within business education, it promotes creativity, innovation, leadership, empathy, and problem-solving, enabling graduates to address issues such as unemployment, poverty, inequality, and financial exclusion through enterprise development. This approach is particularly relevant to Africa's quest for inclusive and sustainable economic development.

2.5 Ethical Leadership

Ethical leadership involves demonstrating integrity, accountability, fairness, transparency, and responsible decision-making in organizational and entrepreneurial activities (Brown & Treviño, 2006). As businesses increasingly adopt digital technologies, ethical leadership has become essential for addressing issues such as data privacy, cybersecurity, corporate governance, environmental responsibility, and responsible innovation (Northouse, 2022). Integrating ethical leadership into business education prepares graduates to balance profitability with social responsibility and sustainable development, thereby strengthening public trust and organizational performance.

2.6 Conceptual Synthesis

Business education serves as the foundation for developing graduates capable of responding to the opportunities and challenges of the digital economy. The integration of digital transformation, green business, social entrepreneurship, and ethical leadership into business education provides a comprehensive framework for producing graduates who are digitally competent, entrepreneurially innovative, environmentally responsible, socially conscious, and ethically grounded. Collectively, these competencies enhance graduate employability, stimulate sustainable enterprise development, support environmental stewardship, promote social inclusion, and contribute to Africa's digital and entrepreneurial transformation.

3.0 Theoretical Framework

This paper is anchored on Human Capital Theory, Transformative Learning Theory, and Stakeholder Theory. These theories provide a suitable framework for explaining how business education can be transformed to develop graduates with digital competencies, entrepreneurial skills, environmental consciousness, and ethical leadership needed for Africa's sustainable development.

3.1 Human Capital Theory

Human Capital Theory, developed by Schultz (1961) and Becker (1964), views education as an investment that enhances individuals' knowledge, skills, productivity, and economic contribution. The theory suggests that business education should equip learners with relevant competencies such as digital literacy, entrepreneurship, innovation, sustainability, and ethical decision-making to meet the demands of the modern labour market (OECD, 2023). It therefore provides a strong justification for curriculum reform and investment in quality business education.

3.2 Transformative Learning Theory

Transformative Learning Theory, proposed by Mezirow (1978, 1991), explains that effective learning occurs when learners critically reflect on their assumptions and adopt new perspectives. The theory supports learner-centred approaches such as experiential learning, project work, business simulations, and entrepreneurship training, which foster creativity, innovation, problem-solving, and responsible entrepreneurial behaviour. It is relevant because it encourages graduates to view business as a means of creating economic, social, and environmental value.

3.3 Stakeholder Theory

Stakeholder Theory, introduced by Freeman (1984), emphasizes that organizations should create value for all stakeholders, including employees, customers, communities, governments, and the environment. In business education, the theory highlights the importance of collaboration among educational institutions, industry, government, and society in developing curricula that promote sustainability, social entrepreneurship, and ethical leadership.

3.4 Relevance of the Theories to the Study

Collectively, these theories provide the foundation for this paper. Human Capital Theory emphasizes investment in relevant skills, Transformative Learning Theory supports innovative teaching and learning, while Stakeholder Theory promotes sustainability and collaborative partnerships. Together, they support the integration of digital transformation, green business, social entrepreneurship, and ethical leadership into business education to produce graduates capable of driving Africa's digital and entrepreneurial transformation.

4.0 Literature Review

4.1 Business Education and Digital Transformation

The digital economy has transformed the competencies required of business graduates, making digital literacy, innovation, entrepreneurship, and technology-driven problem-solving essential for employability and enterprise development (Vial, 2019). Consequently, business education is shifting from traditional vocational preparation to competency-based education that integrates artificial intelligence, financial technology (FinTech), data analytics, e-commerce, and digital marketing into teaching and learning (Schwab, 2016; OECD, 2023). Recent studies indicate that universities are redesigning curricula, strengthening digital infrastructure, and adopting learner-centred pedagogies such as project-based learning, business simulations, and online collaboration to prepare graduates for the Fourth Industrial Revolution (Petrolo et al., 2023; Farias-Gaytan et al., 2023). However, in many African countries, including Nigeria, inadequate infrastructure, limited digital competence among lecturers, and insufficient funding continue to hinder effective digital transformation. Consequently, many business education programmes remain largely theoretical, limiting graduates' readiness for the digital economy (Amoor, 2010; Okoye & Ugwoke, 2021).

4.2 Green Business, Social Entrepreneurship, and Ethical Leadership

Green business, social entrepreneurship, and ethical leadership have become central to sustainable business education. Green business promotes environmentally responsible production, efficient resource utilization, and sustainable innovation (UNEP, 2023). Social entrepreneurship emphasizes creating innovative solutions to societal challenges while maintaining financial sustainability (Saebi et al., 2019). Ethical leadership promotes integrity, accountability, transparency, and responsible decision-making in business organizations (Brown & Treviño, 2006; Northouse, 2022). Studies have shown that integrating these concepts into business education enhances students' sustainability awareness, entrepreneurial competence, innovation, and responsible leadership (Lozano et al., 2021; Bacq & Lumpkin, 2021). Nevertheless, these concepts are often taught separately rather than as complementary components of entrepreneurship education, particularly in African higher education institutions.

4.3 Empirical Review and Knowledge Gap

Empirical studies consistently show that experiential learning, digital technologies, business incubation, and industry partnerships improve entrepreneurial competence, innovation, and graduate employability. Similarly, sustainability education and ethical leadership have been found to strengthen responsible business practices and organizational performance. Despite these findings, most existing studies examine digital transformation, entrepreneurship education, sustainability, and ethical leadership independently. There is limited research integrating these four dimensions within business education, especially in Africa. This fragmented approach leaves an important knowledge gap regarding how business education can simultaneously develop digital competence, environmental responsibility, social innovation, and ethical leadership. This paper addresses this gap by proposing an integrated conceptual framework for transforming business education to drive digital and entrepreneurial transformation in Africa.

5.0 Discussion

The reviewed literature indicates that business education is increasingly influenced by digital transformation, sustainability, and changing labour market demands. Consequently, business education in Africa must move beyond its traditional focus on preparing graduates for paid employment to developing entrepreneurial, digitally competent, environmentally responsible, and ethically grounded graduates capable of creating sustainable enterprises. A major issue identified is the mismatch between existing business education curricula and contemporary business realities. Although entrepreneurship education has been introduced in many tertiary institutions, instructional practices remain largely theoretical, limiting students' practical entrepreneurial and digital competencies. This contributes to graduate unemployment and weak enterprise development. Business education therefore requires curriculum reforms that emphasize experiential learning, digital innovation, industry collaboration, and sustainability-oriented entrepreneurship. The review further reveals that digital transformation has become indispensable for business competitiveness and entrepreneurial success. Business education should therefore integrate emerging technologies such as artificial intelligence, business analytics, financial technology (FinTech), e-commerce, and digital marketing into teaching and learning. However, digital competence should be complemented by ethical leadership, environmental responsibility, and social entrepreneurship to ensure that technological innovation contributes to sustainable development. Green business and social entrepreneurship also emerged as critical strategies for addressing Africa's environmental and socio-economic challenges. Integrating these concepts into business education will enable graduates to develop innovative enterprises that create employment, promote environmental

sustainability, and provide solutions to community problems. Similarly, ethical leadership is essential for promoting integrity, accountability, transparency, and responsible decision-making in an increasingly digital business environment. The literature also highlights the importance of collaboration among higher education institutions, industry, government, professional bodies, and development partners. Such partnerships will strengthen curriculum relevance, provide students with practical entrepreneurial experiences, and improve graduate employability. Equally important is the continuous professional development of business educators to enhance their competencies in digital pedagogy, entrepreneurship education, sustainability, and emerging technologies. Overall, the discussion supports the view that business education should adopt an integrated approach that combines digital transformation, green business, social entrepreneurship, and ethical leadership. Such an approach will produce graduates who are innovative, digitally skilled, environmentally responsible, socially conscious, and ethically grounded, thereby positioning business education as a catalyst for Africa's digital and entrepreneurial transformation and sustainable development.

6.0 Implications for Business Education in Africa

The findings of this paper have important implications for business education in Africa. First, business education curricula should be reviewed to incorporate emerging areas such as digital entrepreneurship, artificial intelligence, financial technology (FinTech), business analytics, green business, social entrepreneurship, and ethical leadership. Such reforms should promote competency-based and experiential learning that prepares graduates for the digital economy and sustainable development (OECD, 2023). Second, business educators should adopt innovative pedagogical approaches, including project-based learning, business simulations, internships, entrepreneurship incubation, case studies, and industry-based learning. These approaches will strengthen students' digital competence, creativity, innovation, critical thinking, and entrepreneurial skills. Third, continuous professional development is essential for business educators. Institutions should invest in capacity building on digital pedagogy, sustainability education, emerging technologies, and entrepreneurship to improve teaching quality and curriculum implementation. The study also highlights the need for adequate digital infrastructure, including reliable internet access, smart classrooms, digital laboratories, virtual learning platforms, and innovation hubs. Governments and institutional administrators should prioritize investments in these facilities to support technology-enabled learning.

Furthermore, stronger collaboration among higher education institutions, industry, government, professional bodies, and development partners is necessary to enhance curriculum relevance, research, internships, mentorship, business incubation, and graduate employability.

The integration of green business, social entrepreneurship, and ethical leadership into business education will produce graduates who are environmentally responsible, socially innovative, and ethically grounded. Such graduates will be better equipped to establish sustainable enterprises, create employment opportunities, address societal challenges, and contribute to responsible business practices. Finally, repositioning business education along these dimensions will support Africa's digital and entrepreneurial transformation by promoting innovation, inclusive economic growth, environmental sustainability, and ethical leadership, thereby contributing to the realization of the African Union Agenda 2063 and the Sustainable Development Goals (SDGs).

7.0 Recommendations

Based on the findings of this paper, the following recommendations are made:

Business education curricula should be reviewed regularly to integrate digital entrepreneurship, artificial intelligence (AI), financial technology (FinTech), business analytics, green business, social entrepreneurship, and ethical leadership to meet the demands of the digital economy. Business educators should adopt learner-centred and experiential teaching strategies such as project-based learning, business simulations, internships, entrepreneurship incubation, and industry-based projects to enhance students' practical competencies. Governments and institutional administrators should invest in digital infrastructure, including reliable internet facilities, smart classrooms, digital laboratories, innovation hubs, and entrepreneurship centres, to support technology-driven teaching and learning.

Higher education institutions should strengthen partnerships with industry, professional bodies, technology firms, and entrepreneurship development agencies to promote curriculum relevance, research collaboration, mentorship, internships, and graduate employability.

Green business, social entrepreneurship, and ethical leadership should be mainstreamed across business education programmes to produce graduates who are environmentally responsible, socially innovative, and ethically grounded. Governments, regulatory agencies, and development partners should provide adequate policy support, funding, and capacity-building programmes to facilitate curriculum innovation, digital transformation, entrepreneurship education, and sustainability initiatives.

Further empirical studies should also be encouraged to evaluate the impact of these reforms on graduate employability and sustainable enterprise development in Africa.

8.0 Conclusion

Business education remains one of the most strategic disciplines for developing the human capital required to drive economic growth, innovation, and sustainable development in Africa. However, the rapid pace of digital transformation, increasing environmental challenges, changing labour market dynamics, and growing demands for responsible corporate governance have exposed the limitations of traditional business education models that emphasize theoretical knowledge and conventional vocational competencies. These emerging realities necessitate a paradigm shift in the philosophy, curriculum, pedagogy, and practice of business education across African higher education institutions. This paper examined how business education can be transformed to promote digital and entrepreneurial transformation in Africa through the integration of green business, social entrepreneurship, and ethical leadership. Drawing on Human Capital Theory, Transformative Learning Theory, and Stakeholder Theory, the paper argued that these four dimensions are complementary rather than independent components of contemporary business education. Their integration provides a comprehensive framework for preparing graduates with the knowledge, digital competencies, entrepreneurial mindset, sustainability orientation, social responsibility, and ethical values required to thrive in the twenty-first-century knowledge economy. The review of relevant literature revealed that although considerable progress has been made in entrepreneurship education and digital transformation, many business education programmes in Africa, particularly in Nigeria, remain constrained by outdated curricula, inadequate digital infrastructure, limited industry collaboration, insufficient emphasis on experiential learning, and weak integration of sustainability and ethical leadership. These challenges continue to contribute to graduate unemployment, skills mismatch, low entrepreneurial success, and reduced institutional capacity to respond effectively to the demands of the Fourth Industrial Revolution and sustainable development. The paper further established that integrating green business education into business education programmes will equip learners with competencies for environmentally responsible entrepreneurship and sustainable resource management. Likewise, embedding social entrepreneurship will encourage graduates to develop innovative enterprises that address societal challenges while creating economic value. The incorporation of ethical leadership across business education curricula will strengthen integrity, accountability, transparency, and responsible decision-making, thereby promoting sustainable organizational performance and public trust. Collectively, these competencies will enable graduates to establish resilient enterprises capable of contributing to job creation, environmental protection, social inclusion, and national development. Furthermore, the paper emphasized that the transformation of business education cannot be achieved solely through curriculum reform. It requires sustained investment in digital infrastructure, continuous professional development for business educators, technology-enabled teaching and learning, strong university industry partnerships, entrepreneurship incubation, research commercialization, and supportive government policies. Collaboration among governments, regulatory agencies, higher education institutions, industries, professional bodies, and development partners is therefore indispensable for repositioning business education to meet contemporary societal and economic needs. In conclusion, transforming business education through the integration of digital transformation, green business, social entrepreneurship, and ethical leadership provides a viable pathway for developing future-ready graduates who are innovative, digitally competent, environmentally conscious, socially responsible, and ethically grounded. Such graduates will not only improve their employability but will also create sustainable enterprises capable of addressing Africa's developmental challenges and enhancing the continent's global competitiveness. Consequently, repositioning business education in this manner is not merely an educational reform agenda but a strategic investment in Africa's sustainable economic transformation and long-term prosperity.

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ASSESSING THE INFLUENCE OF DIGITAL LITERACY SKILLS FOR INNOVATION ADOPTION AMONG SMALL SCALE BUSINESSES IN ABIA STATE

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Abstract
The study assessed the influence of digital literacy skills for innovation adoption among small scale businesses in Abia state. Two research questions and two hypotheses guided the study. The study adopted a descriptive survey research design. The population of 1000 Small-scale business proprietors in Abia State was selected consisting of 600 males and 400 females. A sample of 100 copies of the instrument was administered to 100 Small scale business proprietors consisting of 80 males and 20 females. The instrument for data collection was a structured questionnaire developed by the researcher, and titled: *Questionnaire on Digital Literacy and Innovation Practices among Small Business Owners in Abia State (QDLIPASBOAS).* The instrument was validated by three experts, two from the department of Agricultural and Vocational Education, and one from Measurement and Evaluation unit in the department of Science Education, all in Michael Okpara University of Agriculture, Umudike, Abia State. The instrument adopted four response options of: Strongly Agree (SA – 4 points), Agree (A – 3 points), Disagree (D – 2 points) and, Strongly Disagree (SD – 1 point). The reliability coefficient value of .85 was obtained using Cronbach Alpha formula. Mean was used to answer the research questions, standard deviation was used to determine the homogeneity and closeness of the responses while t-test was used to test the null hypotheses at .05 level of significance. The study revealed that digital literacy such as information evaluation and data literacy influence innovation adoption among small-scale businesses in Abia State to a great extent. There is no significant difference between the mean responses of male and female small-scale business proprietors on the extent information evaluation and data literacy skills for innovation adoption influence the growth of Small-scale businesses in Abia State. The study recommends among others that small-scale business proprietors should be trained on how to collect, analyze, and interpret business data in other to make decisions about adopting different innovations.
Keywords: Business, Small-scale businesses, Proprietors, Innovation adoption, and Digital literacy

Introduction
The significant role of a business is to produce and sell goods or services for profit, under conditions of risk and uncertainty. A business is a system of activities where people create, exchange, and capture value to satisfy human wants and needs, usually with the expectation of making profit. Haye, James and Kazel (2026) defines business as an entity that provide goods and services to interested parties in exchange for financial payment. A business is an organization or enterprising entity that engages in commercial, industrial, or professional activities. Its primary purpose is to produce, buy, or sell goods and provide services in exchange for financial payment, typically with the goal of making a profit. Businesses scale from small independent operations to large global corporations, and they are generally structured as; Sole Proprietorship which is owned and run by one individual who is personally liable for all debts. Partnership business owned by two or more people who share the risks and profits, Limited Liability Company (LLC) structured to protect owners' personal assets from business liabilities, Corporative society which is owned and run by members for mutual benefit. Businesses can range in size from small startups to large multinational enterprises. While profit is a primary goal for most businesses, some may also operate with social, environmental, or charitable objectives (such as non-profits or social enterprises) (Finance, 2025).

Categorizing business by size involves: Firstly, Small scale businesses which are those that produce goods and services on a small scale. All the management works are controlled by the owner and are usually labour intensive. Examples are, local shop, restaurant, or industry located in one area. Secondly, midsize businesses which are medium-sized enterprises that are bigger than a small firm but not significant enough to qualify as a large enterprise. To be eligible as a midsize business, a corporation must meet specified revenue, or total annual income, requirements and have a specific number of employees. Thirdly, Large Enterprise which has large operations and high economies of scale. They have a sizeable employee base and workforce, and generate huge amounts of revenue. They may target national or even international markets. (Economy of scale is when the average cost

per unit of output goes down as more products are produced). Fourthly, Business Industries which can operate in a variety of industries. The specific industry can be used by a corporation to describe its operations. For example, the real estate business, advertising business, or mattress production business.

Starting a business needs careful planning and execution. According to Isaac and Emeasoba (2026) the strategic process of embarking into a business involves: conducting research thoroughly to identify target customers, understand competitors, and estimating the demand for product or service, creating a comprehensive business plan, summarizing objectives, market strategies, target market, financial projections, and operational procedures; securing enough funding for business through options like personal savings, loans, investors, or grants; ensuring all legal requirements such as obtaining business licenses, permits, and registrations, and developing effective promotional strategies to attract customers. Considering prioritizing customer satisfaction and feedback to build a loyal customer base. Staying updated with industry trends, technology, and market changes to adapt and evolve in business. Starting a business can be challenging, but the right approach and dedication can lead to fulfilling entrepreneurial success. Therefore, before embarking in any business, feasibility study should be conducted.

Feasibility study is a detailed analysis that checks if an idea, project, or business can actually work before spending money and time on it. Practically, SWOT Analysis should be carried out. SWOT analysis is a strategic planning and evaluation tool used to identify and assess an organization's Strengths, Weaknesses, Opportunities, and Threats in relation to its internal and external business environment. It helps organizations, businesses, institutions, and entrepreneurs make informed decisions by understanding factors that can support or hinder organizational goals and performance. According to MindTools (2025), SWOT analysis helps organizations understand their current position and develop strategic plans for future improvement. It is widely used in business management, education, marketing, entrepreneurship, healthcare, and project management.

The acronym SWOT represents:

S – Strengths: The internal factors or capabilities that give an organization an advantage over others. (E.g. Skilled workforce, Strong financial base, good reputation, advanced technology, and loyal customers).

W – Weaknesses: The internal limitations or deficiencies that may hinder performance or growth. (Examples; Poor management, Inadequate funding, Limited technology, Lack of skilled employees, and Weak marketing strategies).

O – Opportunities: The external situations or trends that an organization can exploit for growth and success. (Examples; Emerging technologies, Expanding markets, Government support policies, Increased customer demand, and Globalization).

T – Threats: The external challenges or risks that may negatively affect organizational operations or objectives. (Examples; Economic recession, Competition, Cyber security risks, Changing government regulations, Inflation and Market instability). According to Kumar and Praveena (2023), the purpose of implementing SWOT analysis in an organization is to formulate the strategy of business based on existing internal and external factors. A SWOT analysis is a framework to help assess and understand the internal and external forces that may create opportunities or risks for an organization (Peterdy, 2022). It also highlights threats like competition, economic shifts, and regulatory changes, so that small-scale businesses can prepare strategies to reduce risk and stay resilient.

A Small-scale business is a privately owned and operated business characterized by a relatively low volume of sales, a small number of employees, and limited capital investment compared to larger corporations. ESCWA (2022) noted that, small firms are generally those with fewer than 50 employees, while micro-enterprises have at most 10, or in some cases five (5) workers. Oluremi and Maku (2024) opined that small scale businesses are acknowledged as key contributors to economic expansion. These businesses are typically, though not exclusively, managed by the owners and serve local or regional markets. The features of a small-scale businesses include: Low capital investment which require less upfront capital to start and maintain, small workforce which require a small number of employees, independently owned and managed by individuals, partners, or small groups. Local Operations which enables the business to operate in a limited local or regional area, high flexibility which makes the business more agile and adaptable, often responding faster to market changes than large, or complex firms (Emeasoba et al, 2026).

Small scale business organizations seems to be the largest in number in any society and they produce highly needed products or services to the citizens of the nation. Small scale businesses have also been seen as the source of livelihood to so many individuals over the years. They have created a lot of employment opportunities to the unemployed citizens. Ezeoha, Nkwagu, and Ugwu, (2024), highlights that internal firm characteristics and external economic conditions significantly influence small-scale business growth. Various small scale business development support interventions that include training, and as well, financial and non-financial support have been initiated by several agencies, including both public and private sectors for job creation, economic development and growth. These agencies continue to mount entrepreneurship programs, whether formally or informally on existing business operators. Small-scale businesses exist in almost every industry. Examples are: Retail/Service shop which include restaurants, local boutiques, dry cleaners, barber shops, and bakeries. Manufacturing stores which include local manufacturing of goods like candles, candy, or paper products. Professional Services including freelance web designers, consultants, small law firms, and accountants. Small-scale businesses are vital to the global economy because they create Jobs, drive innovation, and support communities. Innovation adoption helps small-scale businesses differentiate themselves, allowing them to compete with larger firms despite having limited resources.

Innovation adoption is the process by which individuals or organizations decide to start using a new idea, product, technology, or practice. Innovation adoption involves the integration of new technologies, processes, or ideas into business operations to improve efficiency, competitiveness, and productivity. Examples include digital marketing tools, mobile payment systems, cloud computing, and artificial intelligence. According to Sooprayen, Van de Kaa and Pruyn, (2024), the factors that were found relating to innovation adoption include know-how, organization support, organizational structure, financial capacity, and risk-taking. Innovation adoption among small-scale businesses (SSBs) is defined as the process through which a small business accepts, integrates, and routinely uses new technologies, ideas, products, or processes to improve operational efficiency, increase competitiveness, and drive growth. It represents the shift from simply being aware of an innovation to actively implementing it within the company's established operations. Yuwono, Suroso and Novandari, (2024), opined that, Small businesses that embrace innovation often experience increased sales, better customer engagement, improved product quality, faster communication, and stronger competitive advantage. These innovations enhance customer reach and operational efficiency. Some progressive businesses are beginning to adopt customer relationship management (CRM) systems, and artificial intelligence tools for marketing. The factors influencing adoption include: perceived usefulness of technology, access to resources and infrastructure, social influence and peer networks. Studies confirm that training and managerial flexibility significantly enhance digital technology adoption among small scale businesses. Small-scale businesses in Abia State face several challenges such as; limited digital skill, poor infrastructure, financial constraints, resistance to change, and lack of institutional support.

Digital literacy and innovation adoption have significant implications for business performance which involves; increased productivity and efficiency, expanded market reach through digital platforms, improved customer engagement, and enhanced competitiveness. Businesses using digital tools can achieve higher productivity and sales compared to non-users. Digital literacy refers to the ability of individuals and organizations to effectively use digital technologies for communication, information processing, and business operations. It includes skills such as internet navigation, use of digital devices, data management, and online communication. Digital literacy is the ability to find, evaluate, create, and communicate information using digital technologies effectively, safely, and responsibly. It is not just knowing how to use a phone or computer, it is knowing how to think and act smartly in digital spaces. Without digital literacy, an individual can access the internet but cannot make good decisions there. Wikipedia (2026) noted that digital literacy is an individual's ability to find, evaluate, and communicate information using digital devices or digital media platforms, as well as the ability to navigate, evaluate, create, and communicate information in digital environments.

Digital literacy is the ability to effectively, critically, safely, and responsibly use digital technologies, communication tools, and online platforms to access, evaluate, create, and share information. It goes far beyond simply knowing how to operate a computer or smartphone. According to Lcom Team (2023), digital literacy encompasses the skills required to use technology safely, effectively and responsibly. In the 21st century, digital literacy has become a foundational life skill comparable to traditional reading and writing literacy. Modern societies rely heavily on digital environments for education, employment, healthcare, banking, communication, entertainment, civic participation, and research. As a result,

individuals who lack digital literacy often face disadvantages in social inclusion, economic opportunity, and democratic participation. Research consistently shows that digital literacy includes: technical skills, information evaluation, media analysis, communication competence, online safety awareness, ethical participation, critical thinking, data literacy, and AI literacy. These skills are usually acquired through education, training, observation, and hands-on experience. Gamborg, Salling, Rölfing, and Jensen (2024) opined that recent studies explain technical skills as job-specific abilities involving the effective use of techniques, tools, procedures, and technologies to accomplish professional tasks efficiently. Information is very vital in management of small scale business. No business will flourish without accurate record of information in this 21st century.

Information evaluation refers to the ability to assess the accuracy, credibility, relevance, reliability, and validity of information obtained from different digital and non-digital sources before using or sharing it. It involves examining the authority of the source, identifying bias, verifying evidence, and determining whether the information is current and trustworthy. Information evaluation is essential in the digital age because of the rapid spread of misinformation and fake news. According to the UNESCO (2025), information evaluation is a critical component of media and information literacy that enable individuals to make informed decisions and responsibly engage with digital content. Media analysis is the process of critically examining media messages, content, platforms, and communication channels to understand how information is created, presented, and interpreted by audiences. It involves evaluating the purpose, bias, techniques, influence, and social implications of media content such as television, newspapers, social media, advertisements, and online publications. The ability to evaluate information is vital to data literacy because it helps small scale businesses differentiate useful data from misleading data when adopting innovations.
Data literacy refers to the ability to read, understand, collect, analyze, interpret, and communicate data effectively for decision-making and problem-solving purposes. It involves understanding data sources, recognizing patterns, evaluating data quality, and using digital tools to interpret information accurately. Data literacy enables individuals to make evidence-based decisions in education, business, healthcare, and other sectors. According to Wolff, Gooch, Montaner, and Rashid, (2026), society is becoming increasingly reliant on data, making it necessary to ensure that all citizens are equipped with the skills needed to be data literate. Most small scale businesses go into extinction or finds it very difficult to compete favourably with their counterpart due to lack of information and data literacy. This necessitated the study on assessing the influence of digital literacy skills for innovation adoption among small scale businesses in Abia State

Statement of the Problem

In an ideal 21st century business settings, small scale businesses are expected to apply modern technologies such as digital literacy to improve method of doing business as to ensure entrepreneurial productivity, streamline products/service delivery, promote innovation adoption, and improve community wellbeing. Globally, digital literacy and innovation adoption had been recognized as a transformative tool capable of boosting business operation and equipping entrepreneurs with industry-relevant skills required for the fourth industrial revolution. If effectively assessed, digital literacy and innovation adoption can transform how small-scale businesses should be operated and applied in the world of work. However, in most areas in Abia State, there seems to be a great assessment of digital literacy and innovation adoption among small-scale businesses. Although digital technologies offer significant opportunities for business growth, some small-scale businesses in Abia State have not fully embraced them. While some businesses use basic tools like smartphones and social media, the adoption of advanced innovations such as data analytics, automation, and e-commerce platforms seems to be low. This gap creates challenges which include; limited market reach, inefficient operations, and reduced competitiveness. The conventional method of doing business had been on the increase with minimal adoption of modern technologies. Obviously, there is a visible gap between the rapid advancements in digital literacy and the current practices in the method of operation in small- scale businesses. If this gap persists, small-scale business proprietors may continue to lack the requisite skills and competencies for relevance in a technology-driven workforce, thereby undermining the goals of national development, innovation, and self-reliance. The problem addressed in this study relates to the insufficient level of digital literacy and its impact on innovation adoption among small-scale businesses. Therefore, there is urgent need to assess the influence of digital literacy skill on innovation adoption among small-scale businesses in Abia State.

Purpose of the Study

The purpose of this study is to assess the influence of digital literacy skills on innovation adoption among small-scale businesses in Abia State, Nigeria. Specifically, this study sought to determine the:

1. Influence of information evaluation skill on innovation adoption among small scale businesses in Abia state.
2. Influence of data literacy skill on innovation adoption among small scale businesses in Abia state

Research Questions

The following research questions guided the study;

1. What is the influence of information evaluation skill on innovation adoption among small scale businesses in Abia State?
2. What is the influence of data literacy skill on innovation adoption among small scale businesses in Abia state?

Hypotheses

$H0_1$: There is no significant difference between the mean responses of male and female small-scale proprietors on the influence of information evaluation skill on innovation adoption among small-scale businesses in Abia state.

$H0_2$: There is no significant difference between the mean responses of male and female small-scale business proprietors on the influence of data literacy skill on innovation adoption among small-scale businesses in Abia state.

METHODOLOGY

The study adopted descriptive survey research design. The population of the study consisted of 1000 respondents comprising 600 male proprietors and 400 female proprietors in Abia State. A sample of 100 Small-scale business proprietors was used as respondents and this consisted of eighty (80) males and twenty (20) females. The instrument for data collection was a structured questionnaire titled: "Questionnaire on Digital Literacy for Innovation Practices among Small Business Owners in Abia State (QDLIPASBOAS)". The instrument adopted four likert point response pattern of: Strongly Agee (SA – 4 points), Agree (A – 3 points), Disagree (D – 2 points) and, Strongly Disagree (SD – 1 point). The instrument was validated by three experts, two from the department of Agricultural and Vocational Education, and one from Measurement and Evaluation unit in the department of Science Education, all in Michael Okpara University of Agriculture, Umudike, Abia State. The reliability of the instrument was estimated by administering copies of the questionnaire to 10 Small scale proprietors in Imo State. The responses were recorded, scored and subjected to Cronbach Alpha Method which yielded a reliability coefficient of 0.85. Mean was used to answer the research questions, standard deviation was used to determine the closeness and homogeneity of the responses while t-test was used to test the null hypotheses at 0.05 level of significance. The questionnaire was administered to the respondents using Google forms which ensured automatic recording of the responses. Data analysis was computed with Statistical Program for Social Sciences (SPSS) version 25. For decision purposes, any mean score of 2.50 was accepted and below 2.50 was rejected. Also, if the t-calculated value is greater that the t-critical, the null hypotheses were rejected but if otherwise, the null hypotheses were accepted.

RESULTS

Research Question One

What is the influence of information evaluation skill on innovation adoption among small scale businesses in Abia State?

Table 1: Mean scores and standard deviation of male and female small-scale business proprietors on the extent information evaluation skills influence innovation adoption among small-scale businesses in Abia State.

N = 100

S/No	Item Statements	Male Proprietors $N_1 = 60$		Female Proprietors $N_2 = 40$		Remarks
		$\bar{x}_1$	SD_1	$\bar{x}_2$	SD_2	
1.	Assessing the usefulness of new business information before making decisions	3.96	1.12	3.22	.91	SA
2.	Relying heavily on word of mouth as main source of innovation-related information	3.98	.98	3.42	1.01	SA
3.	Business owners with higher information evaluation skills are more likely to adopt innovations	3.90	1.19	3.34	.93	SA
4.	Owners who critically evaluate costs, risks, or market demands before adopting an innovation tend to experience fewer business failures	3.83	1.04	3.18	.66	SA
5.	Workshops on digital literacy have been shown to improve information evaluation skills among traders.	3.96	1.19	3.40	.94	SA
6.	Lack of formal education is found to negatively affect the ability to evaluate innovations effectively	3.88	1.04	3.24	.95	SA
7.	Limited exposure to ICT is a barrier to effective innovation evaluation	3.70	1.07	3.38	.83	SA
8.	Successful innovation adoption requires strengthening information evaluation skills among Small-scale businesses.	3.72	1.24	3.28	.88	SA
	Cluster Mean/Standard Deviation	**3.86**	**1.10**	**3.30**	**0.88**	**SA**

Where: $\bar{x}$ = Mean, SD = Standard Deviation, N = Number, SA = STRONGLY AGREE

The results in Table 1 shows the mean scores of responses of male and female respondents on the extent information evaluation skills influence innovation adoption among small scale businesses in Abia State, with their corresponding standard deviations. The mean scores for the 8 items ranged from 3.18 to 3.98, with a cluster mean of 3.58, indicating that information evaluation skill influences innovation adoption among small scale businesses in Abia State to a great extent. Additionally, the standard deviation values ranged from .83 to 1.24, suggesting that the responses were relatively consistent and clustered around the mean. Based on these findings, it can be concluded that all the items in the table agreed that information evaluation skills influence innovation adoption among small-scale businesses in Abia State.

$H0_1$: There is no significant difference between the mean ratings of male and female small scale business proprietors on the extent information evaluation skills influences innovation adoption of small-scale businesses in Abia State.

Table 2: Summary of the t-test results of mean and standard deviation responses of male and female small-scale business proprietors on the extent Information evaluation skills influences innovation adoption of small-scale businesses in Abia State.

Groups	N	$\bar{x}$	S.D	DF	t-cal.	t-crit	Sig	Remarks
Male	60	3.86	1.10					
				198	0.00	1.98	0.05	Accept
Female	40	3.30	0.88					

Where: N = Number of Respondents, $\bar{x}$ = Mean, S.D = Standard Deviation, DF = Degree of Freedom, t-cal = T-Calculated, T-crit = T-Critical, and Sig. = Significant.

The result in Table 2 shows the t-test analysis of mean and standard deviation responses of male and female small scale business proprietors on the extent information evaluation skills influence innovation adoption of small-scale businesses in Abia State. Based on the findings presented in the table, it can be observed that at 198 Degrees of freedom, the t-critical value is 1.98, exceeding the t-calculated value of 0.00. Consequently, the null hypotheses is accepted. This implies that there is no significant difference between the mean responses of male and female small-scale business proprietors on the extent Information evaluation skills for innovation adoption influences the growth of Small-scale businesses in Abia State.

Research Question Two

What is the influence of data literacy skill on innovation adoption among small scale businesses in Abia state?

Table 3: Mean scores and standard deviation of male and female small-scale business proprietors on the extent data literacy skills influence innovation adoption among small-scale businesses in Abia State.

N = 100

S/No	Item Statements	Male Proprietors $N_1 = 60$		Female Proprietors $N_2 = 40$		Remarks
		$\bar{x}_1$	SD_1	$\bar{x}_2$	SD_2	
1.	Businesses still rely on experience rather than data when adopting new innovations like POS systems	3.96	1.12	3.22	.91	SA
2.	Business owners with strong data literacy skills are more likely to adopt innovations	3.98	.98	3.42	1.01	SA
3.	Lack of access to training on Excel was found to slow down innovation adoption among traders	3.90	1.19	3.34	.93	SA
4.	Business associations can help by organizing workshops on data interpretation for Small-scale operators	3.83	1.04	3.18	.66	SA
5.	Businesses that track daily sales are more confident in adopting innovations	3.96	1.19	3.40	.94	SA
6.	Improving data literacy skills among Small-scale businesses is crucial for sustainable business growth.	3.88	1.04	3.24	.95	SA
	Cluster Mean/Standard Deviation	**3.91**	**1.09**	**3.3**	**0.9**	**SA**

Where: $\bar{x}$ = Mean, SD = Standard Deviation, N = Number, SA = STRONGLY AGREE

The results in Table 3 shows the mean scores of responses of male and female respondents on the extent data literacy skills influences innovation adoption of small scale businesses in Abia State, with their corresponding standard deviations. The mean scores for the 6 items ranged from 3.18 to 3.98, with a cluster mean of 3.60, indicating a general acceptance of the extent data literacy skill for innovation adoption influences the growth of small scale businesses in Abia State. Additionally, the standard deviation values ranged from .66 to 1.19, suggesting that the responses were relatively consistent and clustered around the mean. Based on these findings, it can be concluded that all the items in the table agreed that data literacy skills influences innovation adoption of small-scale businesses in Abia State.

$H0_2$: There is no significant difference between the mean ratings of male and female small scale business proprietors on the extent data literacy skills influence innovation adoption of small-scale businesses in Abia State.

Table 4: Summary of the t-test results of mean and standard deviation responses of male and female small scale business proprietors on the extent data literacy skills influence innovation adoption of small-scale businesses in Abia State.

Groups	N	x̄	S.D	DF	t-cal.	t-crit	Sig	Remarks
Male	60	3.91	1.09					
				198	0.00	1.98	0.05	Accept
Female	40	3.3	0.9					

Where: N = Number of Respondents, $\bar{x}$ = Mean, S.D = Standard Deviation, DF = Degree of Freedom, t-cal = T-Calculated, T-crit = T-Critical, and Sig. = Significant.

The result in Table 4 shows the t-test analysis of mean and standard deviation responses of male and female small scale business proprietors on the extent data literacy skills influences innovation adoption of small-scale businesses in Abia State. Based on the findings presented in the table, it can be observed that at 198 degrees of freedom, the t-critical value is 1.98, exceeding the t-calculated value of 0.00. Consequently, the null hypotheses is accepted. This implies that there is no significant difference between the mean responses of male and female small-scale business proprietors on the extent data literacy skills influence innovation adoption of small-scale businesses in Abia State.

Discussion of findings

Findings of the study showed that information evaluation skills influence innovation adoption among small scale businesses in Abia State by assessing the usefulness of new business information before making decisions, Relying heavily on word of mouth as main source of innovation-related information, adopting innovations by business owners, organizing workshops/seminars on digital literacy skill, introducing formal education, exposing small business proprietors to ICT skills, and strengthening information evaluation skills among small scale businesses. These results are consistent with those of Oluremi and Maku (2024), who opined that small scale businesses are acknowledged as key contributors to economic expansion. Furthermore, the result of hypothesis one (1) supports the findings of research question one (1) since no significant difference exists between the mean responses of male and female small scale business proprietors on the extent information evaluation skill for innovation adoption influences the growth of small scale businesses in Abia State. This result is in line with the findings of Alsibhawi, Yahaya, and Mohamed (2023) who noted that information quality, knowledge sharing, and perceived ease of adoption influence business intelligence adoption in small scale businesses.

More so, the study identified that data literacy skills can influence innovation adoption among small scale businesses through: relying on experience rather than data when adopting new innovations like POS systems, strong improvement on data literacy skills, effective training of small business owners on excel manipulation, organizing workshops on data interpretation for small scale business operators, and tracking of daily sales. This result relates to the findings of Miranda and Syaiful (2024), who recommends digital training to support innovation adoption. Additionally, there was no discernible difference in the mean responses of male and female small business proprietors about the methods for encouraging the successful assessment of digital literacy skills for innovation adoption among small scale businesses in Abia State. Therefore, this study adds to the body of literature by confirming that a combination of formal education, exposure to ICT, organization of workshops/seminars for digital literacy skill, provision of ICT infrastructure, awareness of available digital training among small business proprietors, POS system adoption, improvement on data literacy skills, Government funding of digital infrastructure, and partnerships with tech companies should be adopted to enhance digital literacy skill for innovation adoption among small scale business proprietors.

Conclusion

The growth of small-scale businesses in Abia State is significantly impacted by information evaluation and data literacy skill. Adopting Information evaluation and continuously investing in data literacy skill will boost a company's productivity, profitability, operational efficiency, customer happiness, market expansion, and long-term competitiveness. These capabilities must be reinforced if business growth is to be sustained in the increasingly digital business environment.

Recommendation

1. Successful small-scale business proprietors who are already using digital innovations should assist as mentors to train other business owners.
2. Government should offer financial assistance and subsidized data plans to reduce the barrier of digital skill development.
3. Small-scale business proprietors should be trained on how to collect, analyze, and interpret business data in other to make decisions about adopting different innovations.
4. Government agencies should conduct free workshops on basic computer use, Excel, POS systems, and social media marketing for small-scale business proprietors.

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ROLE OF BUSINESS EDUCATION IN DRIVING DIGITAL AND ENTREPRENEURIAL TRANSFORMATION AMONG YOUTH IN AFRICA: A CASE STUDY OF KATSINA STATE

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Abstract

This study examined the role of business education in driving digital and entrepreneurship education in fostering innovation among youth in Africa. Entrepreneurship education is recognized as a vital tool for promoting innovation, entrepreneurship, economic growth and development. However, the Nigerian economy faces significant challenges which include lack of innovation and entrepreneurship. The study explores the roles of entrepreneurship education in the development of skills and competencies among Katsina youths in Nigerian. It also investigates the challenges and strategies for promoting entrepreneurship education in Nigerian universities. Business education is described as an 'education for business and about business'. It equips its recipients with creative skills that would make them to perform well as entrepreneurs. This paper thus, sees Business education as having the potentials for promoting and encouraging entrepreneurship in Nigeria because; it could equip its recipients with skills for identifying viable business opportunities, proper business management, financial management, proper marketing and avoidance of business failure. This paper concludes that, if Nigeria really wants to encourage entrepreneurship, reduce unemployment and ensure that business ventures continue to be in operation, Business education should be taken very serious. Finally, as a way forward which will lead Business education to rapidly develop entrepreneurship, this paper recommends that; Nigerian youths should be encouraged to study Business education, only business educators should be allowed to teach Business education, there should be adequate funding of Business education and entrepreneurs that lack Business education skills should be encouraged to acquire the skills. The study also recommends the development of policies and programmes to support entrepreneurship education and innovation. Entrepreneurship is encouraged in Nigeria because it could lead to self-employment, help in reducing unemployment and contribute towards development of the country.

Keywords: Role, Business Education, Digital, Entrepreneurial, Innovation, Driving, Transformation.

Introduction

It is the desire of every society to achieve a sustainable level of economic development. This could be possible through embarking on entrepreneurial activities by the citizens of the society. This is because the public sector cannot single-handedly drive in the desired level of development. Furthermore, the success of a society in entrepreneurship depends on skills (education) acquired by the entrepreneurs. This owes to the fact that education leads to creativity. Education also equips a person with relevant skills which would lead him to better performance in his chosen career.

In line with these, Business education which is described as an 'education for business and about business' could make a person to perform well as an entrepreneur. This is due to the fact that it equips the recipients with skills which are needed for business success. Furthermore, entrepreneurship focuses on the desire and ability of a person to search for investment opportunities within his environment and also be able to set up and run an enterprise based on the identified opportunities.

Nigeria, with a population of over 200 million people, is African's most populous country and has the continent's largest economy (World Bank, 2016). Despite its vast human and natural resources, Nigeria has struggled to achieve sustainable economic growth and development, with poverty and unemployment remaining significant challenges (National Bureau of Statistics, 2016). The Nigerian government has recognized the importance of business education and entrepreneurship in driving economic growth and development, and has implemented various initiatives aimed at promoting business education and entrepreneurship (National Policy on Education, 2016). Entrepreneurship education has been identified as a critical component in fostering a culture of entrepreneurship and

innovation (Lackeus , 2016). Entrepreneurship education in Africa amongst other things seeks to provide students in tertiary institutions with the knowledge, skills and motivation to encourage entrepreneurial success in a variety of ventures. Variations of entrepreneurship education are offered at all levels of schooling in Nigeria, from primary to secondary schools through the graduate university programmes. It is a lifelong learning process.

In Nigeria, entrepreneurship education has gained significant attention in recent years, with various institutions offering entrepreneurship programmes (Adebayo, 2016). However, despite these efforts, business education and entrepreneurship education in Nigeria still faces significant challenges, including inadequate funding, lack of infrastructure, and limited access to resources (Olokundun et al., 2016). Further more research has shown that entrepreneurship education can have a positive impact on innovation, as it provides individuals with the necessary skills, knowledge, and mindset to create innovative solutions to real world problems (QAA 2016).

Therefore, this study aims to investigate the role of business education in driving digital and entrepreneurial transformation among youth in Africa.

Concept of Business education

Business education is one of the major components of vocational education. In Nigeria as the most populated in Africa, the discipline is offered at both the secondary and tertiary levels of education. According to Abdullahi (2019), Business education is an aspect of total educational programme which provides the recipient with knowledge, skills, understanding and attitude needed to perform well in the business world as a producer or consumer of goods and services. Furthermore, Osuala (2018) is of the opinion that Business education is a broad area of knowledge that deals with a nation's economic system and also identifies and explains the rate of business contentment and experience that prepare individuals for effective participation as citizens, workers and consumers.

Finally, The National Open University of Nigeria (NOUN) (2018) defines Business education as an aspect of vocational education that equips people with necessary skills and theoretical knowledge needed for performance in business world either for job occupation or self-employment. It could be deduced from the definitions above that Business education is an education for and about business. It combines both theoretical and practical knowledge. In the same vein, it exposes the recipient to the economic system of his country and equips him/her with lifelong skills that would enable him/her to make reasonable judgment as a producer (entrepreneur), employee or consumer of goods and services. Aliyu (2020) stated that the purpose of Business education stresses the need for:

a. Specialized instruction to prepare students for career in business.

b. Fundamental instruction to help students assume their economic roles as consumers, workers and citizens.

c. Background instruction to assist students in preparing for professional careers requiring advanced study.

Conceptual Clarification Entrepreneurship

Entrepreneurship is the ability to create and build something from practically nothing. It is initiating, doing, achieving, and building an enterprise or organization. Entrepreneurship necessitates the dissemination of additional knowledge regarding the opportunities and impacts on the environment, society, and economy that are relevant to young and aspiring entrepreneurs. Entrepreneurship is the process of designing, launching, and running a business venture, which involves taking calculated risks, innovating, and persevering to create something of value. Shane and Venkataraman (2021) defined entrepreneurship as the process of discovery, evaluation and exploitation of opportunities. Hisrich et al., (2019) opined that entrepreneurship is the process of creating something new with value by devoting the necessary time and effort, assuming the accompanying financial, psychic, and social risks, and receiving the resulting rewards. Alaka & Okogua in Oguejiofor & Ezenwaji (2023) perceived entrepreneurship as the willingness and the ability of an individual to seek for investment opportunities, to establish and run an enterprise successfully towards a vibrant and successful national economy. It can also be conceptualized to mean the process and activities undertaken by entrepreneurs directed at capturing value associated with business opportunities.

Entrepreneurship is the practice of launching, running, and growing a business venture, requiring a combination of innovation, skills, and clear vision to create products, services, or ideas that meet market demands and offer value to a target audience. At its core, entrepreneurship involves transforming ideas into reality, and those who choose this path are ready to face the risks that come with starting a new business. Successful entrepreneurs embody passion, grit, and a desire to bring ideas to life, solving real world problems and improving lives through their endeavors.

Entrepreneurship is a multi-disciplinary concept. Aruwa (2016) states that the concept of entrepreneurship is not restricted to business or economic operation. It is also obtainable in non-

business operations. He however stated that in the business cycle, entrepreneurship is a distinct resource and a necessary condition for business success. According to Igwe in Adeyeye (2018), entrepreneurship has to do with the process of bringing together creative and innovative ideas as well as management and organizational skills so as to be able to integrate man, machineries and other organizational resources for the purpose of satisfying the identified needs of the customer, thereby creating wealth. Similarly, Kutatko & Hodgett in Mainoma & Aruwa (2016) are of the conviction that entrepreneurship is a dynamic process of vision, change and creation which requires the use of energy and passion for the purpose of creating and implementing new ideas and creative solution. Hisrich & Brush in Mawoli & Aliyu (2019) define entrepreneurship as the: "process of creating something new with value by devoting the necessary time and effort, assuming the accompanying financial, psychic and social risk, and receiving the resulting rewards of monetary and personal satisfaction and independence."

From the foregoing, it could be deduced that entrepreneurship is all about:

i. Identification of business opportunities
ii. Creativity and innovativeness
iii. Bearing risk to utilize opportunities or implement a new plan(s)
iv. Good management skills
v. Wealth creation

It should be noted that entrepreneurship is a risky venture, but yet, some people choose to become entrepreneurs. This choice may be due to the desire of becoming independent, personal and professional growth, profit making and ultimately contributing their quotas to the development of their societies. Ways through which Business education can promote entrepreneurship in Nigeria As noted earlier, Business education is an education for and about business. Entrepreneurship also focuses on identification and utilization of business opportunities, setting up and properly running an enterprise. Based on these, the following are the ways through which Business education can promote entrepreneurship in Nigeria:

Identification of viable business opportunities.

Business education equips the recipients with skills that would enable them to identify viable investment opportunities in their societies. Through this, they would be able to see opportunities where others see chaos. It would also equip them with skills that would make it possible for them to use the SWOT (strengths, weaknesses, opportunity and threats) analysis to function well as entrepreneurs. With this background in mind, it could be observed that Business education could promote entrepreneurship by prompting people to strive toward the utilization of the identified opportunities through taking calculative risks. Skills for financial management Accounting education is an integral part of Business education. It is thus, a potent tool for promoting financial prudence and business success. According to Adamu (2019), the inability of some small and medium-scale entrepreneurs to keep financial records negatively affect the growth of their businesses, ability to secure loans from financial institutions and determination of cost and profit. The knowledge of Business education would therefore help toward proper keeping of financial records. It would also guide the entrepreneurs in cost analysis, inventory control and profit determination.

Utilization of proper marketing skills

Inculcation of marketing skills is among the focus of Business education. According to Gidado (2019), marketers conduct surveys leading to the identification of people's needs and wants and develop products that would meet those needs and wants. This implies that Business education could promote entrepreneurship through making entrepreneurs to properly perform their entrepreneurial functions. This is because the knowledge of marketing would prompt them to make good use of the four-ps of marketing namely; product, price, place and promotion. It is expected that this would lead to the development of sound product idea which would be translated into an acceptable product in the market. Similarly, if it is a business of trading, an understanding of the product mix will make an entrepreneur to procure products that will be appealing to the customers. Finally, acquisition and utilization of the right marketing skills will promote entrepreneurship by leading to proper and acceptable pricing of the product, making it available at the right place and time as well as using the right promotional technique(s) to stimulate customers to buy the product.

Skills for proper business management

Management is crucial to the success of any entrepreneurial effort. As deduced from Aruwa (2016), managerial incompetence of some Nigerian entrepreneurs is among the problems of entrepreneurship in Nigeria. Business education can therefore help in ameliorating this problem and thus a tool for promoting entrepreneurship. This is because attaining proficient skills in economics and management is among the aims of Business education. The acquisition of requisite management skills would make

both current and potential entrepreneurs to successfully manage their ventures through the processes of planning, organizing, directing and controlling the available human and material resources. Similarly, their knowledge of economics is expected to make them to be rational and also ensure proper allocation and utilization of the available resources.

Avoidance of business failure

It is desire of every entrepreneur to ensure that his business survives as a going- concern. But some business ventures do not last long. According to Gana (2019), once a business ceases to be in operation, it is said to have failed. Based on the nature of Business education, it has the potentials of helping entrepreneurs to avoid business failure. This owes to the fact that it equips its recipients with skills for identifying the symptoms of business failure. Some of these symptoms include; declining sales, deteriorating working capital, declining profit and high debt ratio. With this information in mind, the entrepreneurs stand the chance of avoiding the failure of their businesses.

Entrepreneurship Education

Entrepreneurial education refers to the process of equipping individuals with the knowledge, skills, and mindset needed to develop an entrepreneurial mindset and succeed in entrepreneurial endeavors. Entrepreneurship Education, within the realm of Economics Education, acts as a catalyst for transforming theoretical knowledge into actionable initiatives. It transcends the conventional classroom approach by integrating real-world experiences, case studies, and practical exercises. By exposing students to entrepreneurial concept such as ideation, business planning, financial management, and risk assessment, entrepreneurship education nurtures an entrepreneurial mindset (Mohammed & Pitan, 2022). This mindset not only instills a sense of initiative but also foster adaptability, resilience, and creativity- essential qualities for budding entrepreneurs. Entrepreneurship education has been shown to have a positive impact on innovation in Nigeria.

Entrepreneurship education has been reported to support an increase in the value of entrepreneurial outputs. Entrepreneurial skills are also promoted to ensure that university students develop an opportunity-oriented perspective. In recent times, several national governments have increased collaboration with universities in a bid to drive initiatives for entrepreneurship and innovation. Entrepreneurial education is focused on developing youths as well as individuals with passion and multiple skills. Entrepreneurship education has to do with encouraging and inspiring children, youths, and elders on how to be independent both in thinking and creativity in business.

Entrepreneurial education refers to the process of equipping individuals with the knowledge, skills, and mindset needed to develop an entrepreneurial mindset and succeed in entrepreneurial endeavors (Yinka & Chidinma 2025). Opportunities for fostering entrepreneurship in secondary schools are manifold. Programmes like business simulations, innovation hubs, and school-led enterprises allow students to experiment with their ideas in low-risk environments. Partnerships with local businesses, tech startups, and educational NGOs also provide experiential learning opportunities, connecting students to mentors who can guide them in areas like project management, customer relations, and financial literacy. Through project-based learning, students can explore real world challenges, developing solutions and testing them with potential users.

Furthermore, extracurricular activities such as student-led clubs, and business competitions, encourage teamwork, collaboration and competitive spirit, which are essential in any entrepreneurial journey. Okoye in Oguejiofor & Umeh (2017) stated that the introduction of entrepreneurship education in institutions of higher learning is not just a welcome development but also a major step towards solving the economic problems through employment generation. This is largely due to entrepreneurial skills development inculcated in the learners. In today's world, entrepreneurship is seen as a vital source for economic growth and competitiveness, job creation as well as wealth creation and providing societal interests.

Innovation

Innovation is the process of introducing new improved products, services, processes, or business models that create value for individuals, organizations, or society as a whole. As stated by Crossan & Apaydin (2019), innovation is the process of creating and implementing new ideas, products, services, or processes that provide value to customers, improve efficiency, or create new markets. Keeley et al., (2021) defines innovation as the process of transforming ideas into new or improved products, services, or processes that create value for customers and drive business growth.

Innovation is the specific tool of entrepreneurs, the means by which they exploit change as an opportunity for a different business or service. In the modern economy, innovation is crucial for value creation, growth and employment and innovation processes take place at the enterprise, regional and

national level. Innovation will lead to new businesses as well as to the increased competitiveness of existing enterprise Muna (2015). Innovation is typically understood as the successful introduction of something new, and useful, for example introducing new methods, techniques, practices, products or services. An important distinction is normally made between invention and innovation. Invention is the first occurrence of an idea for new product or process, while innovation is the first attempt to carry it out into practice (Fang & School, 2016). In reality, an idea, a change or an improvement is only an innovation when it is put to use, and such effectively, causes a social reorganization. Innovation occurs when someone uses an invention or an idea to change how things work, how people organize themselves, or how they conduct their lives.

Driving / Sustainable Development

Sustainable development is defined as meeting the needs of the present without compromising the ability of future generations to meet their own needs. Kate et al., (2016) emphasized that sustainable development requires balancing economic, social, and environmental considerations to ensure a livable future. Sustainable development involves integrating economic, social, and environmental dimensions to achieve a holistic approach to development. Sustainable development aims to ensure human well-being and environmental protection by promoting sustainable consumption and production patterns. Oguejiofor & Ezeabasili (2016) defined sustainable development as a kind of development that can be initiated and managed properly in such a way as to give attention to continuity and preservation as people explore an explicit available resources for the enlargement of their existence. Sustainable development is a construct, which envision development as meeting the need of the present generation without compromising the needs of the future generation. For development to be sustained there must be human development.

Roles of entrepreneurship education

Roles of entrepreneurship education in fostering innovation for sustainable development in Nigeria Entrepreneurship and innovation are increasingly recognized as important drivers of economic growth, productivity and employment, and as a key aspect of economic dynamism. Entrepreneurship is an innovative behaviour of people. It is a way of doing business through creativity and innovation in identifying business opportunities. To ensure that people posses the requisite skills, knowledge, and abilities for creativity and innovation, entrepreneurship education becomes necessary. It is on this premise that entrepreneurship education was introduced in Nigerian tertiary institutions. Entrepreneurship education therefore, is the act of transmitting and imparting knowledge and skills on the student or learner for innovative and creative behaviour. It entails the acquisition of accounting and finance skills, production skills, marketing skills, human resource skills, information and communication technology skills, communication skills, among others (Oguejiofor & Umeh 2019). According to Manish & Sunil (2015), entrepreneurship education is the curriculum aimed at developing entrepreneurial knowledge, skills, attitudes, behaviour, venture creation spirit and motivation in a manner that ensure entrepreneurial success through innovation.

As it was opined by Fang and School (2016), stimulating the creative potential of students, promoting the stimulation of students' individuality and enhancing the professionalism, and improving students' strong pioneering spirit in entrepreneurship are the core and connotation of entrepreneurship education. Entrepreneurship education has educational value, which is embodied in the cultivation of students' knowledge, practical innovation ability and professional ability, so that students can start their own businesses and promote the overall development and progress of students. The educational value of innovation and entrepreneurship is also reflected in the important aspect of training students' professional quality development, and the students' entrepreneurial skills are created through specific training forms. Students' views on their entrepreneurship education mare related to their perception of innovation; fostering innovation through entrepreneurship education is the primary task of universities. Innovative awareness and innovative ability are also influenced by innovation personality.

In the opinion of Muna (2015), the benefits of entrepreneurial education include: creation of entrepreneurial thinkers who also have the skills and tools to start their own businesses; writing a business plan; applying economic principles; determining individual entrepreneurial interests; applying basic marketing skills; using strategies for idea generation; assessing feasibility of ideas; managing risk; identifying legitimate sources of capital; evaluating ownership structures; translating problems into opportunities; applying principles of human relations management; applying basic accounting and financial management principles; and engaging in ethical business practices; demonstrating. Entrepreneurship education is not just about teaching someone to run a business, it is about encouraging creative thinking and promoting innovation. Wei et al., (2019) emphasized that entrepreneurship education cultivates inventive talents which are vital driving force for future

development, since innovation-driven development strategies place new demands on entrepreneurship education at the present time.

Entrepreneurship education is an important way for entrepreneurs to acquire resources, enhance innovative ability and innovative personality, and build multi-level learning channels for entrepreneurs by integrating various knowledge and value systems. From knowledge learning to skills improvement, entrepreneurship education includes general ability development and improvement of professional ability. Entrepreneurship education is critical for successful innovation. When students are provided with entrepreneurship skills, they become innovative, which will lead to self-reliance and wealth creation thereby reducing the level of poverty and unemployment in the economy. Entrepreneurship education cultivates innovative talents, which are an important driving force for future development. At present, innovation driven development strategies place new demands on entrepreneurship education. However, most of the current research and discussion in this field focuses on the construction of teaching staff in the entrepreneurial education ecosystem (Ruskovaara & Pihkala, 2015), curriculum development (Falck et al., 2016), and whether entrepreneurship education can influence the intention of entrepreneurship (Pittaway & Cope, 2016).

Entrepreneurship stands as a pivotal propellant of our economy. The genesis of prosperity and a substantial portion of employment opportunities trace back to small enterprises initiated by individuals with an entrepreneurial mindset, a considerable number of who ascend to establish significant ventures. Those exposed to entrepreneurship frequently attest to a heightened ability to exercise creative liberties, an augmented sense of self-worth, and an overarching sensation of authority over their lives. As a consequence, numerous seasoned business professionals, political leaders, economists, and educators assert that cultivating a resilient entrepreneurial ethos is imperative, as it holds the potential to amplify both individual and collective economic and social accomplishments at local, national, and global levels. In alignment with this vision, the formulation of National Standards for Entrepreneurship Education was undertaken. This framework was devised with the explicit objective of equipping young individuals and adults alike with the tools essential for prospering within an entrepreneurial economy. By offering a structured curriculum rooted in entrepreneurship, this education prepares individuals to seize opportunities, manifest innovative ideas, and contribute dynamically to economic growth and societal progress. It is through the cultivation of this entrepreneurial mindset that communities and nations can realize their fullest potential, fostering a future brimming with possibilities and achievements.

Entrepreneurship education plays a crucial role in fostering innovation for sustainable development in Nigeria and Africa at large. It helps to develop a sustainable mindset among students, enabling them to identify opportunities for sustainable innovation (Adejumo, 2017). It encourages innovation and creativity by teaching students how to generate and evaluate sustainable business ideas. Entrepreneurship education equips students with essential skills and competencies, such as problem solving, critical thinking, and teamwork, necessary for sustainable innovation (QAA,2018). Igwe et al., (2016) stated that entrepreneurship education enhances the skills and competences of Nigerian entrepreneurs, enabling them to develop sustainable businesses. Entrepreneurship education contributes to sustainable development by creating new businesses, jobs, and opportunities that address social, economic, and environmental challenges (Acs et al., 2016). Entrepreneurship education has a positive impact on sustainable development in Nigeria, leading to improved economic growth, social justice, and environmental protection.

Importance of entrepreneurship includes:

a) **Skill Development**: Entrepreneurship encourages essential skills such as critical thinking, problem-solving, creativity, communication, and leadership. Students learn how to set goals, manage resources, and work within a team skills valuable in any career path.

b) **Career Preparedness and Employability:** Exposure to entrepreneurial thinking helps students understand diverse career options beyond traditional employment. They become better prepared to navigate future job markets, where adaptability, innovation, and self- reliance are increasingly valued.

c) **Promoting Innovation and Creativity:** Entrepreneurship education nurtures creativity by encouraging students to think outside the box, identify unmet needs, and develop innovative solutions. This fosters a mindset of continuous improvement and curiosity.

d) **Economic Awareness and Financial Literacy:** Entrepreneurship introduces students to fundamental concepts of economics, finance, and budgeting. These lessons in financial literacy prepare them for sound decision-making in both business and personal finance.

e**) Empowerment and Confidence:** By taking ownership of projects and seeing their ideas come to life, students build self-confidence and develop a sense of responsibility. This empowerment helps them face challenges and setbacks more resiliently.

Challenges of entrepreneurship education and their proffered solutions

Entrepreneurship education faces several challenges that hinder its effectiveness. Some of the challenges include the following:

i. **Lack of practical experience**

Challenge: Entrepreneurship education often focuses on theoretical knowledge rather than practical application, resulting in a lack of hands-on experience for students.

Solution: Integrate experiential learning methods such as business incubators, accelerators and mentorship programmes, to provide students with practical experience.

ii. **Limited resources**

Challenge: Entrepreneurship education programmes often face budget constraints, limiting the availability of resources such as mentorship, networking opportunities, and funding.

Solution: Seek partnerships with external organizations, such as businesses, government agencies, and non-profit organizations, to access resources and funding.

iii. **Curriculum design**

Challenge: Entrepreneurship education curricula often fail to incorporate essential skills such as creativity, innovation, and risk management **Solution**: Revise curricula to include experiential learning, design thinking, and lean startup methodologies to foster creativity, innovation, and risk management.

iv. Faculty competence

Faculty competence refers to the combination of knowledge, skills, and attitudes that a faculty instructor possesses to effectively teach, guide, and assess students in a specific academic discipline or subject area.

Challenge: Entrepreneurship educators often lack the necessary experience and qualifications to teach entrepreneurship effectively.

Solution: Provide faculty training and development programmes to enhance their knowledge and skills in entrepreneurship education.

v. Cultural and environmental barriers

Challenge: Cultural and environmental factors such as risk aversion fear of failure, and limited access to resources can hinder entrepreneurial endeavours.

Solution: Foster a supportive entrepreneurial ecosystem by promoting entrepreneurship culture, providing resources and funding, and encouraging experimentation and risk-taking.

Conclusion

Business education is a skill-based course which inculcates entrepreneurial skills in the recipient. Entrepreneurship on the other hand, deals with creative identification and utilization of business opportunities. This paper establishes that Business education has the potentials of promoting entrepreneurship in Nigeria since it could lead to the acquisition of skills for identifying viable investment opportunities, proper marketing, financial management, proper management and avoidance of business failure. The implication of this work is that, for Nigeria to encourage entrepreneurship, reduce unemployment and help the practicing entrepreneurs to be successful and achieve the aim of making their ventures to be going-concerns, Business education should be taken serious and highly encouraged; otherwise, the desire of Nigeria to encourage self-employment through entrepreneurship may end up as a mirage.

Entrepreneurship education plays a crucial role in fostering innovation in Nigeria. By integrating entrepreneurship education into the curriculum, Nigerian universities can produce graduates with the skills and mindset to create innovative solutions to the country's challenges. As noted by Olumide et al., (2017), entrepreneurship education can enhance the entrepreneurial intentions and competencies of Nigerian youths, thereby promoting innovation and economic growth. Similarly, Akpoyomare et al., (2017) emphasized the importance of entrepreneurship education in developing the skills and knowledge required for innovative entrepreneurship in Nigeria as the lagest country in Africa.

In conclusion, entrepreneurship education is essential for fostering innovation and driving digita entrepreneurial in Nigeria as the biggest country in Africa. By providing students with the necessary skills, knowledge, and mindset, entrepreneurship education can help promote innovative entrepreneurship and drive economic growth in Nigeria.

Recommendations

Based on the presentation so far, as well as the conclusion drawn, the following recommendations are suggested as the way forward:

1. Nigerian youths should be encouraged to study Business education

Our youths should be stimulated to study Business education. This could be done through career counseling both at home and school as well as creation of awareness through the National Orientation Agency (NOA). The essence of this is because Business education could lead to the production of high level and competent entrepreneurs. These people would also be able to encourage other people to venture into entrepreneurship and turn Nigeria for better.

2. Only business educators should be allowed to teach Business education
   Teaching of Business education should be left exclusively to the business educators. This is because, by their training and orientation, they are in better positions of inculcating entrepreneurial skills in the learners.
3. There should be adequate funding for Business education
   Business education is a skill-based course which requires a lot of money for the purpose procuring the requisite teaching materials. To ensure that the society reaps from its benefits, it should be adequately funded by the stakeholders. These stakeholders are; government at all levels (Federal, State and Local), corporate organizations, Non-Government Organisations (NGOs), philanthropic individuals and the Parents-Teachers' Association (PTA).
4. Entrepreneurs that lack Business education skill should be encouraged to acquire the skills.
   The entrepreneurs that lack Business education skills should be encouraged to acquire the skills. This encouragement can be done by the government through its agencies such as Small and Medium-scale Enterprise Development Agency of Nigeria (SMEDAN) and National Directorate of Employment (NDE) as well as NGOs and professional organisations. The business
5. Integrate digital into business education and entrepreneurship training: digital should form an integral component of entrepreneurship training at all levels in Nigeria.
6. Foster entrepreneurial intentions: Entrepreneurship education should foster entrepreneurial intentions among Nigerian youths, in order to reduce unemployment and poverty.
7. Promote sustainable development: Entrepreneurship education should be able to equip undergraduates with skills to function well and contribute to the society upon graduation.
8. Address challenges and strategies: Entrepreneurship education in Nigeria should address challenges such as inadequate funding, inadequate infrastructure, and lack of qualified educators, and develop strategies to promote entrepreneurship exploration in higher education.

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ENHANCING ADAPTIVE SKILLS OF BUSINESS EDUCATION STUDENTS THROUGH TECHNOLOGY-INTEGRATED INSTRUCTION

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Abstract

The rapid digitalization of the modern workplace requires higher education graduates to possess strong adaptive skills to handle ongoing technological disruptions. This study investigated the impact of technology-integrated instruction on the enhancement of adaptive skills among final-year (400-level) Business Education students in Ebonyi State, and Alex Ekwueme Federal University, Ndufu-Alike (AE-FUNAI), Nigeria. Adopting a quasi-experimental, pre-test, post-test, non-equivalent control group design, the study sampled 114 students from the two universities. The experimental group at Alex Ekwueme Federal University, Ndufu-Alike (AE-FUNAI) (n=55) was exposed to a 6-week block of technology-integrated instruction utilizing cloud-based collaborative platforms and Learning Management Systems (LMS). The control group at Ebonyi State University (EBSU) (n=59) was taught the same curriculum using traditional methods. Data were collected using validated performance-based and self-efficacy instruments entitled "Business Education Adaptive Skills Test" (BEAST) and an accompanying "Adaptive Skills Self-Efficacy Scale" (ASSES). The internal consistency of the instruments was calculated using Cronbach's alpha for the Likert-scale items, which yielded a reliability coefficient of 0.82. Data collected were analysed using Mean, Standard Deviation, and Analysis of Covariance (ANCOVA). The results showed that technology-integrated instruction significantly improved students' digital cognitive flexibility, online learning self-efficacy, and self-directed technological problem-solving skills. The study concludes that embedding digital pedagogy into instruction is vital for preparing resilient graduates. It recommends that university managements and lecturers institutionalize technology-integrated instructional frameworks to align business education programmes with industry demands.

Keywords: Adaptive Skills, Business Education, Technology-Integrated Instruction, TPACK, Self-Efficacy.

Introduction

The contemporary global business landscape is undergoing a profound digital transformation characterized by automation, artificial intelligence, and rapid technological disruptions. Nosakhare, (2023), believes that for graduates of business education programmes, particularly within the tertiary and technical education sectors, traditional administrative and clerical proficiencies are no longer sufficient for them to secure sustainable employment. Today's workplace demands individuals who possess high levels of adaptive skills, which encompass cognitive flexibility, digital literacy, self-directed learning, problem solving and the capacity to seamlessly adjust to evolving technological environments. Okoro, (2013), asserted that business education, is fundamentally aimed at equipping students with industry-relevant competencies for economic productivity and self-reliance. However, this course stands at a critical crossroads owing to consistent and continuous technological advancements. There is therefore an urgent need to transition from conventional, teacher-centred instructional methodologies toward dynamic, technology-integrated frameworks.

Meanwhile Chiamogu, (2024) noted that despite a conceptual alignment between technical education and modern workplace needs, a persistent gap between the digital competencies possessed by polytechnic and university graduates and the actual demands of industry still exist. Oguzor, (2011), also opines that in developing economies like Nigeria, business education curricula, including specialized streams such as Office Technology and Management (OTM), rely on theoretical or superficial exposures to digital tool, whereas national educational policies explicitly advocate for the

robust integration of Information and Communication Technology (ICT). The practical classroom implementation of this policy remains highly disjointed due to systemic infrastructural deficits, frequent power supply interruptions, and inconsistent instructional frameworks (Mada, 2025; Okoro, 2013). This pedagogical disconnect directly hinders the development of adaptive skills, leaving students poorly prepared to navigate dynamic, real-world work environments.

Adaptive skills in business education refer to a student's capacity to dynamically adjust, unlearn, relearn, and perform effectively within technology-driven business environments. Unlike static technical competencies, adaptive skills focus on cognitive, technological, and behavioural agility. Adaptive skills enable learners to adjust effectively to changing workplace demands, technologies, business environments, and emerging career opportunities. According to World Economic Forum (2023) it is an important workforce skill because technological change requires that workers continuously adjust their knowledge and capabilities. This necessitates preparing business education students in a way that they are able to respond effectively to changing technologies, business practices, and employment conditions. Adaptive skill in business education should develop the ability to acquire new digital, entrepreneurial and managerial competencies throughout business education students' career. Succi and Canovi (2020) identify adaptability as one of the skills that help graduates function effectively in changing work environment. It enables students to transfer what they learn to different workplace situations. In addition, van Laar et al (2020) noted that adaptive skill in business education include the ability to use digital technologies, communicate effectively online, solve problems and adapt to emerging digital work environments.

Contemporary business education must transition from static procedural training to inculcating digital cognitive flexibility which is embedded in adaptive skills. In the view of Hidayati et al., (2024) cognitive flexibility refers to the cognitive ability to modify and adapt mental strategies in response to changing demands within dynamic, technology-driven work environment. The term is rooted in Cognitive Flexibility Theory (Spiro et al., 1988), technology-integrated instruction and serves as a vital pedagogical catalyst by exposing students to non-linear problem-solving, interactive simulations, and real-time data environments (Lu & Xie, 2024; Siller et al., 2024). In the assertion of Sweller (1988) educators reduce extraneous cognitive load when digital tools are directly embedded into instructional delivery. This allows learners to redirect mental energy toward higher-order analysis, dynamic task-switching, and decision-making (Ramírez-Montoya et al., 2025). Siller et al. (2024,) added that this continuous restructuring of cognitive frameworks enables business education students to discard obsolete practices, independently acquire proficiency in unfamiliar enterprise software, and effectively respond to technological disruptions.

According to UNESCO (2025), digital literacy which enables on-line learning serves as the foundational technical and critical cognitive competency through which technology-integrated instruction fosters student adaptive skills. Beyond mere hardware manipulation, digital literacy in business education encompasses the capacity to access, critically evaluate, synthesize, and ethically deploy digital information and emerging software tools within dynamic corporate environments (American Library Association, 2024; UNESCO, 2025).

Lu & Xie (2024), testify that through technology-integrated instruction like enterprise resource planning (ERP) systems, interactive analytics, and cloud collaboration, students transition from passive technology users to active digital problem-solvers. This mastery, in the submission of Falloon (2020), and Siller et al. (2024), reduces technological friction and anxiety, granting students the baseline operational confidence required to navigate unfamiliar digital environments. To be precise, digital literacy serves as a foundational prerequisite through which business education learners acquire and strengthen advanced adaptive competencies, including technological resilience, digital agility, and sustained self-directed reskilling, enabling them to effectively navigate evolving technology-driven enterprise environment.

Technology-integrated instruction can strengthen students' confidence, flexibility, and capacity for continuous learning, which are essential components of adaptive skills in a rapidly changing technological environment. Online learning self-efficacy is important because students who are confident in using technology are more likely to adapt to new digital tools and learning environments.

Self-efficacy is rooted in Bandura's Social Cognitive Theory. It influences learners' motivation, effort, persistence, and ability to cope with challenging learning situations (Bandura, 1997). Zimmerman and Kulikowich (2016) submit that online learning self-efficacy refers to students' confidence in their ability to successfully use digital technologies and perform learning tasks in online or technology-mediated environments. It influences learners' motivation, persistence, self-regulation, and ability to overcome technological challenges.

Morris (2019) describes self-directed learning as the critical behavioural bridge through which technology-integrated instruction translates into sustainable adaptive skills. Rather than relying on passive lecture delivery, technology-integrated environments such as learning management systems, enterprise software, and interactive business simulations provide the support necessary for students to exercise digital action and self-regulation (Kruger, 2020). Mentz & Bailey (2020) maintains that when students actively direct their learning paths, they cultivate the autonomy required to troubleshoot unexpected software errors, curate business intelligence independently, and master new digital tools without formal retraining. This self-directed posture transforms static classroom learning into dynamic problem-solving, enabling business education students to unlearn outdated routines and continuously adapt to shifting market demands. In other words, encouraging self-directed learning through technology-driven pedagogy equips future business professionals with the lifelong cognitive and technological agility and problem solving skills needed to thrive in volatile enterprise environments.

Educational researchers increasingly advocate for the adoption of the Technological Pedagogical Content Knowledge (TPACK) framework to handle the issue of adaptability. Originally conceptualized by Mishra and Koehler (2006), TPACK posits that effective learning occurs when educators do not merely treat technology as an isolated tool, but skilfully fuse it with specific pedagogical strategies and disciplinary content (Guggemos, 2020; Valliere, 2023). Fang (2024), supports the assertion that technology-integrated business education instruction has the capacity to transform the classroom from a passive environment into a simulated digital workspace. Utilizing tools like cloud-based collaborative platforms, virtual office simulations, and digital data management systems allows students to actively construct knowledge and develop online learning self-efficacy. This hands-on, active participation fosters critical problem-solving and adaptive capacities that conventional teaching methodologies fail to reproduce (Oguzor, 2011).

Confronting the realities of modern higher education requires a thorough empirical investigation into how targeted digital instruction directly influences student adaptability. While considerable funding and institutional attention are directed toward the physical procurement of computer systems and digital software, these assets frequently sit underutilized due to a lack of structured, pedagogically driven integration strategies (Habila, 2023). This paper directly addresses this gap by investigating the impact of structured, technology-integrated instruction on the development of adaptive skills among business education students. By exploring the synergy between active digital learning environments and student skill acquisition, this study provides actionable insights for curriculum designers, institutional administrators, and lecturers aiming to cultivate globally competitive, resilient, and highly employable graduates.

Statement of the Problem

The core objective of business education is to equip students with practical competencies, digital literacy, and adaptive skills necessary for immediate employment and long-term economic self-reliance (Okoro, 2013). However, the contemporary global workspace has shifted rapidly from routine clerical functions toward a digitized, dynamic environment driven by workplace technologies. This shift demands that graduates possess high levels of cognitive flexibility and technological adaptability. The fundamental problem is a persistent and widening mismatch between the traditional pedagogical methodologies employed in tertiary institutions and the highly dynamic adaptive skills required by modern industries (Chiamogu, 2024; Nosakhare, 2023).

Most institutions make heavy investments in purchasing computers and digital infrastructure; however, these technologies are frequently treated as passive or isolated tools rather than being seamlessly integrated into instructional frameworks. Classroom instruction continues to rely heavily on superficial, teacher-centred approaches to software use, thereby limiting students' ability to

independently navigate evolving technology-mediated environments. In developing contexts, these instructional challenges are further intensified by systematic constraints, including unreliable electricity supply, limited internet connectivity, and the absence of structured pedagogical frameworks such as Technological Pedagogical Content Knowledge (TPACK) to support lecturers in the effective integration of technology into teaching and learning.

Consequently, business education students frequently graduate with rigid, rote-learned technical skills but lack the critical digital cognitive flexibility, problem-solving capacity, online learning self-efficacy, and all other adaptive competencies needed to adjust when workplace technologies inevitably evolve. Despite extensive evidence on the benefits of ICT literacy, limited empirical attention has been given to how structured and pedagogically driven technology-integrated instruction influences the development of adaptive skills among business education students. Without targeted empirical research to address this instructional gap, institutions will continue to produce business education graduates who struggle with underemployment and structural unemployment due to their inability to adapt to the changing digital demands of the modern business world. This study directly addresses this deficiency.

Purpose of the Study

The primary purpose of the study was to investigate the impact of technology-integrated instruction on the enhancement of adaptive skills among business education students in Universities in Ebonyi State. Specifically, the study sought to achieve the following purposes:

1. Assess the effect of technology-integrated instruction on the digital cognitive flexibility of business education students.
2. Determine the influence of technology-integrated instruction on the online learning self-efficacy of business education students.
3. Evaluate the extent to which technology-integrated instruction improves the self-directed technological problem-solving skills of business education students.

Research Questions

The following research questions guided the study:

1. What is the difference in the mean scores of digital cognitive flexibilities between business education students taught using technology-integrated instruction and those taught using traditional instructional methods?
2. How does the mean score of online learning self-efficacy differ between business education students exposed to technology-integrated instruction and those exposed to traditional instructional methods?
3. What is the difference in the mean scores of self-directed technological problem-solving skills between business education students taught through technology-integrated instruction and those taught through traditional instructional methods?

Research Hypotheses

The following null hypotheses were tested at a 0.05 level of significance:

Ho_1: There is no significant difference in the mean scores of digital cognitive flexibilities between business education students taught using technology-integrated instruction and those taught using traditional instructional methods.

Ho_2: There is no significant difference in the mean scores of online learning self-efficacy between business education students exposed to technology-integrated instruction and those exposed to traditional instructional methods.

Ho_3: There is no significant difference in the mean scores of self-directed technological problem-solving skills between business education students taught through technology-integrated instruction and those taught through traditional instructional methods.

Methods

The study adopted a quasi-experimental, pre-test, post-test, non-equivalent control group design. A quasi-experimental design is highly appropriate for this educational study because it is neither practical nor logistically feasible to disrupt established institutional schedules or randomly assign individual students to new classrooms without disrupting their academic progress (Creswell & Creswell, 2018). Intact, pre-existing classes were selected and assigned as experimental group and the other as

the control group. The population consisted of all final-year (400 level) business education students in universities offering business education in Ebonyi State, Nigeria. Final-year students were purposely selected because they have completed a substantial portion of their technical coursework, are preparing for immediate transition into the global labour market, and are expected to demonstrate advanced professional competencies. Purposive and multi-stage sampling technique was utilized. First, two Universities with comparable infrastructure and accreditation statuses were purposely selected to prevent cross-contamination of treatment effects. Second, one intact class of final-year business education students was chosen from each of the institutions. Through a simple flip of a coin, one institution's intact class was designated as the Experimental Group (E_G), while the second institution's class served as the Control Group (C_G). The final sample size comprised the total number of students enrolled within those two selected intact classes. Data for this study were collected using a researcher-developed instrument entitled "Business Education Adaptive Skills Test" (BEAST) and an accompanying "Adaptive Skills Self-Efficacy Scale" (ASSES). To ensure the instruments' validity, they were subjected to face and content validation by three experts: two lecturers from the department of business education and one measurement and evaluation expert. To establish reliability, the instruments were pilot-tested on small cohort of 400 level business education students from a university outside the study area. Internal consistency was calculated using Cronbach's alpha for the Likert-scale items, which yielded a reliability coefficient of 0.82. Before launching the intervention, a uniform pre-test was administered concurrently to both the experimental and control groups to capture baseline data. In the Experimental Group Treatment, students were exposed to a structured, 6-week instructional block where core business management and office administration topics were delivered via technology-integrated instruction. Lectures seamlessly integrated interactive learning management systems (LMS), real-time cloud collaboration tools (such as Google Workspace and Microsoft 365), and automated data management workflows to simulate a modern digital office environment. In the Control Group Treatment, students were taught the identical academic curriculum over the same 6-week timeframe, but using traditional pedagogical approaches. Instruction relied primarily on face-to-face lectures, whiteboard illustrations, textbook-bound study materials, and individual, offline paper-and-pencil and standalone computer assignments. Upon the conclusion of the 6-week instructional period, a post-test utilizing a shuffled variant of the original instrument was administered to both groups to measure empirical gains in adaptive skill dimensions. The collected quantitative data was systematically cleaned and coded into modern statistical analysis software. The Research Questions were answered using descriptive statistics, specifically calculating the Mean ({X}) and Standard Deviation (SD) for each group's pre-test and post-test scores. Null hypotheses were tested at a 0.05 level of significance using Analysis of Covariance (ANCOVA). ANCOVA was specifically chosen because it statistically controls for any pre-existing individual variances between the non-equivalent groups by utilizing the pre-test scores as a covariate.

Results

The findings of the study are presented below.

Research Question 1: What is the difference in the mean scores of digital cognitive flexibilities between business education students taught using technology-integrated instruction and those taught using traditional instructional methods?

Null Hypothesis 1 (Ho_1): There is no significant difference in the mean scores of digital cognitive flexibilities between business education students taught using technology-integrated instruction and those taught using traditional instructional methods.

Table 1: Pre-test and Post-test Mean Scores for Digital Cognitive Flexibility

Group	Institution	N	Pre-test Mean	Pre-test SD	Post-test Mean	Post-test SD	Mean Gain
Experimental (Tech-Integrated)	AE-FUNAI	55	42.18	6.42	74.65	5.12	32.47
Control (Traditional)	EBSU	59	41.85	6.81	51.30	7.24	9.45

Table 2: Summary of Analysis of Covariance (ANCOVA) for Digital Cognitive Flexibility

Source	Sum of Squares	df	Mean Square	F	p-value	Decision
Corrected Model	15420.12	2	7710.06	196.12	.000	Significant
Intercept	8940.45	1	8940.45	227.42	.000	Significant
Pre-test (Covariate)	210.34	1	210.34	5.35	.023	Significant
Group (Treatment)	14980.25	1	14980.25	381.06	.000	Reject Ho_1
Error	4363.60	111	39.31			
Total	451200.00	114				

As shown in Table 1, the experimental group (AE-FUNAI) achieved a remarkably higher mean gain score of 32.47 compared to the control group (EBSU), which had a mean gain of 9.45. To determine if this difference was statistically significant, the ANCOVA table (Table 2) shows an F-statistic for the treatment group of F (1, 111) = 381.06, with a p-value of .000. Because the p-value is less than the chosen alpha level ($p < .05$), the null hypothesis (Ho_1) is rejected. This indicates that technology-integrated instruction significantly enhances the digital cognitive flexibility of business education students compared to traditional methods.

Research Question 2: How does the mean score of online learning self-efficacy differ between business education students exposed to technology-integrated instruction and those exposed to traditional instructional methods?

Hypothesis 2 (Ho_2): There is no significant difference in the mean scores of online learning self-efficacy between business education students exposed to technology-integrated instruction and those exposed to traditional instructional methods.

Table 3: Pre-test and Post-test Mean Scores for Online Learning Self-Efficacy

Group	Institution	N	Pre-test Mean	Pre-test SD	Post-test Mean	Post-test SD	Mean Gain
Experimental (Tech-Integrated)	AE-FUNAI	55	2.12	0.45	3.58	0.38	1.46
Control (Traditional)	EBSU	59	2.15	0.41	2.34	0.49	0.19

Table 4: Summary of Analysis of Covariance (ANCOVA) for Online Learning Self-Efficacy

Source	Sum of Squares	df	Mean Square	F	p-value	Decision
Corrected Model	44.12	2	22.06	114.30	.000	Significant
Intercept	112.45	1	112.45	582.64	.000	Significant
Pre-test (Covariate)	0.85	1	0.85	4.40	.038	Significant
Group (Treatment)	42.10	1	42.10	218.13	.000	Reject Ho_2
Error	21.42	111	0.19			
Total	1012.50	114				

As presented in Table 3, the experimental group at AE-FUNAI demonstrated a substantial mean gain score of 1.46 on the 4-point self-efficacy scale, moving from a baseline of 2.12 (low self-efficacy) to 3.58 (high self-efficacy). In contrast, the control group at EBSU experienced a minimal mean gain of 0.19, ending with a post-test mean of 2.34. The ANCOVA results in Table 4 confirm that this difference is statistically significant, $F(1, 111) = 218.13$, $p = .000$. Because the p-value is less than the .05 significance level ($p < .05$), the second null hypothesis (Ho_2) is rejected. This proves that immersive exposure to technology-integrated instruction significantly builds students' confidence and self-efficacy in navigating online learning environments.

Research Question 3: What is the difference in the mean scores of self-directed technological problem-solving skills between business education students taught through technology-integrated instruction and those taught through traditional instructional methods?

Hypothesis 3 (Ho_3): There is no significant difference in the mean scores of self-directed technological problem-solving skills between business education students taught through technology-integrated instruction and those taught through traditional instructional methods**.**

Table 5: Pre-test and Post-test Mean Scores for Self-Directed Technological Problem-Solving Skills

Group	Institution	N	Pre-test Mean	Pre-test SD	Post-test Mean	Post-test SD	Mean Gain
Experimental (Tech-Integrated)	AE-FUNAI	55	38.50	7.12	71.22	6.04	32.72
Control (Traditional)	EBSU	59	39.10	6.95	45.65	7.30	6.55

Table 6: Summary of Analysis of Covariance (ANCOVA) for Self-Directed Problem-Solving Skills

Source	Sum of Squares	df	Mean Square	F	p-value	Decision
Corrected Model	18345.60	2	9172.80	204.57	.000	Significant
Intercept	6432.18	1	6432.18	143.45	.000	Significant
Pre-test (Covariate)	195.40	1	195.40	4.36	.039	Significant
Group (Treatment)	17920.15	1	17920.15	399.65	.000	Reject Ho_3
Error	4977.20	111	44.84			
Total	395400.00	114				

Table 5 shows that the experimental group achieved a mean problem-solving score increase of 32.72, whereas the control group's improvement was limited to a mean gain of 6.55. The inferential data presented in the ANCOVA table (Table 6) shows an F-value of 399.65 for the treatment effect, with a p-value of .000. Since $p < .05$, the third null hypothesis (Ho_3) is rejected. These statistical findings demonstrate that when business education students are taught using embedded digital pedagogy rather than static lectures, they develop significantly stronger, independent troubleshooting and technological problem-solving capabilities.

Discussion of Findings

The findings of the study provide empirical evidence of the transformative impact of technology-integrated instruction on the professional preparation of final-year university business education students. By shifting instructional practices from traditional lecture-based approaches towards interactive and technology-integrated learning environments, the study highlights the ways modern pedagogical frameworks directly build the core adaptive competencies demanded by the global workplace.

The analysis of data for Research Question 1 and the subsequent rejection of Null Hypothesis 1 demonstrated that students exposed to technology-integrated instruction achieved significantly higher scores in digital cognitive flexibility than those taught via traditional methods. This result underscores the reality that when digital tools, such as cloud-based productivity software and automated workflow systems are actively embedded into business management modules, students learn to switch effortlessly between diverse interfaces and cognitive tasks. This finding is in line with the structural tenets of the Technological Pedagogical Content Knowledge (TPACK) framework proposed by Mishra and Koehler (2006), which emphasizes that technology should not be a stand-alone addition but a core method of delivering content. It is also in congruent with Onwuchekwa, (2026) assertion that, moving past static whiteboard summaries and passive learning environments allows tertiary institutions to directly enhance their students' capacity for cognitive adaptation.

The outputs for Research Question 2 and Hypothesis 2 indicated a highly significant improvement in the online learning self-efficacy of students in the experimental group. Students who navigated structured Learning Management Systems (LMS), submitted cloud-based assignments, and engaged in virtual collaborations shifted from a baseline of low technological self-belief to high confidence scores. Conversely, students confined to traditional pen-and-paper or offline instruction showed negligible self-efficacy gains. The finding strongly supports Bandura's classical self-efficacy theory, which asserts that psychological confidence is primarily built through mastery experiences and hands-on performance accomplishments (Afari et al., 2023). When students regularly interact with cloud infrastructures and successfully overcome minor operational friction, their internal anxiety decreases and their digital confidence grows. As established by recent pedagogical reviews, domain-specific technological self-efficacy acts as a vital psychological mediator that drives graduates' willingness to adopt and master emerging technologies including artificial intelligence once they enter the workforce (Ismaniati, 2024; Joshi, 2023).

Regarding Research Question 3 and Hypothesis 3, the inferential data revealed that technology-integrated instruction yielded an outstanding positive effect on students' self-directed technological problem-solving skills. Students who were actively challenged to manage digital workspaces independently learned to identify, diagnose, and resolve technical issues such as database configuration errors or cloud synchronization faults without relying on immediate lecturer intervention. This outcome must have occurred because traditional teacher-centred instruction frequently robs students of the opportunity to make mistakes, thereby stifling critical thinking. In contrast, an instructional framework that uses technology to simulate authentic, industry-grade workplace challenges fosters active self-regulated learning strategies (Onwuchekwa, 2026). This finding agrees with Benitez (2024) view that when business graduates possess the willingness and capability to troubleshoot emerging technical challenges independently, they transform into valuable corporate assets capable of steering organizations through ongoing digital transformations.

Conclusion

The findings of this study provide confirmation that the integration of digital technology into instruction is not merely an administrative upgrade, but has become a pedagogical necessity for fostering the adaptive skills demanded by contemporary industries. Therefore, this study concludes that adopting structured pedagogical models, such as the Technological Pedagogical Content Knowledge (TPACK) framework is essential for bridging the gap between higher education and modern industry demands. Simply equipping laboratories with computers is insufficient; tertiary institutions must actively transform their classrooms into active, simulated digital workspaces. If Nigerian universities are to produce globally competitive, resilient, and highly employable business professionals, curriculum planners and institutional leaders must institutionalize technology-integrated instruction as a mandatory standard for tertiary business education programmes.

Recommendations.

Based on the findings of this study, the following are put forward:

1. University Senate, Curriculum Planners, and Departmental Heads at EBSU and AE-FUNAI must redesign the practical course blueprints for business education. They should mandate the use of varied digital interfaces (such as switching between Microsoft 365, Google Workspace, and open-source database systems) within the same academic semester.

2. Business Education Lecturers must restructure their daily teaching methods. Instead of relying on manual submissions, they should conduct all continuous assessments, group projects, and peer reviews through structured Learning Management Systems (LMS) like Moodle or Canvas, allowing students to build psychological confidence through successful digital navigation.

3. Business Education Lecturers and Technical Laboratory Instructors must actively design practical laboratory manuals that incorporate problem-based learning. Simultaneously, University Management and ICT Directorates must back these initiatives by providing stable internet bandwidth, reliable power configurations, and technical support teams to ensure that operational friction remains an instructive learning challenge rather than an insurmountable barrier.

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EMPOWERING WOMEN THROUGH DIGITAL ENTREPRENEURSHIP EDUCATION FOR INCLUSIVE ECONOMIC DEVELOPMENT IN AFRICA: A CONCEPTUAL REVIEW.

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Abstract

Digital entrepreneurship education holds significant promise for women's empowerment and inclusive economic development in Africa. Despite progress in education and entrepreneurship initiatives, women continue to face barriers such as limited access to digital skills, entrepreneurial training, and economic opportunities. These barriers restrict their ability to participate fully in the digital economy and reduce their contributions to national and regional development. This conceptual review examines frameworks and strategies for integrating digital entrepreneurship education into business education, aiming to enhance women's digital skills, entrepreneurial mindset, and capacity for innovation. Drawing on recent literature on women's empowerment, digital entrepreneurship, and inclusive development in Africa, the study identifies key enablers and challenges to promoting women's participation in the digital economy. It highlights practical strategies including digital skills training, mentorship programmes, and access to online business platforms, and supportive policy measures that can foster entrepreneurial growth, economic security, and inclusion. The review further discusses implications for business educators, policymakers, and stakeholders, emphasizing the role of digital entrepreneurship education in creating sustainable pathways for women's economic engagement. By equipping women with digital and entrepreneurial competencies, African nations can unlock economic potential, stimulate innovation, generate employment, and foster inclusive development.
Keywords: Digital entrepreneurship, women's empowerment, business education, inclusive development, Africa.

Introduction

Across the African continent, the intersection of gender, education, and economic opportunity has emerged as one of the most consequential policy frontiers of the twenty-first century. Despite decades of investment in women's education and entrepreneurship promotion, the structural conditions that define women's participation in economic life remain deeply unequal. Women constitute more than half of Africa's population, yet their contribution to formal economic output is consistently suppressed by entrenched barriers among them, limited access to quality digital skills education, inadequate entrepreneurial support, and systemic exclusion from technology-driven markets. Against this backdrop, digital entrepreneurship education presents itself not merely as an academic intervention, but as a transformative force capable of reshaping the economic trajectories of women across the continent.

The global economy has undergone a fundamental reconfiguration in the past two decades, driven by the rapid proliferation of digital technologies, e-commerce platforms, and knowledge-based industries. In Africa specifically, the digital economy is expanding at an unprecedented pace. According to the International Finance Corporation (2023), Africa's digital economy is projected to contribute approximately 8.5% of the continent's GDP by 2050, creating an estimated 44 million jobs. However, women remain disproportionately underrepresented in this digital expansion, constituting only a fraction of digital entrepreneurs, technology workers, and online business owners. This gender gap is not incidental; it reflects the cumulative effect of educational inequities, cultural norms, infrastructural deficits, and policy neglect.

Business education, broadly conceived, has an important role to play in reversing these trends. Traditionally, business education in Africa has emphasised conventional commercial subjects accounting, marketing, office management, and economics without adequately incorporating the competencies demanded by the digital economy. The integration of digital entrepreneurship education into business education curricula presents an opportunity to bridge this gap, equipping women with the technical knowledge, entrepreneurial reasoning, and innovation capacity needed to thrive in

technology-mediated markets. This paper argues that such integration, when supported by appropriate institutional and policy frameworks, can serve as a lever for broader inclusive economic development.
This conceptual review draws on recent scholarly literature to examine the frameworks and strategies through which digital entrepreneurship education can empower women in Africa. The paper is structured as follows: a review of the conceptual landscape situating women, digital entrepreneurship, and business education within the African context; an analysis of key barriers and enablers; a discussion of practical strategies and frameworks; implications for stakeholders; and concluding reflections on future directions.

Conceptual Framework and Theoretical Underpinnings

To understand how digital entrepreneurship education can empower women, it is useful to situate the discussion within three complementary theoretical frameworks: the Capabilities Approach, Digital Entrepreneurship Theory, and Transformative Learning Theory. Together, these perspectives illuminate the conditions under which education translates into economic agency and social change.

The Capabilities Approach

Amartya Sen's Capabilities Approach, further developed by Martha Nussbaum (2000), holds that human development is best understood not in terms of income or GDP, but in terms of what individuals are actually able to do and become. Applied to women's empowerment, this framework foregrounds the importance of real freedoms substantive capabilities such as the ability to engage in economic activity, access information and communication technologies, and exercise voice in decision-making. From this perspective, digital entrepreneurship education is not simply a mechanism for skills transfer; it is a means of expanding women's capability set, enabling them to convert digital competencies into entrepreneurial functioning and, ultimately, into greater economic and social agency (Alkire, 2005; Nussbaum, 2000).

Digital Entrepreneurship Theory

Digital entrepreneurship, as conceptualised by Hull et al. (2007) and elaborated by Nambisan (2017), refers to the creation and pursuit of economic opportunity through digital platforms, networks, and technologies. It is distinguished from conventional entrepreneurship by its reliance on digital infrastructure as both a productive resource and a market mechanism. Nambisan (2017) highlights the "open" and "distributed" nature of digital entrepreneurial processes, wherein value creation is mediated by digital artefacts and ecosystems rather than physical assets. For women in Africa, digital entrepreneurship offers distinct advantages: lower barriers to market entry, reduced dependence on physical mobility and infrastructure, and the possibility of operating competitive businesses from resource-constrained settings. The theoretical salience of this framework lies in its recognition that entrepreneurship is increasingly context-independent when mediated by digital technologies an insight with profound implications for women in geographically remote or socially restrictive environments.

Transformative Learning Theory

Jack Mezirow's (1991) Transformative Learning Theory posits that meaningful learning involves a fundamental shift in the learner's frame of reference their assumptions, beliefs, and values. For women whose entrepreneurial self-efficacy has been constrained by cultural expectations or educational disadvantage, transformative learning offers a theoretical basis for understanding how digital entrepreneurship education can re-engineer not only skills but also identity and agency. Education programmes that engage critically with learners' lived experiences, challenge limiting assumptions, and foster reflective practice are more likely to produce lasting behavioural and economic change (Mezirow, 1991; Taylor, 2017). This framework underscores the importance of pedagogical design not just what is taught, but how it is taught in producing transformative outcomes for women entrepreneurs.

Women, Entrepreneurship, and the Digital Economy in Africa

The Landscape of Women's Entrepreneurship in Africa

Africa hosts one of the world's highest rates of female entrepreneurial activity by some measures, yet the quality and sustainability of that activity varies enormously by region, sector, and socioeconomic context. The Global Entrepreneurship Monitor (GEM, 2022) reports that women in sub-Saharan Africa engage in entrepreneurial activity at rates comparable to or exceeding those of men in many countries. However, much of this activity is concentrated in the informal economy petty trade, subsistence agriculture, and domestic services sectors characterised by low productivity, limited scalability, and precarious income (Amorós & Bosma, 2014; Minniti & Naudé, 2010). The persistent concentration of women's entrepreneurship in low-value-added sectors reflects not a deficit of entrepreneurial ambition but a structural limitation of opportunity: limited access to finance, formal networks, skills, and markets.
The digital economy presents a qualitatively different set of possibilities. E-commerce, fintech platforms, digital content creation, online education, and remote service provision have created entrepreneurial niches that are, at least partially, decoupled from the traditional constraints of physical capital and

geographic proximity. Across Africa, platforms such as Jumia, Paystack, Flutterwave, and a growing ecosystem of locally developed digital tools have created infrastructure for digital entrepreneurship that did not exist a decade ago. Women who can navigate these platforms have access to regional and global markets previously beyond their reach. The critical question, therefore, is whether current educational systems are preparing women to seize these opportunities.

The Gender Digital Divide in Africa

Despite the expansion of digital infrastructure, a significant gender digital divide persists across the continent. According to the Alliance for Affordable Internet (A4AI, 2021), women in low- and middle-income countries are 8% less likely than men to own a mobile phone and approximately 20% less likely to access the internet. In sub-Saharan Africa, this gap widens further in rural areas, where infrastructural deficits compound social and economic barriers to digital access. The GSMA (2023) reports that women in sub-Saharan Africa are 37% less likely than men to use mobile internet, representing a gap of 119 million women who are not connected despite living in areas with mobile internet coverage.

This digital divide is not merely a matter of hardware or connectivity. It reflects deeper asymmetries in digital literacy, confidence, and access to the time and social permission required to engage with digital tools. Women's digital exclusion is reproduced by educational systems that have historically underinvested in girls' technical education, cultural norms that frame technology as a masculine domain, and economic conditions that make digital devices prohibitively expensive for many households. Addressing this divide therefore requires educational interventions that are simultaneously technical, cultural, and economic in orientation a challenge that business education is uniquely positioned, though not always equipped, to meet.

Barriers to Women's Participation in Digital Entrepreneurship

Understanding the specific barriers that women face in accessing digital entrepreneurship opportunities is essential for designing effective educational interventions. The literature identifies a constellation of interlocking barriers that operate at the individual, institutional, and structural levels.

Limited Access to Digital Skills and Technology

At the most immediate level, many women lack the foundational digital literacy required to participate meaningfully in the digital economy. This deficit is not solely a product of individual circumstance; it reflects historical patterns of gender-differentiated access to technology education in both formal schooling and informal learning environments. Studies across Nigeria, Kenya, Ethiopia, and Ghana consistently show that women receive less exposure to computers, smartphones, and internet-based tools during their formative educational years than their male counterparts (Adegbenro et al., 2022; Hafkin & Huyer, 2007). Without a foundational base of digital competency, even motivated women find it difficult to engage with the more advanced entrepreneurial applications of digital technology.

Sociocultural Constraints

Entrepreneurship and digital entrepreneurship in particular exists within a social and cultural context. In many African societies, gender norms restrict women's mobility, professional autonomy, and access to public spaces, including educational and commercial settings. Women entrepreneurs frequently report that family obligations, spousal disapproval, and community expectations constrain the time and resources they can devote to business development (Ahl, 2006; Marlow & McAdam, 2013). These constraints are amplified in contexts where digital engagement is associated with Western values or perceived as socially inappropriate for women. The persistence of these norms underlines the need for educational approaches that are culturally sensitive and community-embedded, rather than purely technocratic.

Limited Access to Finance and Capital

Access to startup and growth capital remains one of the most formidable barriers facing women entrepreneurs in Africa. Despite the emergence of mobile banking and fintech solutions, women continue to have lower rates of financial inclusion than men in most African countries (AfDB, 2020). Formal financial institutions frequently require collateral, credit histories, and business registration documents that many women cannot provide, particularly those operating in the informal sector. Without capital, the ability to invest in digital tools, e-commerce subscriptions, or business development services is severely constrained even for women with strong digital skills and entrepreneurial capacity.

Inadequate Institutional and Policy Support

At the macro level, the absence of gender-responsive policy frameworks represents a structural barrier to women's digital entrepreneurship. While many African governments have adopted national digital economy strategies and entrepreneurship promotion programmes, these initiatives frequently lack gender-specific provisions, fail to reach women in rural areas, or are undermined by weak implementation capacity (United Nations Economic Commission for Africa [UNECA], 2021). Business education institutions, for their part, have been slow to update curricula to reflect the competencies

required in the digital economy, and even slower to develop specific programming for women. This institutional inertia represents both a challenge and an opportunity for deliberate reform.

Key Enablers and Frameworks for Integration

Despite the gravity of these barriers, the literature also reveals a set of enabling conditions and practical frameworks that can support the integration of digital entrepreneurship education into women's education in Africa. These enablers operate at the programme, institutional, and policy levels.

Digital Skills Training Programmes

Targeted digital skills training is the most direct educational lever available. Research on effective digital skills programmes for women in Africa highlights the importance of contextualised, locally relevant content; the use of mother-tongue instruction where possible; flexible scheduling that accommodates domestic responsibilities; and the progressive design of curricula that moves from foundational digital literacy to applied entrepreneurial competency (Asongu et al., 2020; Peprah et al., 2020). Programmes such as the Heifer International Digital Entrepreneurship initiative in East Africa and the Tony Elumelu Foundation's digital acceleration programme have demonstrated the feasibility of scaling targeted digital skills training for women, particularly when delivered through community-based organisations with established trust and local legitimacy.

Critically, effective digital skills training for entrepreneurship must go beyond basic computer literacy to encompass competencies in areas such as digital marketing, e-commerce platform management, social media business promotion, mobile money, and data-driven decision-making. These applied competencies are directly relevant to the markets that women entrepreneurs are most likely to enter and most able to succeed in.

Mentorship and Networking Programmes

The role of mentorship in entrepreneurial development is well-established in the literature (Bosma et al., 2012). For women entering the digital economy, mentorship has a dual function: it provides domain-specific guidance on navigating digital platforms and business challenges, and it offers psychosocial support that counteracts the isolation and discouragement that many women entrepreneurs experience. Peer mentorship networks connecting established women digital entrepreneurs with those at earlier stages of their journey have shown particular promise in African contexts, where formal mentorship infrastructure is often limited (Gamba et al., 2022). Virtual mentorship platforms, enabled by mobile internet access, extend the geographic reach of such networks and can connect women in rural areas with mentors in urban centres or even diaspora communities abroad.

Integration into Business Education Curricula

The most sustainable pathway for scaling digital entrepreneurship education for women lies in the systematic integration of digital entrepreneurship into the curricula of existing business education institutions polytechnics, colleges of education, universities, and secondary schools. Curricula reform in this direction requires the incorporation of modules on digital business models, online marketing, fintech tools, intellectual property in the digital age, and social enterprise development. It also requires investment in educator capacity: business educators who are themselves digitally literate and entrepreneurially experienced are far more effective in transmitting these competencies to students (Kakkar, 2021; Ogbuanya & Chukwuedo, 2017).

The ABEN community is particularly well-positioned to drive this reform, given its mandate to advance the quality and relevance of business education in Nigeria and across Africa. The conference theme Business Education for Digital and Entrepreneurial Transformation in Africa explicitly invites engagement with questions of how business education can be modernised to address the demands of the digital economy, and women's empowerment represents one of the most compelling and consequential application domains of this transformative agenda.

Access to Online Business Platforms and Digital Infrastructure

For digital entrepreneurship education to translate into economic outcomes, women must have access not only to knowledge but also to the digital infrastructure through which that knowledge can be applied. This includes reliable internet connectivity, affordable smartphones and computers, and access to digital platforms for business transactions and marketing. Efforts to expand digital infrastructure in rural and peri-urban areas of Africa including government initiatives, private sector investment, and community digital hubs are therefore complementary to digital entrepreneurship education and must be pursued in parallel (World Bank, 2021). Business education institutions can play a connective role, linking students to available digital resources, platform ecosystems, and business support services.

Supportive Policy Environments

Macro-level policy support is essential to the sustainability of digital entrepreneurship education for women. This encompasses gender-responsive national digital economy policies, targeted funding for women's entrepreneurship programmes, regulatory frameworks that facilitate women's access to mobile finance, and investment in digital infrastructure in underserved areas. Countries such as Rwanda, Ghana, and Kenya have demonstrated that deliberate policy commitment to gender inclusion in the digital economy can yield measurable results, including higher rates of women's digital financial inclusion and increased female participation in technology sectors (African Union Commission, 2020; Ndung'u, 2019). These experiences offer replicable models for other African governments.

Implications for Business Educators, Policymakers, and Stakeholders

Implications for Business Educators

Business educators occupy a pivotal position in the ecosystem of women's digital empowerment. The immediate implication of this review is that business educators must themselves acquire digital competencies and entrepreneurial knowledge if they are to deliver effective digital entrepreneurship education. Professional development programmes, collaborative curriculum review processes, and sustained engagement with digital entrepreneurship communities of practice are therefore strategic priorities for business education institutions. Furthermore, pedagogical approaches must evolve: experiential learning, simulation-based instruction, project-based assessment, and engagement with real digital business challenges are more effective than didactic lecturing in developing entrepreneurial competence.

Beyond pedagogy, business educators have a role in advocacy making the case within their institutions for the integration of digital entrepreneurship into existing programmes, the development of dedicated women-focused entrepreneurship courses, and the establishment of partnerships with digital businesses, fintech companies, and mentorship organisations. The credibility and institutional location of business educators give them a distinctive capacity to drive change both inside and outside the classroom.

Implications for Policymakers

For policymakers, this review underscores the importance of treating digital entrepreneurship education not as a peripheral add-on but as a core component of national strategies for women's economic empowerment and inclusive development. Concrete policy implications include the development of gender-sensitive digital entrepreneurship education standards for business education institutions; the establishment of grant and loan programmes specifically targeted at women digital entrepreneurs; the integration of digital skills and entrepreneurship components into existing women's empowerment programmes; and the use of data and monitoring systems to track women's progress in the digital economy.

At the continental level, regional bodies such as the African Union and the Economic Community of West African States (ECOWAS) have an opportunity to develop harmonised frameworks for women's digital entrepreneurship education that can be adapted by member states, enabling the sharing of best practices and the scaling of effective interventions across borders.

Implications for Other Stakeholders

Private sector actor’s telecommunications companies, fintech firms, e-commerce platforms, and technology companies have both an interest in and a responsibility to contribute to women's digital entrepreneurship education. Women represent a vast, underserved market of potential entrepreneurs and consumers; their inclusion in the digital economy is not only a social good but also a commercial opportunity. Corporate social responsibility initiatives, public-private partnerships, and direct investment in women's digital skills programmes represent avenues through which private sector actors can make meaningful contributions. Civil society organisations, development partners, and academic research institutions similarly have important roles in generating evidence, piloting innovations, and holding governments and firms accountable for gender inclusion commitments.

Discussion: Towards a Framework for Women's Digital Entrepreneurship Education in Africa

Drawing together the insights reviewed above, it is possible to sketch the contours of a framework for integrating digital entrepreneurship education into women's education in Africa. Such a framework must be multi-level, addressing individual, institutional, and structural dimensions simultaneously; gender-responsive, recognising the specific barriers and strengths that women bring to digital entrepreneurship; contextually adaptive, accounting for the significant diversity in digital infrastructure, cultural norms, and economic conditions across African countries and regions; and empirically grounded, building on evidence from effective programmes and drawing on ongoing research to refine and improve practice.

At the individual level, the framework prioritises the development of a comprehensive set of digital entrepreneurial competencies spanning digital literacy, online business management, digital marketing, financial technology, and entrepreneurial mindset—delivered through contextualised, learner-centred pedagogies. At the institutional level, it calls for the systematic integration of these competencies into business education curricula, supported by investment in educator development and institutional partnerships. At the structural level, it demands policy frameworks that actively promote gender inclusion in the digital economy, supported by infrastructure investment, regulatory reform, and sustainable financing mechanisms.

This framework aligns closely with the ABEN conference theme of Business Education for Digital and Entrepreneurial Transformation in Africa. Women's digital entrepreneurship education is not a secondary or supplementary theme within this agenda it is, arguably, one of its most urgent and consequential expressions. Africa cannot achieve genuine digital transformation without the full and meaningful participation of its women; business education cannot claim relevance to the digital economy while leaving half its potential constituency behind.

Conclusion

This paper has argued that digital entrepreneurship education is a critical and underutilised instrument for women's economic empowerment and inclusive development in Africa. Through a review of relevant conceptual frameworks and empirical literature, it has illuminated the barriers that restrict women's participation in the digital economy, identified the enabling conditions and practical strategies that can facilitate their inclusion, and discussed the implications of these findings for business educators, policymakers, and other stakeholders.

The central conclusion of this review is that the empowerment of women through digital entrepreneurship education is neither a utopian aspiration nor a luxury intervention — it is a prerequisite for the achievement of Africa's inclusive development goals. When women are equipped with the digital competencies and entrepreneurial capacities to participate fully in the digital economy, the benefits extend far beyond the individual: households become more economically secure, communities become more innovative, and national economies become more productive and resilient. The potential is vast; the need for deliberate, well-designed, and adequately resourced action is urgent.

Recommendations

On the basis of this review, the following recommendations are offered to key stakeholders:

1. Business education institutions should urgently review and update their curricula to incorporate digital entrepreneurship competencies, with specific attention to the needs and circumstances of women learners.
2. National governments should develop and fund gender-responsive digital entrepreneurship education strategies, including targeted programmes for women in rural and underserved communities.
3. Private sector actors should invest in women's digital skills programmes as a component of corporate social responsibility and long-term market development strategy.
4. Academic researchers should conduct empirical studies to assess the effectiveness of digital entrepreneurship education interventions for women across diverse African contexts, generating evidence to guide programme design and policy.
5. Regional and continental bodies should develop harmonised frameworks for women's digital entrepreneurship education, facilitating cross-border learning and the scaling of effective practices.

The path toward an Africa in which women are full partners in the digital economy is neither short nor simple. But it is navigable, and digital entrepreneurship education, delivered with intention, rigour, and gender responsiveness, is one of its most promising waypoints.

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DIGITAL TRANSFORMATION SKILL INCLUSION IN BUSINESS EDUCATION PROGRAMME FOR UNDERGRADUATE FOR TECHNO-PRENURESHIP ATTAINMENT IN EBONYI STATE

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Abstract

The study examined the digital transformation skills inclusion in business Education programme for undergraduate techno-prenureship attainment in South-East, Nigeria. Two research questions and two null hypotheses guided the study. The study adopted descriptive survey research design. The population of the study comprised 102 business educators from four tertiary institutions that offered business education programme in South East geopolitical zone of Nigeria. There was no sampling. Instrument for data collection was structured questionnaire. The instrument was validated by three experts; two from Business Education Department and one from measurement and evaluation unit, science education department all from Ebonyi state university. The reliability of the instrument was established using trial-testing and data collected were analysed using Cronbach Alpha which yielded coefficient value 0.91. Data were analysed using mean, standard deviation and t-test. Findings showed that digital skills were highly needed in business education programme in tertiary institutions for digital economy development. It was further revealed that the identified digital skills were suitable for preparing business education students for digital economy development. The researchers concluded that the curriculum of business education should be restructured to accommodate digital skills that are critical to the growth of the nation's economy. Based on the findings, it was recommended among others that curriculum of business education should be reviewed from time to time to accommodate required digital skills to enhance digital skill acquisition among students for self employment and job creation.

Introduction

Digital technologies are electronic tools, systems, and devices that process, store and transmit data in binary code (0s and 1s). They represent the backbone of modern life, driving connectivity, automation and innovation through technologies like computers, smartphones, artificial intelligence (AI), and the internet. These tools are reshaping communication, business, healthcare, and education. Digital technologies have developed rapidly in recent time, changing people access information as well as human interaction and communication. This transformation includes emergence of digital economy and digital automation. Digital economy refers to the economic activities that emerge from connecting individuals, businesses, devices, data and operations through digital technology. It encompasses the online connections and transactions that take place across multiple sectors and technologies, such as the internet, mobile technology, big data and information and communications technology. The World Economic Forum and the Group of Twenty (G20) (2018) defined the digital economy as a broad range of economic activities comprising all jobs in the digital sector as well as digital occupations in non-digital sectors. The digital economy is estimated to make up around 5% of global GDP and 3% of global employment (Bukht & Heeks 2017). Based on this this, there is need for educational institutions to include digital skills into the curriculum of academic programme of business education students in tertiary institutions. This is to enable students to develop digital skills for business development business

Business education is a branch of vocational education programme aimed at equipping it recipients with relevant skills needed in the business world. According to Ezenwafor and Onokpaunu (2017), business education programme is a branch of vocational education concerned with exposing its recipients to the internal and external foundations and functioning of the workplace. Business education is a work-focused, skill-based, result-oriented and technology-based educational programme (Ugwoke, 2011). With the knowledge of business education, students are better informed and groomed with skills and understanding to cope with the unpredictable challenges of the business environment. However, business education programme which is charged with the responsibility of unveiling the dynamics of the world of work must ensure that its recipients possess relevant skills needed for effective entry and

efficient participation in economic development. Oguejiofor (2020) in support of the above stated that the value of any business education programme could be determined by its ability to adequately prepare and equip individuals in such a manner that they could fit into specific jobs, become technologically relevant, internationally competitive and economically prosperous, if properly packaged and adequately delivered. Extensively, business education is that aspect of general education that prepares students for employment and advancement in a broad range of office occupations, accounting profession, marketing occupation, teaching profession and entrepreneurship venture (Onokpaunu, 2016). However, the reliable medium through which the mission and vision of business education programmes can be achieved, stems from effective review and implementation of its curriculum (Ezenwafor & Onokpaunu, 2017).

A curriculum is the total plan of what students learn, how they learn it, and how teachers test their progress in a school or program. It includes goals, books, activities, and rules. It contains prescribed course of studies which students must learn in order to reach a certain level of education. According to Azubuike (2026), curriculum is the structured set of subjects, courses, and learning experiences offered by a school, college, or training program. It defines what students should learn, how learning is organized, and the skills or competencies they are expected to develop In addition, Efanimjor and Okolocha (2020) stated that curriculum is responsible for the systematic organisation of formal and informal experiences geared towards facilitating the development of the cognitive, physical, psychomotor and socio-emotional potentials of students.

Thus, Business Education curriculum in Nigeria is designed to equip students with practical skills in accounting, entrepreneurship, marketing, office management, and pedagogy, preparing them for careers in teaching, business occupations (including in the modern digital world), and self-employment. It blends general education with specialized vocational training to meet the needs of the modern economy. Correspondingly, Okoro (2015) opined that business education curriculum entails educational training which an individual receives in order to acquire adequate attitudes, concepts, knowledge, understanding and skills in business activities for vocational use in careers as administrators, managers, teachers wherever one may find oneself in the business world. It is believed that the curriculum of business education exposes students to educational and business-related experiences. One of such business related skill experiences in the modern time is technological entrepreneurship skill development otherwise known as technopreneurship.

Technopreneurship is the practice of building and running a business by combining advanced technology with an entrepreneurial mindset. Technopreneurship is a concept that combines elements of technology and entrepreneurship to create and develop innovative, technology-based businesses (Phuthong, 2023). The term "technopreneurship" stands for "technology" and "entrepreneurship". The concept emphasises the ability of individuals or groups to identify business opportunities arising from technological developments, design innovative products or services, and manage the business aspects associated with the application of technology. In the context of this study, technopreneurship, technopreneurs or technology entrepreneurs are individuals who not only have a strong business vision (Karneli, 2023), but also a deep understanding of technological developments and how technology can be applied in their business. Hence the need for business education curriculum to include technology entrepreneurship in business education curriculum.

However, it has been observed that business education in tertiary institutions in Nigeria today lacks modern digital skills required for techno-preneurship.. Oguejiofor (2020) reported that curriculum offerings at the tertiary institution levels do not cater for some of the needs of the current century skills. In agreement, Ikpesu (2017) stated that business education in Nigeria is at variance with global digital world. This variance, however portrays a total disconnection between what tertiary institutions offer and the needs of the labour market. The challenge here lies on how to ensure that the curriculum and delivery system provide satisfactory output that can compete globally in the labour market. In order to achieve this, there is need for the integration of digital skills in the teaching of business education programme.

Digital skills are the abilities to use devices, software, and networks to find, create, and share information safely and effectively. They range from basic computer use to advanced tasks like data analysis and AI tool management. According to UNESCO (2018), digital skills are a range of abilities to use digital devices, communication applications, and networks to access and manage information. They enable people to create and share digital content, communicate and collaborate, and solve problems for effective and creative self-fulfillment in life, learning, work and social activities at large. Ferrari (2013) saw digital skills as the ability to critically analyse and assess digital information, problem solving through the use of digital tools, creation and recreation of content and so forth. The International Telecommunication Union (ITU) (2018) defined digital skills as a set of technological abilities that may

be fully or partially acquired before entering the world of work. In the context of this study, digital skills are the abilities needed to use digital devices, applications, and networks effectively in work, education, and daily life. In Nigeria, programs like Digital Skills Nigeria (a Microsoft-led initiative) are helping young people gain essential skills in areas such as cloud computing, cybersecurity, data analysis, and AI to prepare for globally competitive careers.

Basic digital skills needed to be integrated into business education curriculum include computer literacy skills, digital connectivity skills and software management skills. Computer literacy skills are the essential abilities needed to use computers and digital technologies effectively. This ranges from basic operations like file management and email to advanced tasks such as data analysis, troubleshooting, and cybersecurity. In Nigeria, these skills are increasingly vital for employability, education, and entrepreneurship. According to Azubuike (2024), computer literacy skills refer to the knowledge, capabilities, and practical fluency required to effectively utilize computers, software applications, and related digital technologies to find, evaluate, create, and communicate information in the context of this study, computer literacy skills refers to computer literacy skills are the basic and advanced abilities needed to use computers and related technology effectively for everyday tasks, school, and work. Computer literacy skills are required to be integrated into business education curriculum. This will enable students to know the importance and the utilisation of computers and digital technologies in their routine daily activities. It might also enable them to develop entrepreneurial mindset in digital sector.

Apart from computer literacy skills, another skill, another important digital skill required to be integrated in the business education curriculum is digital connectivity skills. Digital connectivity skills are the practical abilities needed to use devices, software, and networks to safely access, share, and manage information online. According to Ogbonna (2025) digital connectivity skills refer to the abilities required to access, navigate, manage, and utilize digital communication tools, networks, and online resources effectively. These skills are essential for participating in the modern workforce, education, and social life. Mwafor (2023) also indicated that digital connectivity skills are the abilities that allow individuals to effectively connect, communicate, and collaborate using digital devices, networks, and platforms. In the context of this study, digital connectivity skills are the essential abilities required to operate digital devices, navigate networks, and use online communication tools safely and effectively. In Nigeria today, digital skills are critical for employability, remote work, and entrepreneurship, especially as the country faces a demand for 28 million digitally skilled workers by 2030. Therefore, integration of digital connectivity skills will enable students to develop skills in digital entrepreneurship development after graduation.

Finally, software management skills. Software management skills combine technical awareness, project control, and human leadership to guide development teams toward utilisation of software in business activities. According to Orji (2025) software management skills are the abilities required to plan, coordinate, and oversee the entire lifecycle of software projects from design to delivery and maintenance. They combine technical knowledge with leadership, communication, and risk management to ensure teams deliver high-quality software on time and within scope. In line with this, Nweze (2024) stated that software skills are technical abilities that enable one to effectively use computer programs and applications, essential for most modern jobs. Software management skills are essential because they ensure technology projects are delivered on time, within budget, and to the required quality standards. Students of business education require software management skills to enable them to gain employment as the demand for software skill workers are on the high side. In order to position business education students ahead of their counterparts, there is need to integrate software management and utilisation skills. Alyoubi (2015) noted that students need digital skills for effective participation in the development of digital economy. The World Economic Forum (2018) reported that digital skills are required for the development of every sector of economy (such as health, agriculture, finance, transportation, education, construction, tourism, information and communication technology industries among others). Business educators should therefore equip themselves with new technological skills needed to train students to fit into the demands of modern business world.

Despite the above-mentioned modern technology skills required to be integrated in business education curriculum in Nigeria, there is dearth of literature on the perception of lecturers of this noble course on the need for integration of these skills. It therefore becomes imperative to examine the necessities of these skills in Business Education curriculum Effective integration of digital skills in business education will adequately equip business education graduates with relevant ICT skills needed to establish and manage their personal digital business development for the reduction of high rate of youth unemployment in Nigeria as a whole and in Ebonyi state in particular where majority of the graduates hope on non existing government jobs. It is based on this that the study examines the digital

transformation skills inclusion in business Education programme for undergraduate techno-prenureship attainment in South-East, Nigeria.

Statement of the Problem

Youth unemployment remains a persistent challenge in Nigeria, particularly in South-East Nigeria (Ebonyi state in particular), where economic opportunities are limited, and many students on graduation entirely depend on government jobs for employment. With rising unemployment rates, many youths are left vulnerable to social vices, and illegal migration, which negatively impact the country's socio-economic development. Business education, is designed to equip students with entrepreneurial skills for self-reliance and job creation. However, traditional business education curricula may not adequately address the demands of the digital economy, where digital entrepreneurship skills are increasingly necessary for job creation. These new skills are in the areas of technological assets such as computers, smartphones, software applications, online operations and communication media web-based initiatives among others.

As the world is going digital there is need for business education students to acquire the right digital skills needed to meet up with the modern economy. This can only be achieved when students move with current trends in technological advancement which is reflected in the changing patterns of business education curriculum. Policymakers, researchers and educational stakeholders alike are beginning to recognize that closing this digital skills gap is essential for preparing the nations' educational sector (especially business education) for development of digital economy. Therefore, to close this gap, there is the need for the integration of digital skills into the business education curriculum in tertiary institutions to produce competent and skillful individuals that can compete with their counterparts globally in the ever-changing technological world.

Purpose of the Study

The main purpose of the study was to examines the digital transformation skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state, Nigeria. Specifically, the study seeks to:

1. Determine the computer literacy skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state
2. Find out the Determine the digital connectivity skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state
3. Determine the software management and utilisation skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi stat

Research Questions

The following research questions guided the study:

1. What are the computer literacy skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state?
2. What are the digital connectivity skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state?
3. What are the software management and utilisation skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state?

Null Hypotheses

1. There is no significant difference in the mean rating of male and female business educators on computer literacy skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state
2. There is no significant difference in the mean rating of male and female business educators on the digital connectivity skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state
3. There is no significant difference in the mean rating of male and female business educators on the software management and utilisation skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state

Method

The study adopted descriptive survey research design. The population of the study consisted of 50 business educators from four tertiary institutions offering business education courses in Ebonyi State, Nigeria. The whole population was studied because the population was not too large. The instrument for data collection was a structured questionnaire titled "digital transformation skills inclusion in business Education programme for undergraduate techno-prenureship attainment". The questionnaire was divided into two-parts. A and B. Part A was designed to elicit demographic information of the respondents such as school type. The instrument was developed based on a modified 4-points rating

scale. The instrument was validated by two experts in the field of business education and one experts from measurement and evaluation. Trial testing method was used to determine the reliability of the instrument using 20 business education lecturers outside the study area who were not part of the study. Data collected were analyzed using Cronbach Alpha which yielded an overall coefficient value of 0.82. The researcher personally administered copies of the questionnaire with the help of two research assistants to business educators in tertiary institutions within the area of the study. Data collected were analyzed using mean and standard deviation to answer the research questions and t-test was used to test the null hypothesis at 0.05 level of significance.

Results

Research Question 1: What are the computer literacy skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state?

Table 1: Mean rating of the computer literacy skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state

S/N	computer literacy skills inclusion in business education programme	$\bar{x}$	SD	Remarks
1.	Skills in booting and operating computer system	3.63	0.57	Agreed
2.	skills navigating files in the computer	3.56	0.71	Agreed
3.	Skills to operate keyboard and typing	3.51	0.61	Agreed
4.	Skills in office productivity software	3.47	0.75	Agreed
5	Internet and Email Proficiency	3.40	0.80	Agreed
6	Basic troubleshooting and technical support	3.17	0.74	Agreed
7	Use of spreadsheet and data analysis	3.27	0.77	Agreed
8	Basic Graphic Design Knowledge	3.07	0.83	Agreed
9	Database Management	3.07	0.78	Agreed
	Grand mean	3.35	0.63	Agreed

Table 1 shows the mean rating of the computer literacy skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state. The result from the table revealed that items 1-9 had the mean responses above 2.5 the criterion for acceptance. This means that all the 9 items were the computer literacy skills required to be included in the business education curriculum in tertiary institution for techno-prenureship attainment in Ebonyi state. The table also had the grand mean of 3.35 which indicated that computer literacy skills is required to be integrated in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state.

Research Question 2: What are the digital connectivity skills inclusion in business Education programme for undergraduate techno-prenureship attainment in South-East?

Table 2: mean rating of the digital connectivity skills inclusion in business Education programme for undergraduate techno-prenureship attainment in South-East

S/N	digital connectivity skills inclusion in business education programme	$\bar{x}$	SD	Remarks
10	Social media connectivity	3.10	0.701	Agreed
11	Use of virtual equipment for organising meetings	3.05	0.807	Agreed
12	Use of social media in social networking	2.85	0.934	Agreed
13	Use of intercom	3.24	0.655	Agreed
14	Use of webinars to communicate	3.18	0.742	Agreed
15	Use and surfing the internet	2.83	0.692	Agreed
16	use of e-mails	3.02	0.636	Agreed
17	Use of chatbots for feedbacks	3.01	0.751	Agreed
18	Use of artificial intelligence for customer care	3.10	0.701	Agreed
	Grand mean	3.05	0.807	Agreed

Table 2 shows the mean rating of the digital connectivity skills inclusion in business Education programme for undergraduate techno-prenureship attainment in South-East. Results from the table

revealed that items 10-18 were with the mean rating above 2.5 the benchmark for acceptance. This means that all the 9 items were the digital connectivity skills required for inclusion in business Education programme for undergraduate techno-prenureship attainment in South-East. The table also had the grand mean of 3.05 to support the claim.

Research Question 3: What are the software management and utilisation skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state?

Table 3: mean rating of the software management and utilisation skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state

S/N	software management and utilisation skills inclusion in business education programme	$\bar{x}$	SD	Remarks
19	Software development skills	3.15	0.740	Agreed
20	Software manipulation skills	3.46	0.556	Agreed
21	Software security skills	3.14	8.250	Agreed
22	Communication skill	3.01	0.906	Agreed
23	Skills in the adoption of software tools	3.15	0.740	Agreed
24	Utilisation of business software	3.18	0.602	Agreed
25	Technical awareness of software utilisation	3.10	0.701	Agreed
	Grand mean	3.05	0.807	Agreed

Table 3 shows the mean rating of software management and utilisation skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state. The result from the table showed that items 19-25 were with the mean ratings over 2.50 the criterion for acceptance. This means that software management and utilisation skills is needed to be included in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state.

Hypothesis One

There is no significant difference in the mean rating of male and female business educators on computer literacy skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state.

Table 3: Summary of t-test analysis of mean rating of male and female business educators on computer literacy skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state.

Variable	N	X	SD	DF	t-cal	t-crit	Decision
Male	36	3.36	0.63	48	1.49	1.96	Not Rejected
Female	14	3.63	0.68				

From table 4, the calculated t-cal of 1.49 is less than the t-critical value of 1.96 at 48 degree of freedom and at 0.05 level of significance. This indicates that the null hypothesis will not be rejected. It therefore shows that the null hypothesis which states that there is no significant difference in the mean rating of male and female business educators on computer literacy skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state was not rejected.

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Hypothesis Two

There is no significant difference in the mean rating of male and female business educators on the digital connectivity skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state

Table 4: Summary of t-test analysis of mean ratings of male and female business educators on the digital connectivity skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state

Variable	N	X	SD	DF	t-value	P-value	Decision
Male	36	3.42	0.63	48	1.29	1.96	Not Rejected
Female	14	3.53	0.78				

Data in Table 4 show that t-value of 0.35 at 48 degree of freedom is greater than the criterion value of 0.05. Therefore, the null hypothesis is upheld. This means that there is no significant difference in the mean rating of male and female business educators on the digital connectivity skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state
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Hypothesis III

There is no significant difference in the mean rating of male and female business educators on the software management and utilisation skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state

Table 4: Summary of t-test result analysis of male and female male and female business educators on the software management and utilisation skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state

Variable	N	X	SD	DF	t-cal	t-crit	Decision
Male	36	3.36	0.63	48	1.60	1.96	Not Rejected
Female	14	3.63	0.68				

From table 6, the calculated t-cal of 1.60 at degree of freedom of 48 and at 0.05 level of significance is lower than the critical value of 1.96. This indicates that the null hypothesis was not rejected. It therefore shows that the null hypothesis which states that There is no significant difference in the mean rating of male and female business educators on the software management and utilisation skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state was not rejected.

Discussion

Table 1 showed the mean rating of the computer literacy skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state. The result from the table indicated that for technoprenurship or entrepreneurship development in digital technology to take effect, the student are supposed to be computer literate. Computer literacy is the ability to use computers and related technology effectively and safely. It ranges from basic hardware operation to using everyday programs like word processors, spreadsheets, and web browsers without needing constant help. Results from the table revealed that the respondents agreed that there is need for include skills in booting and operating computer system. Booting and operating computer system is one of the basics of computer literacy skills. according Ebeh (2019), booting a computer is the most common basic of computer system utilisation. Thus, students ought know how to boot a computer system as a basic step in using of computer. The result from the table also indicated that the respondents stated that skills to navigate files in the computer, skills in keyboarding, office productivity software, internet and Email Proficiency, basic troubleshooting and technical support, use of spreadsheet and data analysis, basic Graphic Design Knowledge as well as database Management are required for inclusion in business Education programme for undergraduate techno-prenureship attainment in South-East. This result was supported by the hypothesis which stated that there is no significant difference in the mean rating of male and female business educators on computer literacy skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state.

Table 2 shows mean rating of the digital connectivity skills inclusion in business Education programme for undergraduate techno-prenureship attainment in South-East. There are many entrepreneurial opportunities in digital connectivity for graduates to engage in for self-employment. According to Nwigbo (2025), digital connectivity and literacy skills are the practical abilities needed to safely access, communicate, and manage information using modern digital devices and networks. The result from the study revealed that the respondents agreed that there is need to include skills in the; social media connectivity, use of virtual equipment for organising meetings, use of social media in social networking, use of intercom, use of webinars to communicate, use and surfing the internet, use of e-mails, use of chatbots for feedbacks and use of artificial intelligence for customer care. Digital media connectivity is required in business development, communication marketing and feedbacks. Hence the integration of digital media connectivity would boost the chances of techno-prenureship attainment in Ebonyi state

Table 3 showed the mean rating of the software management and utilisation skills inclusion in business Education programme for undergraduate techno-prenureship attainment in Ebonyi state. The result from the table revealed that the respondents agreed that software development skills, software manipulation skills, software security skills, such as communication skill, skills in the adoption of

software tools, skills utilisation of business software, and technical awareness of software utilisation. These results are in accordance with Nwafor (2025) who reported that software utilisation and management is required to be integrated in technology and vocational education programme as it will help to equip the recipient of this educational programme with skills in entrepreneurship development in the modern digital technologies.

Conclusion

From the foregoing, it can be said that curriculum review is very crucial for sustainable entrepreneurship development among graduates of business education. To position business education graduates to the technopreneurship world, there is need for integration of technological skills into business education curriculum. From the data collected and analysed, it was indicated that computer literacy skills digital connectivity skills and software management and utilisation skills are needed to be included in business Education curriculum programme for undergraduate techno-prenureship attainment in Ebonyi state.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. There is need for the NUC to integrate computer literacy skills in the curriculum of business Education programme for undergraduate techno-prenureship attainment in Ebonyi state
2. There is need for the NUC to integrate digital connectivity skills in the curriculum of business Education programme for undergraduate techno-prenureship attainment in Ebonyi state
3. There is need for the NUC to integrate software management and utilisation skills in the curriculum of business Education programme for undergraduate techno-prenureship attainment in Ebonyi state

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BUSINESS EDUCATION AS A CATALYST FOR AGRIPRENEURSHIP DEVELOPMENT AND SUSTAINABLE POVERTY REDUCTION IN NIGERIA

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Abstract

This study examined Business Education as a catalyst for agripreneurship development and sustainable poverty reduction in Nigeria. Business Education is increasingly recognized as a tool for equipping individuals with entrepreneurial skills necessary for self-reliance, job creation, and economic empowerment. The study was anchored on Human Capital Theory and Entrepreneurship Innovation Theory, which emphasize the role of education and innovation in economic development and poverty reduction. A qualitative approach based on literature review was adopted. Findings from reviewed literature revealed that Business Education significantly contributes to agripreneurship development by equipping learners with financial, managerial, and entrepreneurial competencies required for successful agribusiness ventures. It also promotes innovation, value addition, and self-employment, thereby contributing to sustainable poverty reduction. However, challenges such as inadequate practical training, insufficient funding, lack of infrastructural facilities, and weak policy implementation hinder its effectiveness. The study concludes that Business Education is a critical driver of agripreneurship and poverty reduction in Nigeria and recommends curriculum reform, improved funding, teacher capacity development and stronger institutional linkages to enhance its effectiveness.
Keywords: Business Education, Agripreneurship Development and Sustainable Poverty Reduction

Introduction

Business Education occupies a strategic position in Nigeria's educational system as it equips learners with the knowledge, skills and competencies required for effective participation in economic activities, including entrepreneurship and self-reliance. In recent years, the focus of Business Education has expanded beyond traditional office skills to include entrepreneurial training, innovation, and practical business development, particularly in response to rising unemployment and poverty levels in the country. According to the Federal Ministry of Education (2021), Business Education is designed to prepare individuals for gainful employment and to foster entrepreneurial capabilities that can drive national development. This makes it a vital tool for promoting agripreneurship, which integrates agriculture with modern business practices to enhance productivity, value addition, and market competitiveness.

Agripreneurship has emerged as a viable pathway for economic diversification and sustainable livelihood creation in Nigeria, especially given the country's vast agricultural resources and youthful population. Ogunlela (2022) emphasized that agripreneurship combines innovation, risk-taking, and value chain development within the agricultural sector, thereby creating employment opportunities and reducing rural-urban migration. Similarly, Nwankwo (2023) noted that integrating Business Education into agricultural practices equips individuals with managerial and financial skills necessary for running profitable agribusiness ventures. This integration is crucial in transforming subsistence farming into commercial agriculture capable of generating income and improving living standards.

Despite its potential, Nigeria continues to grapple with high levels of poverty, particularly in rural areas where agriculture remains the primary source of livelihood. According to National Bureau of Statistics (2022), a significant proportion of Nigerians live below the poverty line, highlighting the urgent need for sustainable poverty reduction strategies. In this context, Business Education serves as a catalyst by empowering individuals with entrepreneurial competencies that enable them to identify opportunities, mobilize resources, and create wealth within the agricultural sector. Mohammed (2021) argued that entrepreneurship-driven education can significantly reduce poverty by promoting self-employment and enhancing income-generating capacities among youths and rural dwellers.

Furthermore, the role of Business Education in fostering agripreneurship aligns with global development goals such as sustainable development and food security. Okonjo-Iweala (2020) highlighted the importance of investing in skills development and entrepreneurship education as a means of achieving

inclusive economic growth and poverty alleviation in developing countries. Business Education provides learners with essential skills such as financial management, marketing, record keeping, and innovation, which are critical for the success of agribusiness enterprises. These competencies not only enhance productivity but also ensure sustainability through efficient resource utilization and environmental consciousness.

However, the effective utilization of Business Education as a tool for agripreneurship development faces several challenges, including inadequate curriculum implementation, limited access to practical training, and insufficient funding for educational programs. Adeyemi (2022) observed that many educational institutions in Nigeria still emphasize theoretical knowledge at the expense of practical entrepreneurial skills, thereby limiting students' readiness to engage in agribusiness ventures. Additionally, issues such as poor infrastructure, lack of access to credit facilities, and weak policy support hinder the translation of acquired skills into viable agripreneurial activities (Adeyemi, 2022). In view of these challenges, there is a growing need to reposition Business Education to effectively serve as a catalyst for agripreneurship development and sustainable poverty reduction in Nigeria. This involves strengthening curriculum content, enhancing practical training opportunities, and fostering partnerships between educational institutions, government agencies, and the private sector. Therefore, this study seeks to examine the role of Business Education in promoting agripreneurship and its impact on sustainable poverty reduction in Nigeria.

Theoretical Foundation

This study is anchored on two relevant theories that explain the link between Business Education, agripreneurship development, and sustainable poverty reduction: the Human Capital Theory and the Entrepreneurship Innovation Theory. These theories provide a comprehensive framework for understanding how education, particularly Business Education, equips individuals with the competencies required to engage in productive agribusiness ventures and improve their socio-economic conditions.

1. Human Capital Theory

The Human Capital Theory, popularized by Gary Becker (1964) and further expanded by Theodore Schultz (1961), posits that investment in education and training enhances individuals' productivity, skills, and earning potential. The theory assumes that education is a form of capital that yields economic returns both to individuals and society. In the context of this study, Business Education represents a strategic investment in human capital, as it equips learners with entrepreneurial knowledge, managerial skills, and financial literacy necessary for agripreneurship development. Olayemi (2022) asserted that skill-oriented education, such as Business Education, significantly enhances the employability and self-reliance of youths, thereby reducing poverty levels. Similarly, Ugochukwu (2023) noted that human capital development through entrepreneurial training enables individuals to identify and exploit opportunities within the agricultural value chain, leading to increased productivity and income generation.

The theory further suggests that individuals who acquire relevant business and technical skills are better positioned to establish and manage agribusiness enterprises effectively. This aligns with the objectives of Business Education, which focuses on developing competencies in areas such as financial management, marketing, record keeping, and decision-making. However, critics argue that Human Capital Theory tends to overlook external factors such as access to finance, infrastructure, and policy support, which also influence entrepreneurial success. Despite this limitation, the theory remains highly relevant to this study as it emphasizes the transformative power of education in fostering agripreneurship and reducing poverty.

2. Entrepreneurship Innovation Theory

The Entrepreneurship Innovation Theory, propounded by Joseph Schumpeter (1934), provides another important theoretical foundation for this study. The theory views entrepreneurship as a driver of economic development through innovation, creativity, and the introduction of new products, processes, and markets. According to Schumpeter, entrepreneurs are change agents who disrupt existing economic structures by creating new opportunities and value. In relation to agripreneurship, this theory highlights the importance of innovation in transforming traditional agricultural practices into modern, profitable enterprises. Okeke (2021) emphasizes that agripreneurs who adopt innovative practices such as mechanization, digital marketing, and value addition are more likely to succeed and contribute to economic growth. Likewise, Bello (2022) argues that Business Education fosters entrepreneurial mindset and innovative thinking, enabling individuals to create sustainable agribusiness ventures that can alleviate poverty.

The Entrepreneurship Innovation Theory also underscores the role of education in nurturing creativity, risk-taking ability, and problem-solving skills among learners. Through Business Education, individuals

acquire the capacity to identify gaps in the agricultural sector and develop innovative solutions that enhance productivity and profitability. This is particularly important in Nigeria, where agriculture remains largely subsistence-based and requires modernization to meet the demands of a growing population (Bello, 2022). However, the theory has been criticized for placing excessive emphasis on individual innovation while downplaying the role of institutional and environmental factors. Despite this, it provides valuable insights into how entrepreneurial skills acquired through Business Education can drive agripreneurship development and contribute to sustainable poverty reduction.

Concept of Business Education

Business Education is a vital component of the educational system that focuses on equipping learners with the knowledge, skills, attitudes, and competencies required for effective participation in the business world and entrepreneurial activities. In Nigeria, Business Education has evolved from its traditional orientation of preparing individuals for clerical and office occupations to a broader scope that emphasizes entrepreneurship, innovation, and self-reliance. According to Federal Ministry of Education (2021), Business Education is designed to develop individuals who can function effectively as employees or employers by acquiring practical and theoretical business skills. This makes it a critical tool for economic empowerment and sustainable development.

Business Education integrates various disciplines such as accounting, marketing, management, and entrepreneurship to prepare learners for real-life economic challenges. Osuala (2020) defines Business Education as a programme that provides learners with functional skills, knowledge, and attitudes necessary for gainful employment and self-employment. Similarly, Onyido and Duru (2019) posits that Business Education equips students with critical thinking, decision-making, and problem-solving skills that are essential for business creation and management. These competencies are particularly relevant in the context of agripreneurship, where individuals must combine agricultural knowledge with business acumen to achieve profitability and sustainability.

Furthermore, Business Education plays a significant role in fostering entrepreneurial intentions among youths. Bello (2023) asserts that exposure to Business Education enhances students' ability to identify business opportunities, mobilize resources, and take calculated risks. This aligns with the growing need to address unemployment and poverty in Nigeria through entrepreneurship development. In addition, Okafor (2021) emphasizes that Business Education promotes self-reliance by encouraging learners to become job creators rather than job seekers, thereby contributing to economic growth and poverty reduction.

The relevance of Business Education to agripreneurship development cannot be overstated. Modern agriculture requires not only technical farming skills but also competencies in financial management, marketing, record keeping, and value chain analysis. According to Abdullahi (2022), Business Education provides the entrepreneurial framework needed to transform traditional farming into profitable agribusiness ventures. This transformation is essential for enhancing productivity, increasing income, and improving the standard of living among rural dwellers.

Despite its importance, the implementation of Business Education in Nigeria faces several challenges, including inadequate funding, shortage of qualified teachers, and limited access to modern instructional facilities. Adeyemi (2022) observes that many institutions still emphasize theoretical teaching at the expense of practical skill acquisition, which limits the effectiveness of Business Education in promoting entrepreneurship. Additionally, poor curriculum implementation and lack of industry collaboration hinder students' exposure to real-world business environments.

Concept of Agripreneurship

Agripreneurship is an emerging concept that combines agriculture with entrepreneurship, focusing on the application of business principles, innovation, and value addition within the agricultural sector. It goes beyond traditional farming by emphasizing productivity, profitability, and market orientation. In Nigeria, agripreneurship has gained increasing attention as a strategic approach to addressing unemployment, food insecurity, and poverty. According to Adesina (2021), agripreneurship involves transforming agriculture into a business-driven enterprise that creates wealth, generates employment, and contributes to national economic growth.

Agripreneurship encompasses a wide range of activities across the agricultural value chain, including production, processing, packaging, marketing, and distribution of agricultural products. Nwankwo (2023) defines agripreneurship as the integration of innovative practices and entrepreneurial skills in agriculture to enhance efficiency and competitiveness. This implies that agripreneurs are not just farmers but business-oriented individuals who apply modern techniques, technology, and management strategies to maximize output and profitability. The concept also highlights the importance of innovation and value addition in agriculture. Okeke (2022) notes that agripreneurship encourages the development of new products, improved farming methods, and better marketing strategies that increase the economic

value of agricultural produce. For instance, processing raw agricultural products into finished goods, such as turning cassava into garri or starch, significantly enhances income generation and reduces post-harvest losses. This value chain approach is essential for sustainable agricultural development and poverty reduction.

Agripreneurship is particularly relevant in Nigeria due to the country's abundant agricultural resources and large youth population. National Bureau of Statistics (2022) reports that a significant proportion of Nigeria's workforce is engaged in agriculture, yet productivity remains low due to the predominance of subsistence farming. By adopting agripreneurial practices, individuals can transition from subsistence to commercial agriculture, thereby increasing income levels and improving living standards.

Moreover, agripreneurship plays a critical role in job creation and rural development. Bello (2023) asserts that agripreneurship provides employment opportunities for youths and reduces rural-urban migration by making agriculture more attractive and profitable. It also contributes to food security and economic diversification, which are essential for sustainable national development. Despite its potential, agripreneurship development in Nigeria faces several challenges, including limited access to finance, inadequate infrastructure, poor market linkages, and lack of entrepreneurial skills among farmers. Mohammed (2021) observes that many farmers lack the business knowledge required to manage agricultural enterprises effectively, which limits their ability to scale up production and compete in the market. This underscores the importance of integrating Business Education into agricultural practices to equip individuals with the necessary skills for successful agripreneurship.

Concept of Sustainable Poverty Reduction

Sustainable poverty reduction refers to long-term strategies and processes aimed at improving the living standards of individuals and communities by addressing the root causes of poverty while ensuring economic, social, and environmental sustainability. Unlike temporary poverty alleviation measures, sustainable poverty reduction focuses on empowering individuals with the skills, resources, and opportunities needed to generate continuous income and improve their quality of life. In Nigeria, poverty remains a major socio-economic challenge, necessitating innovative and sustainable approaches to its reduction. According to the National Bureau of Statistics (2022), a significant proportion of Nigerians still live below the poverty line, particularly in rural areas where access to basic resources and opportunities is limited.

Amartya Sen (1999) conceptualizes poverty as a deprivation of capabilities, arguing that individuals must be empowered with skills and opportunities to achieve meaningful development. Building on this perspective, Fawole and Ozkan (2019) asserts that sustainable poverty reduction can be achieved through capacity building, entrepreneurship development, and access to productive resources, which enable individuals to create wealth and improve their livelihoods. In Nigeria, sustainable poverty reduction is increasingly associated with entrepreneurship and skill acquisition. Ngozi (2020) highlights that empowering individuals through education and entrepreneurial training is essential for achieving inclusive economic growth and reducing poverty. Business Education, in this regard, plays a crucial role by equipping individuals with practical skills such as financial management, marketing, and business planning, which are necessary for establishing and sustaining income-generating ventures.

Furthermore, sustainable poverty reduction requires the development of sectors with high employment potential, such as agriculture. Akinwumi (2020) notes that agriculture has the capacity to lift millions of people out of poverty if properly harnessed through innovation, investment, and value addition. Agripreneurship, therefore, serves as a viable pathway for sustainable poverty reduction by creating jobs, increasing income, and enhancing food security. When combined with Business Education, agripreneurship can significantly improve productivity and profitability within the agricultural sector.

However, achieving sustainable poverty reduction in Nigeria is hindered by several challenges, including inadequate access to finance, poor infrastructure, unemployment, and weak policy implementation. Olufemi (2023) observes that despite various government initiatives, the lack of effective skill development programmes and limited support for entrepreneurs continue to impede poverty reduction efforts. Additionally, socio-economic inequalities and limited access to quality education further exacerbate the problem.

Business Education and Agripreneurship Development

The relationship between Business Education and agripreneurship development has attracted significant scholarly attention in recent years, particularly in developing economies like Nigeria where agriculture remains a major source of livelihood. Business Education provides the foundational knowledge and entrepreneurial competencies required to transform agricultural practices into profitable ventures. It equips individuals with skills in financial management, marketing, record keeping, and business planning, which are essential for the success of agribusiness enterprises. According to Osuala

(2020), Business Education fosters entrepreneurial capabilities that enable individuals to identify and exploit business opportunities within various sectors, including agriculture.

Chinedu (2021) found that students exposed to entrepreneurship-oriented Business Education are more likely to engage in agribusiness activities and demonstrate higher levels of innovation and risk-taking. This suggests that Business Education plays a crucial role in shaping the mindset and attitude of individuals towards agriculture, transforming it from a subsistence activity into a viable business venture. Furthermore, Business Education contributes to agripreneurship development by promoting innovation and value addition in the agricultural sector. Okeke (2022) asserts that individuals with business training are better equipped to adopt modern technologies, improve production processes, and develop effective marketing strategies. These capabilities enhance productivity and competitiveness, thereby increasing the profitability of agricultural enterprises. In addition, Business Education encourages the development of value chains, where raw agricultural products are processed and packaged to meet market demands, leading to higher income generation.

The role of Business Education in agripreneurship development is also evident in its ability to address unemployment and youth disengagement. Sadiq (2022) emphasizes that equipping youths with entrepreneurial skills through Business Education motivates them to venture into agribusiness, thereby reducing dependence on white-collar jobs. This is particularly important in Nigeria, where youth unemployment remains a major challenge. By providing practical skills and knowledge, Business Education empowers young people to become self-reliant and contribute to economic development.

Empirical studies further support the positive impact of Business Education on agripreneurship development. Grace Okafor (2021) found that graduates of Business Education programmes who received entrepreneurship training were more likely to establish and sustain agribusiness enterprises compared to those without such training. Similarly, Ibrahim Abdullahi (2022) reported that access to business knowledge significantly improves farmers' decision-making abilities and enhances their capacity to manage risks associated with agricultural production.

Despite these benefits, several challenges hinder the effective contribution of Business Education to agripreneurship development in Nigeria. Olufemi Adeyemi (2022) observes that inadequate practical training, outdated curricula, and limited collaboration between educational institutions and the agricultural sector reduce the effectiveness of Business Education programmes. Additionally, lack of access to finance and modern technology limits the ability of trained individuals to implement their agripreneurial ideas.

Business Education and Sustainable Poverty Reduction

Business Education plays a significant role in promoting sustainable poverty reduction by equipping individuals with the knowledge, skills, and competencies required for economic empowerment and self-reliance. In Nigeria, where unemployment and poverty remain persistent challenges, Business Education serves as a practical approach to enhancing individuals' capacity to generate income and improve their standard of living. According to Osuala (2020), Business Education prepares individuals for both employment and entrepreneurship, thereby reducing dependence on limited job opportunities in the formal sector.

Mohammed (2021) argues that equipping individuals with entrepreneurial skills enables them to create jobs, generate income, and contribute to economic development. This aligns with the view of Kazeem (2021), who notes that skill acquisition and entrepreneurship development are essential strategies for achieving inclusive growth and reducing poverty in developing countries. Through Business Education, individuals acquire practical skills such as financial management, marketing, and business planning, which are crucial for establishing and sustaining income-generating ventures.

Furthermore, Business Education contributes to sustainable poverty reduction by fostering a culture of innovation and self-employment. Sadiq (2023) asserts that individuals who receive entrepreneurship training are more likely to identify business opportunities and develop innovative solutions to economic challenges. This is particularly important in rural areas, where access to formal employment is limited. By promoting self-reliance and creativity, Business Education empowers individuals to improve their livelihoods and reduce poverty sustainably.

Empirical studies have also demonstrated the positive impact of Business Education on poverty reduction. Okafor (2021) found that individuals who acquire business and entrepreneurial skills are better positioned to establish small and medium-scale enterprises, which serve as a major source of employment and income generation. Similarly, Akinwale (2022) reported that entrepreneurship-oriented education significantly enhances individuals' earning capacity and reduces poverty levels by promoting economic participation and productivity.

In addition, Business Education supports sustainable poverty reduction by enhancing financial literacy and resource management skills. Bello (2022) notes that individuals with business knowledge are more

capable of managing their finances effectively, making informed investment decisions, and sustaining their enterprises over time. This ensures that income generated from business activities is effectively utilized to improve living conditions and support long-term development.

Despite its potential, the effectiveness of Business Education in reducing poverty in Nigeria is constrained by several challenges. Olufemi Adeyemi (2022) observes that inadequate funding, poor curriculum implementation, and limited access to practical training facilities hinder the development of entrepreneurial skills among learners. Additionally, external factors such as lack of access to credit, poor infrastructure, and weak policy support limit the ability of individuals to translate acquired skills into sustainable business ventures.

Challenges Affecting the Effectiveness of Business Education in Promoting Agripreneurship and Poverty Reduction

Despite the recognized potential of Business Education in fostering agripreneurship development and sustainable poverty reduction in Nigeria, several challenges hinder its effectiveness. These challenges cut across educational, institutional and socio-economic dimensions, thereby limiting the ability of individuals to translate acquired knowledge into practical agribusiness ventures.

- **Inadequacy of practical-oriented curriculum and teaching methods:** Many educational institutions in Nigeria still emphasize theoretical knowledge rather than hands-on entrepreneurial training. Olufemi (2022) observes that the lack of practical exposure in Business Education programmes reduces students' readiness to engage in real-world agribusiness activities. Similarly, Kazeem (2021) notes that outdated curricula fail to incorporate modern agricultural practices and emerging technologies, thereby limiting students' ability to innovate within the agricultural sector.
- **Inadequate funding and infrastructural facilities:** Business Education programmes require well-equipped laboratories, demonstration farms, and access to modern technologies to facilitate effective teaching and learning. However, many institutions lack these essential resources. According to Federal Ministry of Education (2021), insufficient funding has continued to affect the quality of vocational and entrepreneurial education in Nigeria. This situation is further compounded by poor maintenance of existing facilities and limited access to instructional materials.
- **Lack of qualified and experienced teachers:** This is also a significant barrier. Effective delivery of Business Education requires educators who possess both academic knowledge and practical entrepreneurial experience. Emmanuel (2020) emphasizes that teachers without practical exposure to business and agribusiness operations may find it difficult to impart relevant skills to students. In addition, limited opportunities for professional development and training further hinder teachers' ability to adopt innovative teaching methods.
- **Access to finance:** This remains another major challenge affecting the translation of Business Education into agripreneurial practice. Kazeem (2021) points out that many graduates with entrepreneurial skills are unable to start or expand agribusiness ventures due to lack of capital and limited access to credit facilities. Financial institutions often impose stringent conditions that discourage young entrepreneurs, thereby limiting the impact of Business Education on poverty reduction.
- **Poor infrastructure and weak policy support:** Inadequate transportation systems, unreliable electricity supply, and limited access to markets negatively affect agribusiness operations. Bello (2022) argues that without supportive government policies and enabling business environments, the effectiveness of entrepreneurship education in reducing poverty will remain limited. Inconsistent policies and lack of coordination among stakeholders further exacerbate these challenges.
- **Negative perception of agriculture among youths:** Many young people perceive agriculture as a low-status and labor-intensive occupation, preferring white-collar jobs instead. Sadiq (2021) notes that this mindset discourages youth participation in agripreneurship, despite the opportunities available in the sector. This highlights the need for reorientation and awareness campaigns to change attitudes towards agriculture.
- **Weak linkage between educational institutions and industry:** This limits practical exposure and skill acquisition. Okafor (2021) observes that inadequate collaboration between schools and agribusiness enterprises reduces opportunities for internships, mentorship, and experiential learning. This gap makes it difficult for students to gain the practical experience required for successful agripreneurship.

Strategies for Enhancing Business Education for Agripreneurship Development and Sustainable Poverty Reduction

To maximize the potential of Business Education as a catalyst for agripreneurship development and sustainable poverty reduction in Nigeria, several strategic measures must be implemented. These strategies focus on improving curriculum delivery, strengthening institutional capacity and creating an enabling environment for entrepreneurial growth.

- **Integration of practical and skill-based training into Business Education programmes:** Emphasis should be placed on experiential learning approaches such as internships, industrial attachments, and school-based enterprises. Adeyemi (2022) suggests that practical exposure enhances students' ability to apply theoretical knowledge in real-life situations, thereby improving their readiness for agripreneurship. Similarly, Nwosu (2023) advocates for the inclusion of modern agricultural practices and digital tools in the curriculum to equip learners with relevant and up-to-date skills.
- **Increased funding and provision of adequate infrastructural facilities:** Government and private stakeholders should invest in the development of well-equipped training centres, demonstration farms, and modern instructional resources. According to the Federal Ministry of Education (2021), adequate funding is essential for improving the quality of vocational and entrepreneurial education. Access to modern technologies and learning resources will enhance the effectiveness of Business Education in promoting agripreneurship.
- **Capacity building for teachers:** Educators should be provided with regular training and professional development opportunities to enhance their knowledge and teaching skills. Olanrewaju, Osabohien and Fasakin (2021) emphasizes that teachers with practical business experience are better positioned to impart entrepreneurial skills to students. Training programmes should focus on innovative teaching methods, agribusiness management, and the use of digital technologies in education.
- **Improving access to finance for aspiring agripreneurs:** Financial institutions and government agencies should provide soft loans, grants, and credit facilities to support individuals in establishing and expanding agribusiness ventures. Fawole and Ozkan (2019) notes that access to finance is a key determinant of entrepreneurial success and poverty reduction. In addition, financial literacy programmes should be incorporated into Business Education to enable individuals to manage resources effectively.
- **Strengthening collaboration between educational institutions and industry stakeholders:** Partnerships with agribusiness firms, non-governmental organizations, and government agencies can provide students with opportunities for practical training, mentorship, and exposure to real-world business environments. Ogunleye and Bamidele (2021) highlights that such collaborations enhance skill acquisition and bridge the gap between education and industry needs.
- **Changing societal perceptions towards agriculture:** Awareness campaigns and sensitization programmes should be organized to promote agripreneurship as a profitable and respectable career option. Bello (2023) asserts that positive reorientation can motivate youths to embrace agriculture as a viable means of livelihood. Highlighting success stories of young agripreneurs can further inspire participation in the sector.
- **Supportive government policies and a conducive business environment:** These are essential for the success of agripreneurship initiatives. Bello (2022) argues that consistent policies, improved infrastructure, and access to markets are necessary to sustain entrepreneurial activities. Government should also ensure effective implementation and monitoring of policies related to entrepreneurship and agricultural development.

Conclusion

The reviewed literature and theoretical perspectives indicate that Business Education can serve as an important catalyst for agripreneurship development and sustainable poverty reduction in Nigeria. Its contribution lies principally in developing financial, managerial, marketing, record-keeping, innovation and business-planning competencies that enable individuals to identify opportunities, establish enterprises and manage resources effectively.

Agripreneurship provides a practical pathway for applying these competencies to agricultural production and value chains. It can support employment creation, income generation, value addition, food security and rural development. However, the impact of Business Education is not automatic. Inadequate practical training, poor funding, weak infrastructure, shortages of qualified teachers, limited access to finance and inconsistent policy support can prevent skills from becoming sustainable enterprises.

The central implication is therefore that Business Education should be repositioned towards practical, market-oriented and agripreneurship-focused learning. When educational institutions, government,

industry and financial institutions work together, the skills developed through Business Education can be more effectively converted into viable agribusiness opportunities and sustainable livelihoods.

Recommendations

Based on the findings and conclusions of the study, the following recommendations are made:

- Business Education curricula should contain stronger practical, skill-based and agripreneurship-oriented content aligned with current agricultural and economic opportunities.
- Government and educational authorities should provide adequate funding, modern instructional facilities and appropriate practical-learning environments.
- Regular training, workshops and capacity-building programmes should be provided for Business Education teachers to strengthen their entrepreneurial, agribusiness and instructional competencies.
- Educational institutions should develop sustained partnerships with agricultural industries and financial institutions to provide practical exposure, mentorship and access to funding opportunities.
- Government should implement supportive policies that encourage youth participation in agripreneurship and improve access to appropriate credit facilities.
- Entrepreneurship awareness campaigns should be intensified to present modern agriculture and agripreneurship as viable and profitable career options.

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DIGITAL SUBJECT COLLECTION FOR TECHNO-PRENUERIAL SKILLS ACQUISITION AMONG BUSINESS EDUCATION STUDENTS IN RIVERS STATE' TERTIARY INSTITUTIONS.

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Abstract

This study investigated digital resource collection for technopreneurial skills acquisition among Business Education students in universities in Rivers State. The growing demand for digital and entrepreneurial competencies in the modern economy has made it imperative to integrate well organized digital resources in business education programme. One specific objectives, one research questions and one hypothesis guided the study. Descriptive survey research design was adopted for the study. The population and sample of the study consisted of Business Education Lecturers in four tertiary institutions offering Business Education as an undergraduate programme in Rivers State during the 2025/2026 academic session. Structured questionnaire was used for data collection, this was analysed using mean and standard deviation. The results revealed that digital resources collections such as e-book, online tutorials, virtual simulations, business software applications and multimedia instructional materials play a significant role in enhancing students' acquisition of technopreneurial skills, including digital marketing, innovation, problem solving, and online management. The study also identified challenges such as inadequate access to digital infrastructure, poor internet connectivity and limited digital competencies among students and their lecturers as barrier to effective utilization. The study concluded that digital resources collections are critical tools for promoting technopreneurial skills acquisition among business education students. Based on the finding, it was recommended among others that Management in tertiary institution in Rivers state should provide adequate digital infrastructure including high speed internet access, functional computer laboratories, digital libraries and institutional repositories to support effective digital collection and Business education Lecturers should encourage students to make effective use of credible digital resources such as e-book, e-journal, online data base, open educational resource and institutional repositories in teaching and learning. Students should be encouraged to develop the habit of continuously collecting, organising and utilizing relevant digital content to improve their technological, entrepreneurial and life long learning skill.

Keywords: Digital Resources Collection, Technopreneur Skills Acquisition, Business Education, ICT, Universities

Introduction

The rapid advancement of digital technologies has transformed the global business environment, making technopreneurship an essential component of business education. The integration of digital tools into teaching and learning has created new opportunities for students to acquire practical knowledge and entrepreneurial competences. Business education, as a discipline designed to equip learners with knowledge, skills and attitudes needed for employment and self-reliance, has increasingly embraced digital resources to improve learning outcomes and prepare students for the demands of the digital economy. A digital subject collection refers to systematic acquisition, organisation, preservation and management of digital information resources on specific subject areas to meet the information resources on specific subject areas to meet the information needs. Johnson (2018) highlighted that

traditional collections that focus on digital subject collection includes electronic books, journals, databases, multimedia resources, and other online contents organised around particular disciplines. An organized respository of electronic learning materials such as e-books, online journals, multimedia resources, digital libraries, educational websites, videos, podcasts, simulations, and other electronics instructional resources that support teaching and learning. These resources provide students with easy access to current information, promote independent learning, encourage collaboration and improve digital literacy. Unlike traditional printing materials, digital subject collections are accessible through computers, smartphones, tablets and internet-enable devices, allowing student to learn anytime and from virtually anywhere. Hobbs (2017) explained that digital Subject Collection has to do with programme designed in order to build the competences of existing teaching staff with the view of boosting their performance and attainment of specific objectives using digital technologies. Similarly, Galaczi, Poulter and Allen (2018) described digital Subject Collection as the process used to introduce teachers to new sets of skills or tools essential in the attainment of educational goals using digital platforms. Consequently, it means that for teachers to always be capable of delivering educational offerings using digital technological tools, they need to develop the appropriate digital competences from time to time. Ottestad, Kelentric, and Guomundsdottir (2014) opined that the importance of Digital Subject Collection is to enable them drive the development of students' digital competence collaboratively as the end product of the learning process.

According to Redecker (2017), to create digital content, collaborate and communicate with others in order to solve problems relating to teaching and learning, teachers need to acquire digital competencies essential for their responsibilities.Digital Subject Collection for Techno-prenuer Skills Acquisition are of benefit to both the teachers themselves and to their students. This is because teachers' proficiency in the use of new digital technologies and other resources have been discovered to have link to the exposure of students to electronic learning exercises (Fraser, Atkins, & Hall, 2013; Abdulkarim & Onwuchekwa, 2020). Consequently, the possession of digital competences among teachers should actually promote their use of new technology to prepare for and teach in this digital era.

Technopreneurship is a form of entrepreneurship that combines technological innovation with business opportunities to create products, services or processes that meet societal needs while generating economic value. Technopreneurship is the process of combining technology, innovation and entrepreneurial skills to create new products, services or business models that generate economic or social value. It involves the identification and technological opportunities, development of innovation solutions and commercialisation of technological based ideas (Nambisam 2017). Technopreneurship skills acquisition combines technology prowess with entrepreneurial talent to launch and manage high-tech ventures. It requires a blend of hard technical abilities and soft business proficiencies, such as opportunity recognition, software development, financial literacy, digital marketing, and adaptable leadership. Nambisam (2017) explains that digital technologies have transformed entrepreneurship by enabling new forms of venture creation, collaboration and marketing expansion.

In today's knowledge driven economy, technopreneurs require both technical expertise and entrepreneurial capabilities, including creativity, risk taking, opportunity recognition, strategic planning and business management skills. According to Teece (2018), successful technology ventures depend on the ability to develop, protect and capture value from innovation in rapidly changing environments. Technopreneurial skills such as digital marketing, e-commerce, innovation, creativity, problem solving, software application, business analytics, financial technology and online business management have become essential for business education graduates.These skills enable graduates not only to secure employment but also to establish and manage technology based enterprises.

Business education programme has been explained by many authors. Val-Ossai and Akpomi (2017) described business education as that aspect of vocational education programme that prepares recipients with requisite competencies for entry into and advancing on jobs related to the business world as well as teaching profession. Business education students are expected to process both enterpreneurial and technological competencies to remain relevant in a highly competitive labour market. Val-Ossai and Akpomi (2017) described business education as that aspect of vocational education programme that prepares recipients with requisite competencies for entry into and advancing on jobs related to the business world as well as teaching profession. Ordu and Abdulkarim (2020) noted that business education programme offered at the universities have optional areas such as Office Technology and Management option, marketing/Distributive option, Accounting option, Entrepreneurship option, and Management option. Okoye (2021) averred that the introduction of business education programme in Nigerian university education curriculum gave a high hope to the nation's economic development as many of its graduates can drive economy. The goal of business education programme deduced from its definition and what it constitutes is to prepare students either

for paid employment or self-employment by guiding them to develop relevant knowledge, skills and attitude for business operations and teaching. The use of digital subject collections can significantly enhance students' learning experience by exposing them to current industry trends, practical business applications, online business models, and emerging technologies. Through digital learning platforms, students can develop critical thinking, communication, collaboration, creativity and problem solving abilities that are essential for successful technopreneurship. Despite the increasing availability of digital learning resources, many business education students continue to experience challenges in accessing and utilizing these resources effectively. Factors such as inadequate internet connectivity, limited access to digital devices, insufficient digital literacy, inadequate institutional support, unstable electricity supply and lack of training among lecturers often hinder the effective use of digital subject collections for learning and skills acquisition. Consequently many graduates leave school without practical technological and entrepreneurial competencies required to compete successfully in the modern business environment. Technopreneurship which combine entrepreneurship component with digital and technological capabilities are increasingly required for business graduates to create innovative ventures, compete in the digital economy and contribute to national development. Consequently higher education institutions are expected to provide students with access to quality digital learning and digital content that support acquisition of these skills.

In Nigeria despite government efforts to promotes digital education and entrepreneurship, many business education students still experiences difficulties in accessing, collecting and utilizing relevant digital content for learning technopreneurship. Challenges such as inadequate digital infrastructure, limited internet access, insufficient digital libraries and repositories, poor digital literacy, irregular electricity supply and inadequate institutional support often hinder students from effectively sourcing and using digital learning materials. These limitation may reduce students' opportunities to acquire practical technopreneur skills needed for self employment and innovation. Furthermore, while several studies have examine entrepreneurship education and integration of information and communication technology in Nigerian higher institution, limited attention has been given to digital subject collection as a factor influencing technopreneur skills acquisition among business education students. The extent to which student access, organise and utilize digital learning resources for developing technopreneur competencies remains inadequately explored. If these challenges persist, Business education graduates may lack technological and entrepreneurial competencies required to establish technology driven enterprises or effectively participate in the digital economy. Therefore, there is a need to investigate digital content collection for technopreneur skills acquisition among business education students in Rivers State' Tertiary Institutions. This seek to address the gap by examining the factors affecting digital content collection and its influence on students' acquisition of technopreneur skills.

Research Question

The study was guided by the following research question:

3. What factors affect digital content collection for technopreneur skills acquisition among business education students in Rivers State?

Hypothesis

The following hypothesis was tested at 0.05 significant level:

v. There is no significant effect of the factors affecting digital content collection on technopreneurial skills acquisition among Business Education students in Rivers State.

Method

The design adopted for this study was a descriptive survey research design. This research design was deemed appropriate because it will enable the researcher collect data from a representative sample of Business Education lecturers on digital collection and technopreneur skills acquisition without manipulating any variables. The population for this study was made up of 147 business education lecturers from all the public tertiary institutions in Rivers State, Nigeria offering Business Education as at 2025/2026 academic session. The population was deemed appropriate for the study because only Business Education lecturers can certify their possession of digital competencies and utilization of new technologies assessed. The breakdown of the population for the study was as follows:

Table 1: Population Distribution of Business Education Lecturers

S/N	Name of institutions	Lecturers
1.	Rivers State University	31
2.	University of Port Harcourt	07
3.	Ignatius Ajuru University of Education	25
4.	FCE(T) Omoku	78
	Total	141

Source: Academic and Planning Unit of Each of the Universities, 2026

The researcher used the entire population of 141 Business Education lecturers in public universities in south-south, Nigeria as the sample of the study. The entire population was used because it is a manageable size. According to Saunders, et al (2012) in Ordu and Abdulkarim (2020), when the population is small and the cost implication of studying is not much, the entire population can be studied. One structured questionnaire designed by the researcher and titled "Digital Content Collection and Technopreneur Skills Acquisition in Business Education Questionnaire (DCCTSAQ)" was used for the study. The questionnaire consisted of two sections. Section A: Respondents' demographic information, while section B: items measuring digital content collection and technopreneurial skills acquisition on 4 points rating scales of Strongly Agree (SA – 4points), Agree (A – 3points), Disagree (D – 2 points), and Strongly Disagree (SD – 1point) with a criteria mean of 2.5 as the mid points of positive and negative responses.

The instruments developed were given to three research experts, two from Business Education department and one from the field of Measurement and Evaluation in Federal College of Education (Technical), Omoku. The copy of the instruments was attached to the objectives of the study and hypothesis formulated and distributed to those involved in the validation. The experts were requested to determine the clarity and suitability of the items formulated for generating data required for the completion of the study. The experts were asked to make correction, suggestions as well as amend any item found not suitable. The contributions of the experts to the clarity and suitability of the items in the instrument were taken into consideration before the final copy of the instrument was mass produced for use to complete the study.

The reliability of the instrument was determined using the Cronbach Alpha Co-relation Coefficient. In order to generate data for testing the reliability of the instrument, a pilot study was conducted using 10 Business Education lecturers of undergraduate programme in Federal College of Education (Technical), Omoku, Rivers State who were not part of the study. According to Gill and Johnson (2010) in Onyemekara (2023), range of Cronbach Alpha index that falls within 1to 0.69 are considered to be inadequate while from 0.70 to 1 are considered to be adequate and acceptable for most research instruments. Consequently, the present instruments were deemed to be reliable with regards to their internal consistency which Cronbach alpha determines.

To cover the five tertiary institutions in Rivers State, the researchers recruited one research assistant to assist in administration of instruments to two tertiary institutions, while the researchers handled the other two. The research assistant was briefed on the purpose of the instruments and how to administer them to intended respondents. A letter of introduction explaining the purpose of the work was attached to the instruments. The instruments were administered to the respondents and retrieved the same day. However, at the point of collation only 123 copies were properly filled and returned. This is approximately an 87% return rate . However, the copies properly filled were coded and data generated for analysis. Pearson Product Moment Correlation (r) was used to answer the research question and test the hypothesis posed at 0.05 level of significance. For the purpose of interpreting the r value obtained, relationship scale interpretation by Bryman and Bell (2011) was used:

r = 00 – 0.19 'very weak relationship
r = 0.20 – 0.30 'weak',
r = 0.40 – 0.59 'moderate relationship',
r = 0.60 – 0.79 'strong',
r = 0.80 – 1.00 'very strong'

Results and Discussion

Research Question

What factors affect digital content collection for technopreneurial skills acquisition among business education students in Rivers State?

Table 1

S/N	ITEMS	MEAN	SD	DECISION
1	Internet access affects digital content collection.	3.72	0.81	Agree
2.	Digital literacy influences digital content creation.	3.69	0.76	Agree
3.	Availability of digital libraries enhances digital content collection.	3.61	0.84	Agree
4.	Poor Electricity Supply affects digital	3.83	0.71	Agree

	content collection.			
5	Institutional support enhances digital content collection.	3.65	0.80	Agree

The table reveals that grand mean is 3.70, which is above the criterion mean of 2.50, it indicates that respondents agreed that internet access, digital literacy,digital libraries, electricity supply and institutional support are significant factors affecting digital collection for technopreneur skills acquisition.

Research Hypothesis

There is no significant effect of the factors affecting digital content collection on technopreneur skills acquisition among business education students in Rivers State.

Table 2

Variables	Beta (β)	T - value	Sig.	Decision
Factors affecting digital content collection	0.631	9.284	0.000	Rejected H_0

Table 2 reveals significance value is 0.000. Since the Significant value 0.000 is less than the 0.5 level of significant, the null hypothesis is rejected. This indicates that factors affecting digital collection have a significant effect on technopreneur skills acquisition among business education students in Rivers State, Nigeria.

Discussion of Finding

The results relating to the research question and hypothesis formulated revealed that factors affecting digital collection have a significant effect on technopreneurial skills acquisition among Business Education students in Rivers State, Nigeria. Also internet access, digital literacy,digital libraries, electricity supply and institutional support were identified as major factors affecting digital content collection for technopreneur skills acquisition among Business Education students in Rivers state, Nigeria .

The finding of this study is supported by the findings of Fakomogbon and Bolaji (2017) reported that learning through mobile learning platforms (digital platforms) enables students to develop collaborative skills and sense of sharing idea with their peers, but this have not be adequately exploited in most tertiary institutions in Nigeria. The finding of this study is also supported by the assertion of Agbagbue (2019) who noted that the use of digital resources in teaching and learning has been significantly low and do not reflect the competence of teachers in empowering their students to practice collaboratively using online activities or learning activities that may require use of digital tools. Digital content creation significantly improves innovation, digital business competence, business planning, problem solving ability and entrepreneurial readiness, there by enhancing technopreneurial skills acquisition. The regression analysis showed the statistically significant relationship between digital content collection and technopreneurial skills acquisition at the 0.05 level of significance.

Conclusions

From the findings of this study, it was concluded that digital content collection is a critical component of technopreneurship education. Business Education students who have adequate access to relevant digital learning resources and possess the skill to search, organise, evaluate and utilize such resources are more likely to acquire technological and entrepreneurial competencies required to succeed in digital economies. Strengthening digital learning environments and improving students' digital content collection practices will enhance technopreneurial skills acquisition and prepare graduates for self employment, innovation and sustainable national development.

Recommendations

1. Management in tertiary institutions in Rivers State should provide adequate digital infrastructure including high speed internet access, functional computer laboratories, digital libraries and institutional repositories to support effective digital collection.
2. Business Education Lecturers should encourage students to make effective use of credible digital resources such as e-book, e-journal, online data base, open educational resource and institutional repositories in teaching and learning. Students should be encouraged to develop

the habit of continuously collecting, organising and utilizing relevant digital content to improve their technological, entrepreneurial and life long learning skill.

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DIGITAL TRANSFORMATION AND SKILLS ACQUISITION FOR TECHNO-PRENEURSHIP IN AFRICA: PATHWAYS TO DIGITAL ECONOMY

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Abstract

Africa is experiencing the fastest digital adoption in its history. With over 60% of the population under 25 years, the continent has a unique opportunity to leverage digital transformation to solve pressing socio-economic problems and create jobs. Digital transformation refers to the integration of digital technologies into business, education, and governance to drive innovation and productivity. However, technology alone is not enough. For Africa to fully benefit from the digital economy, its young people must acquire relevant digital and entrepreneurial skills. This is the foundation of techno-premiership — the ability to use technology to identify problems and build scalable businesses around solutions. This opinion paper argues that the future of Africa's economy depends on deliberately linking digital transformation with skills acquisition for techno-premiership. The paper examines the current state of digital transformation in Africa, the skills gap that limits youth participation in the digital economy, and the role of techno-preneurship as a vehicle for job creation and wealth generation. It draws insights from existing trends in fintech, agritech, edtech, and e-commerce across the continent to show that African problems require African techno-preneurs with the right competencies. The paper further highlights key challenges to skill acquisition for techno-preneurship as such inadequate digital infrastructure, outdated education curricula, lack of industry-school collaboration, and a mindset that favors job seeking over job creation. It contends that closing the skills gap requires a tripartite approach involving institutions, industry, and individuals. Universities should be able to shift to competency-based and project-driven learning. The private sector should invest in training, mentorship, and internships. Students should take ownership of their learning and innovation. It concluded that Africa does not need to copy digital models from other continents. It needs to build its own techno-preneurs who understand local contents and can create home-based solutions in health, agriculture, finance, education, transport and commerce. Lastly, it suggested among others that African governments, universities, and tech companies should take active part in training Africa's future workforce in technology incline programmes which can be done through internships, apprenticeships, and challenge-based learning where students solve real life problems.

***Keywords*:** Digital Transformation, Skills Acquisition, Technopreneurship, Entrepreneurship, Digital Economy

Introduction

Africa stands at a defining moment in its economic history. With about 60% of its population under the age of 25, the continent has the youngest youth population globally (United Nations, 2024). This demographic reality presents challenge and a unique opportunity for techno-preneurship development. The challenge is that traditional labor markets cannot absorb the estimated 10-12 million young Africans graduates entering the workforce each year (African Development Bank, 2023). While the opportunity is that this same youthful population, if equipped with the right skills, can drive innovation, create jobs and lead the continent's growth from resources and commodity driven economy to a digital economy. At the center of this opportunity lies digital transformation. Digital transformation has been widely discussed as a driver of economic development and productivity growth (OECD, 2023; World Bank, 2021). The Organization further explained that digital transformation is about using technology to create new or modify existing business processes, cultures, and customer experiences. According to Westerman, Bonnet, and McAfee, (2011) digital transformation "is the integration of digital technologies into all areas of business, education and governance to fundamentally change how value is created and delivered". Value creation in this wise is a function of diversification and digitalization of systems where critical thinking, creativity and innovation are the hallmark of such system. O'Brien, Scapicchio, Dowine (2025) described digital transformation as a business strategy initiative that

integrates digital technology across all areas of an organization. The authors state further that digital transformation reviews and modernize processes, products, operations and technology stack of organization's which facilitate continual and speedy customer-driven innovation. Organization for Economic Co-operation and Development (2023) asserted that digital transformation is all about using technology to create new or modify existing business processes, cultures, and customer experiences.

This implies moving from resource-dependent economies to knowledge and innovation-driven economies powered by technology which is already visible in the continent ranging from mobile money to various e-commerce platforms. This digital technology is reshaping how Africans live, work, and do business. The COVID-19 pandemic is a testament of the reshaping processes which further accelerated this shift, forcing schools, businesses, and governments to move services online within weeks. However, technology alone does not create transformation. Technology must be matched with human capacity which centered on skill acquisition. Skill acquisition is the process of gaining practical abilities and knowledge that enhance employability and entrepreneurship (NUM, 2025). Skills basically are task enablers required in the performance of specific operation in order to create value for profit. And in the context of digital economy, skills acquisition go beyond basic digital literacy to include entrepreneurial skills needed to build products, transport those products to prospective markets. The World Economic Forum (2024) identifies analytical thinking, creative thinking, and technological literacy as top skills for the future workplace. These are skills that are acquired through intentional training, mentorship, and experience. Hence, the success of digital transformation in Africa means young Africans must acquire not only technical skills but also entrepreneurial skills that allow such Africans to turn ideas into viable businesses. This combination is called techno-preneurship. Techno-preneurship is the fusion of technology and entrepreneurship. The relationship between skills and technopreneurship is therefore symbiotic. Technopreneurship cannot thrive without skills, and skills without an entrepreneurial outlet often lead to unemployment. When people acquire digital skills such as software development or data analytics but have no pathway to create businesses, they either migrate or remain job seekers.

Conversely, when they have entrepreneurial ambition but lack digital skills, their businesses remain informal and hard to grow. The success stories we see across Africa prove this point. Andela succeeded because it combined world-class coding training with a business model that connected African talent to global clients. Farmcrowdy succeeded because it combined agritech knowledge with an entrepreneurial model that connected small farmers to investors. In both cases, skills acquisition was the foundation upon which techno-preneurship was built. This suggests that any policy or programme aimed at promoting techno-preneurship in Africa should start with skills. Despite this clear link, several factors continue to limit skills acquisition for techno-preneurship in Africa. First is the issue of access. Many young people, especially in rural areas, still lack access to computers, stable internet connectivity, and electricity. Learning cloud computing skills for instance is impractical with inconsistent internet connectivity. Second is the issue of relevance of curricula. University curricula are often outdated and do not aligned with industry needs. A student can graduate with a degree in Computer Science without ever building a real product or working on a real project. Third is the issue of mindset. Africa education system still trains students to seek white-collar jobs rather than to create jobs. Entrepreneurship is often taught as a theoretical course rather than as a practical activity. These challenges mean that even when digital infrastructure improves, the human capital needed to drive it may not be ready. This creates a dangerous scenario where Africa imports digital solutions instead of creating digital solutions. To address these challenges, Africa must rethink skills acquisition from three angles: institutions, industry, and individuals. At the institution level, universities, polytechnics, and vocational centers need to redesign their programmes to be competency-based and project-driven. This means more training programmes for software skills development, more tech competitions, more startup support centers, and more partnerships with tech companies. At the industry level, private sector players should take responsibility for training. Tech companies cannot keep complaining about skill gap without investing in closing it. Models like apprenticeships, internships, and corporate schools have worked elsewhere and can work in Africa. At the individual level, young Africans should take ownership of their learning (self-learning). The internet has democratized access to knowledge, thus, individuals with smartphone can learn various software design programmes. If these three actors align, the potential for techno-preneurship in Africa is enormous. In other words, Digital transformation provides the platform. Skills acquisition provides the engine. Techno-preneurship provides the vehicle for economic growth and job creation. Africa does not need to wait for foreign investors to solve its problems. The problems of poor healthcare, inefficient agriculture, financial exclusion, and poor logistics are all opportunities for techno-preneurs who understand the local setting and have the skills to build solutions. What Africa needs now is bold action; governments that fund digital skills programmes,

universities that teach for the future, companies that mentor young techno-preneurs, and young techno-preneurs who are willing to build.

Concept of Digital Transformation and Techno-preneurship

Digital transformation is the application of technology driven methods in the management of business processes. It is changing how work processes are done, how businesses create value that meets customers expectation, and how customers experience products. Digital transformation is the process of converting traditional business activities and processes into digital systems using technology (Renad, 2025). Digital transformation is the integration of digital technology into all areas of a business, fundamentally changing how it's operate and deliver value to customers (Enterprisers, 2026). Rogers (2016) explains that digital transformation is a strategy for competing in a customer network. Gaining advantage in a competitive customer network requires businesses to first understand how people search, buy and communicate on phones and the internet. Because customers behaviors are changing, as such organizations can no longer rely on the same methods, products and services of yesteryears. They have to redesign experiences around trend, personalization, and convenience to remain relevant in the business world. In this case technology is the enabler. Technology alone, however, does not create transformation. Kane et al. (2019) found that the altering of organization culture to become more responsive, risk tolerant and experimental remains a sure way in adapting to digital disruption. Westerman, Bonnet, and McAfee (2014) argue that digital transformation requires leaders who can set a clear vision, model new ways of working, decide which old processes to drop, which data to use for decisions and how to reward innovation. The authors further reiterate that technology must be connected to business results; that moving sales to an online platform is not transformation if the organization still measures success the same old way. Real transformation happens when leaders use digital tools to change decisions, products, and how teams are organized. Bughin and Van Zeebroeck (2017) discovered that businesses that treat digital as an ongoing capability outperform those that do a single "digital project" and stop. Because technology keeps changing, organizations must keep learning, keep listening to customers, and keep updating their systems. When this happens, techno-preneurship becomes the way organization stays relevant, creates new value, and serves people better.

Technopreneurship is the act of starting and growing a business where technology is the main product, service or tool. The word itself joins "technology" and "entrepreneurship." It describes individuals who do not only use technology but build with it to solve real problems. The one who uses technology to solve problem is techno-preneur. Techno-preneur looks at daily challenges in order to designs digital solution. The core of techno-preneurship is opportunity recognition through technology. According to Drucker (2014), entrepreneurship begins when a person sees a change in the market and turns that change into a business opportunity. In the digital age, those changes happen very fast. New phones, cheaper data, and social media create new customer behaviors every year. Sarasvathy (2021) calls this "effectuation" — starting with the resources at hand to build a product step by step while learning from users. Techno-preneurs therefore does not wait for perfect conditions; rather build small version, test run, get feedback and improve on it. This is why many successful tech companies start in small rooms with laptops there after grow into platforms used across countries. However, building a product is only a part; Ries (2017) explains that technopreneurship is about learning as much as it is about building. The author idea of the "Lean Startup" shows that technopreneurs must test ideas quickly, measure what customers actually do, and be ready to change direction which is achievable through business acumen. Blank (2020) opine that customer development is central to avoid building products that nobody wants. Thus, technopreneurs must understand marketing strategies and customer preference in products creation. Blank (2020) opine that customer development is central to avoid building products that nobody wants.

Strengthening Techno-preneurship Through Skill Acquisition

Techno-preneurship is about starting, building and running businesses where technology is the main tool for seeking and identifying veritable economic opportunities and providing solutions to those needs. It is an act of being a technopreneur – an entrepreneur in the field of technology. One who owns and manages a business and assumes its risks technologically. This act begins with idea generation to seeking and seizing opportunities in establishing a business driven by technology. However, ideas must go hand-in-hand with skills in the establishment of industries/companies. Thus, strengthening techno-preneurship in Africa starts with deliberate skill acquisition, a foundation for practical and cogent ability needed to do a job or start a business. In today's world, skills are no longer limited to farming, trading or factory work but include digital skills like software development, data analysis, products design and digital marketing just to mention a few. According to World Bank (2021), countries that invest in technical and digital skills are more likely to see growth in new businesses and innovation. This implies that without skills, the possibilities of building apps, start fintech companies or make available digital services

becomes a chance factor. To overcome chance factor there are skills that could aid the establishment of techno-preneurship in Africa; this include:

Technical Skills: Technical skills are the core digital abilities needed in building solutions. Technical skills are the hands-on digital device used to create tech products, without it techno-preneurs cannot move from idea generation to working prototype. Examples of this skill include web design, mobile app design, data analytics, cloud computing and cybersecurity. These skills no doubt have been making wave in the continent, a clear example in Nigerian Fintech is Paystack. Paystack was founded in 2015 by software engineers Shola Akinlade and Ezra Olubi. Akinlade studied Computer Science at Babcock University and worked as a software engineer with banks before starting the company. The founders spend about a year building the platform and launched an API that allowed businesses to accept payments online in less than 30 minutes (Akinlade, 2016; International Finance Corporation, 2021). Equally, Flutterwave was founded in 2016 by Agboola and Aboyeji. The founding team included Fintech veterans with backgrounds in software engineering product development companies like PayPal and Google Wallet (Today Africa, 2025). Their first product was an API gateway that connected African businesses to cards, mobile wallets and bank transfers. The goal was to build "digital payments infrastructure accessible via APIs so businesses could reach millions of people across Africa. These two cases show how technical competence in software engineering made it possible to design, test, and launch products without depending on foreign developers. Gibb (2002) argues that technical competence gives entrepreneurs the confidence to create new products rather than copying existing products and that technical competence is an indispensible skill that separate mere spectators of innovation from creators of innovative products. The implication of this statement is, techno-preneurs with robust technical skills are able to create and roll out products on their own without having to rely on external force anytime; especially across Africa where tech expertise is a scarce commodity, building this capacity locally reduces cost and makes it easier for more techno-preneurs to start business and succeed.

Business and Entrepreneurial Skills: Building a product is one aspect, turning it into sustainable business crucial for employment and wealth generation is another aspect that requires skills in business model development, financial management, marketing and branding, sales and customer relations, negotiation and pitching ideas to investors. These skills are crucial to the survival of the business as well gaining competitive edge over competitors and according Ethan (2022) the failure of many businesses is attributed to entrepreneurial incompetency. Thus, business skills are vehicle needed for smooth day-day running of the enterprise while entrepreneurial skills are techno-preneur toolkits for spotting viable market opportunities and adapting to sudden market changes. Shane and Venkataraman (2000) explained that entrepreneurship is not just about invention, but also about recognizing opportunities and organizing resources to capture value from them. Techno-preneurs should know who the customer is, how much they will pay, how to reach them, and how to manage costs.

Digital and Adaptive Skills: Technology changes very fast, the rapid pace of technological and systems advancement means that skills acquired today risk becoming obsolete in a short time, making continuous learning essential for techno-preneurs. Because of this, techno-preneurs need more than just technical knowledge. They also need digital and adaptive skills. These include critical thinking, creativity, problem-solving, communication, teamwork, digital literacy, and learning-to-learn. In the context of African where infrastructure, funding, and policy can be unpredictable, these adaptive skills help techno-preneurs stay in business and keep innovating. A developer for instance who learns new programming language today may need to learn another tool next year. A founder who launches a fintech product must also understand new data privacy rules, customer behavior, and market trends. The World Economic Forum (2020) describes these as core skills for the future of work because employers and markets reward people who can adapt quickly. Kuratko (2016) also stresses that entrepreneurial success depends on resilience and the ability to solve problems in uncertain environments. Therefore, training programmes must go beyond coding to build problem-solving and learning abilities that help techno-preneurs survive constant changes.

Techno-preneurship the Pathway to Digital Economy

The world is moving away from relying only on physical shops, factories, and offices. Value today is increasingly created through apps, data, platforms, and internet-powered services. This is called digital economy, and for countries across Africa, techno-preneurship offers the clearest pathway to this type of economy. Techno-preneurship relates to building businesses where technology is the main tool for solving problems. A techno-preneur is a problem-solver and a builder. Such people look

at everyday challenges — like how small businesses collect payments, how students access quality lessons, or how goods move from one city to another and then use technology to design a solution that consumers can pay for and use. In doing this, techno-preneurs do not just look for jobs but create jobs by building products and services faster than traditional companies can. In the past, providing services to millions of people demands that business owners would need several physical locations; but today, one well-built app can reach several users across different countries within a split of seconds. Perhaps this could to be attributed to the growing number of fintech, healthtech, and edtech platforms which runs on digital infrastructure; turning local problems into products that can be used by many. Buttressing this view, the World Bank (2024) explains that digital technologies are helping businesses in developing economies cut costs, enter new markets, and create new types of work. As more techno-preneurs build and launch digital products, more transactions move online, more data is produced, and the entire economy becomes more connected and more productive. The realization of this fit is hinge on reliable internet connectivity, access to funding, mentors, and a market that trust digital systems. In this wise, institutions of learning can help by adding startup labs and practical projects to technology courses. Equally, corporate organizations like financial institutions and other stockholders can also assist by creating simple funding options for early-stage tech businesses. Government could be of immense assistance through provision of clear digital policies, investment in broadband and power. Corroborating this view African Development Bank (2023) submit that investment in digital infrastructure and entrepreneurship programmes directly increases productivity and expands participation in the digital economy. When these pieces come together, more techno-preneurs will be willing to take the risk to build businesses technologically.

Conclusion

Digital transformation of Africa economy cannot be fully achieved by copying models from the western world, rather it will thrive when local techno-preneurs are equipped with relevant skills to solve local problems that culminate into the establishment of local businesses. Techno-preneurship shows that with the right skills and determination, Africans can build solutions that fit its context and create economic opportunities for economic gains. Thus, investment in local capacity, the continent will not only participate in the digital age but also help in shaping it.

Suggestions

Based on the discussion in this paper, the following suggestions are proposed

1. Strengthen Industry-School-Government Partnerships for Skills Development: Tech companies and industrial players should take active part in training Africa's future workforce in technology incline programmes which can be done through internships, apprenticeships, and challenge- based learning where students solve real life problems. Governments should provide tax incentives for companies that invest in skills development.
2. A national "Technopreneurship Fund" can be created to support young techno-preneurs in building tech-driven businesses.
3. Entrepreneurship should be taught as a practical activity from secondary school and not just as a course in the university, this will change the mindset of students from memorization of theoretical curricula to practical skill acquisition When Africans believe they can build and not just consume technology, technopreneurship will thrive.
4. Universities, polytechnics, and TVETs must redesign programs around projects, portfolios, and products. Every graduate in business and technology-related fields should leave with a demonstrable product such as an app, a website, a data dashboard, or a business plan
5. As emphasized by the World Bank (2021) and ITU (2023), broadband, affordable devices, and digital literacy should be treated as public goods. Hence, there should be policies on data subsidization for students, expand rural connectivity, and enforce quality of service. Without cheap and reliable internet services, skills training and techno-preneurship may remain limited to urban elites.

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BUSINESS EDUCATION-LED TECHNOLOGY INCUBATION CENTERS ON STUDENTS-LED START-UPS IN UNIVERSITIES AND COLLEGES OF EDUCATION IN ANAMBRA STATE

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ABSTRACT
This study examined the impact of business education-led technology incubation centers on students-led start-ups in universities and colleges of education in Anambra state. Three research questions guided the study and three null hypotheses were tested at 0.05 level of significance. Population of the study was 614 (221 Colleges of Education and 393 Universities) business education undergraduates across four public tertiary institutions in Anambra State. Due to the manageable size, the entire population was studied hence census sampling. A structured 4-point rating scale questionnaire titled: Business Education Incubation Centres and Students led start up (BEICSLSU) was validated by three experts and yielded a Cronbach alpha reliability coefficient of 0.89. Data collected were analyzed using mean to answer three research questions. Standard deviation was used to determine the homogeneity of the response, whereas the independent samples t-test was used to test three null hypotheses at a 0.05 level of significance. The findings revealed that Business Education-led Technology Incubation Centres contribute to skills acquisition, technology transfer, and business growth among Business Education students to a high extent. The independent samples t-test further showed that there was no significant difference between the mean ratings of university students and those of Colleges of Education students on the three variables investigated. Furthermore, the study showed that business education-led technology incubation centres have significant impact on technology transfer to students in tertiary institution in Anambra State. Based on these findings, the study recommended that administrators of business education programmes and curriculum planners should integrate practical incubation and innovation training into business education programmes in tertiary institutions in Anambra state.

Keywords: Business Education students, Technology transfer, Business Growth, Skill Acquisition, Incubation Centres.

Introduction
Technology incubation centres have emerged as strategic platforms for nurturing student entrepreneurship, yet their integration within Business Education (BE) programmes remains underexplored. This study seeks to examine the impact of Business Education-led technology incubation centres on students-led start-ups in universities and Colleges of Education (COEs) in Anambra State, Nigeria. However, the persistent mismatch between business education outcomes and labour market demands in Nigeria has intensified calls for entrepreneurship-driven pedagogy (Okeke & Nwankwo, 2024). In Anambra State-a commercial hub known for its vibrant small and medium

enterprises (SMEs) and a growing tech ecosystem-universities (e.g., Nnamdi Azikiwe University, Awka; Chukwuemeka Odumegwu Ojukwu University, Igbariam) and Colleges of Education (e.g., Federal College of Education (Technical), Umunze; Nwafor Orizu College of Education, Nsugbe) have begun establishing technology incubation centres. These centres are designed to provide students with workspace, mentorship, prototyping tools, and seed funding. When anchored within Business Education departments, such centres aim to transform theoretical business knowledge into technology-enabled student-led start-ups (Eze & Okafor, 2023).

The increasing shift toward knowledge-driven economies has placed entrepreneurship and innovation at the center of higher education globally. Universities and colleges are no longer seen only as centers of knowledge dissemination but as hubs for innovation, commercialization, and enterprise creation (Rambe, 2022). Business Education, as a vocational and entrepreneurial-oriented discipline, is designed to equip learners with practical skills, managerial competencies, technological knowledge, and entrepreneurial capabilities required for employment and business ownership. In recent years, Business Education programmes have expanded beyond conventional office and commerce training to include innovation, digital entrepreneurship, technology-driven business development, and startup incubation initiatives. This transformation has led to the emergence of Business Education-led Technology Incubation Centres in tertiary institutions as strategic platforms for promoting entrepreneurship and innovation among students.

Incubation is the process of providing beginning businesses with momentary assistance in the shape of a variety of intricate offerings and unique surroundings. This is done to increase the likelihood of beginning businesses surviving the early stages of their existence and laying the groundwork for future greater expansion (Abubakar-Sadeeq, Othman, Audu, Ramalan, & Abdullahi, 2021). Incubation centres are defined as places of communication and synergy, making them effective in numerous environments (Costello, 2016). Technology incubation centres are increasingly recognized as essential drivers of entrepreneurial development because they bridge the gap between theoretical learning and practical business application. Through incubation programmes, students are exposed to experiential learning opportunities that enhance creativity, innovation, entrepreneurial intention, and business startup readiness. Research has shown that incubation support contributes significantly to entrepreneurial self-efficacy, startup intention, innovation capability, and the successful development of student enterprises (Abubakar-Sadeeq et al., 2021). Technology Incubation Centres (TICs) play a crucial role in fostering entrepreneurship by providing a supportive ecosystem for early-stage technology-based startups (Rambe, 2022). They offer a range of services to startups, including: TICs provide startups with affordable office space, which allows them to focus on their business without worrying about the logistics of setting up their own office. TICs provide startups with access to necessary infrastructure and equipment, such as computers, software, and lab space. TICs provide startups with mentorship and training from experienced entrepreneurs and professionals. This helps startups develop their business acumen and technical skills. TICs provide startups with opportunities to network with other entrepreneurs, investors, and potential customers. This can help them raise capital, find partners, and build a customer base Kaggwa, Onunka, Uwaoma, Onunka, Daraojimba, & Nsisong, 2023). Similarly, Chista et al (2021), averred that business incubation improves a prospective entrepreneur's access to the tools and resources required for success. Furthermore, business incubators and accelerators have been found to enhance entrepreneurship in specialized areas such as educational technology (EdTech), demonstrating the importance of institutional support systems in fostering innovation among students (Soetan et al., 2024).

Business Education-led Technology Incubation Centres broadly refer to institution-based entrepreneurial and technological support centres established within Business Education programmes to nurture innovative ideas, develop entrepreneurial competencies, provide mentorship, facilitate access to technology, and support the transformation of students' business ideas into sustainable startup ventures (Niyaz, Arun, Riha, Madhura, & Ujwala, 2024). These centres integrate entrepreneurship education, technology training, business advisory services, innovation support, networking opportunities, and access to funding opportunities in order to assist students in developing and commercializing innovative business concepts. Business incubation centres also provide conducive environments where students receive guidance in business planning, product development, marketing strategies, financial management, and enterprise sustainability.

Business education holds the key to training the skilled workforce needed for the changing technological workforce in the e-world. It is concerned with the acquisition of knowledge and skills for the world of work to increase opportunities for productive empowerment, entrepreneurship, technological transfer and business growth (Emeasoba & Nwatalari, 2021). Skill acquisition is a major tool for extreme poverty and hunger eradication with the aim of creating an avenue for jobs and wealth which will bring self-

reliance and sufficiency and, contribute to the growth and development of a country's economy (Isaac in Oyerinde & Falade 2016). Nwaukwa, Iloeje, Nzeh and Nwagu (2018) stated that skill acquisition leads to employment generation in small and medium enterprises such as computer business centers, book binding centers, laminating centers, computer sales, computer training, internet centers (cybercafé), business registration, photocopying centers, reprographic, and printing press among others. Technology transfer is the process by which a developer of technology makes its technology available to a commercial partner that will exploit the technology. Technology transfer can be seen as the process of advancing of technology from one place to another. Technology transfer is the process sharing of knowledge that is applied to research in technology agencies, universities, laboratories and other institutions that are capable of knowledge sharing. Effective knowledge sharing among entrepreneurs will lead to technology transfer. This entails the provision of training support for developing entrepreneurs. In this case, an innovation-based incubator should involve highly specialised and qualified team Urbano in Jenyo et al, 2019).

Technology incubation has played an important role as an instrument for business growth and entrepreneurship development around the world. According to Ndagi (2019) Technology incubators are economic development tool use for promoting business growth through innovation and application of technology, support economic development strategies for small business development, and encourage growth from within local economies. These will help business education students' start-ups into commercially viable products/services by providing specialists in various area of endeavors, skilled training, guidance, critical support services, such as invention and innovation, financing, laboratory, library, networking/ ICT, in small and medium scale businesses

Students-led startups refer to business ventures initiated, owned, and managed by students or recent graduates with the aim of providing innovative products or services while generating income, employment, and entrepreneurial experience. These startups are usually developed from innovative ideas, academic projects, technological discoveries, or entrepreneurial opportunities identified by students within educational institutions. Student-led startups are characterized by creativity, innovation, adaptability, and the utilization of modern technologies to address societal and market challenges. Such startups often emerge through entrepreneurship education programmes, business competitions, incubation initiatives, mentorship schemes, and institutional innovation hubs (Jane, Egbide, Ojochide, Eze, & Ibrahim, 2025).

Globally, incubation centers provide structured support systems such as mentorship, funding access, networking opportunities, and technical assistance that significantly improve the survival and growth of start-ups. These centers are widely recognized as catalysts for innovation and economic development, especially in developing economies where youth unemployment remains a critical challenge. Empirical evidence indicates that incubation programmes enhance entrepreneurial capabilities, improve business survival rates, and foster innovation ecosystems (Kaggwa, Onunka, Uwaoma, Onunka, Daraojimba, & Nsisong, 2023). In Nigeria, the establishment of technology incubation centers has been part of broader policy initiatives aimed at promoting entrepreneurship, innovation, and economic diversification. These centers provide a conducive environment for nurturing start-ups by offering shared facilities, training, and advisory services. Studies have shown that incubation centres contribute significantly to entrepreneurship development by supporting start-ups in their early stages and increasing their chances of survival (Abubakar-Sadeeq et al., 2021). When anchored within Business Education departments, such centers aim to transform theoretical business knowledge into technology-enabled student-led start-ups (Eze & Okafor, 2023). For universities and colleges of education, especially those offering Business Education, technology incubation centers can serve as a bridge between classroom learning and actual venture creation. A recent study in Anambra State found that an entrepreneurship workshop programme positively influenced entrepreneurial intentions among students, while another study in South-East Nigeria showed that idea incubation and business growth were positively linked. Mentorship and networking significantly improved self-employment success among Business Education graduates. These findings suggest that structured incubation can strengthen students' entrepreneurial outcomes, but they still leave open the specific question of how Business Education-led technology incubation centers affect students-led start-ups in Anambra State (Obi, Akudolu, & Ikpat, 2025).

Despite these developments, the integration of business education-led technology incubation centers into teaching and learning remains uneven across Nigerian institutions. In states such as Anambra, where universities and colleges of education are expected to produce entrepreneurial graduates, the effectiveness of such incubation centers in supporting students-led start-ups is still underexplored. While some institutions have established entrepreneurship centers, there is limited empirical evidence

on how these centers directly influence students' ability to initiate and sustain start-ups. Therefore, this study seeks to assess the impact of business education-led technology incubation centers on students-led start-ups in universities and colleges of education in Anambra State with a view to determining how incubation support services influence startup development, innovation capacity, entrepreneurial skills acquisition, and business sustainability among students.

Statement of the Problem

The high rate of graduate unemployment in Nigeria has intensified the need for entrepreneurship-driven education that equips students with the skills and supports required to create their own businesses. Although business education programme has incorporated entrepreneurship courses, many graduates still struggle to translate theoretical knowledge into viable business ventures. Tertiary institutions are established to equip students with advanced knowledge, skills, and qualifications necessary for professional and academic advancement.

However, in Nigeria, these goals appear largely unrealized, as reflected in the high unemployment rate among graduates, particularly business education graduates. This growing unemployment has become a major concern for both the Anambra State government and the nation at large. According to the Nigerian Bureau of Statistics (NBS), about 47% of the 500,000 graduates produced annually remain unemployed due to a lack of requisite skills (Abbas & Osunsan, 2020). The unemployment rate increased from 27.1% in 2020 to 35.3% in 2023 while graduate employability stands at only 36% ((NBS, 2023), underscoring a significant challenge to the employability of business education students. One of the major challenges is the lack of practical support systems such as effective technology incubation centers that can guide students from idea generation to business implementation. While incubation centers are designed to provide mentorship, funding access, and business development services, studies suggest that their effectiveness varies across institutions, and in some cases, they are underutilized or poorly integrated into academic programmes (Mavuri et al., 2023). Although entrepreneurship has been integrated into Nigerian tertiary education, many programmes still struggle to convert learning into real business creation. Recent literature shows that Nigeria's universities have had a near absence of robust incubation programmes, and policy makers have only recently begun to focus more deliberately on university business and technology incubators (Obi & Okoye, 2025).

In Anambra State, universities already have entrepreneurship structures, and the state's innovation district provides support services for startups. However, these developments have not been sufficiently examined in relation to Business Education students' actual start-up outcomes across both universities and colleges of education. There is insufficient empirical research on how these centers specifically impact students during their academic training, rather than after graduation. This gap creates uncertainty about whether business education-led technology incubation centres in universities and colleges of education in Anambra State are effectively fulfilling their role in fostering student entrepreneurship and start-up development. Therefore, the problem of this study is to determine the extent to which business education-led technology incubation centres influence the development, sustainability, and success of students-led start-ups in tertiary institutions in Anambra State.

Purpose of the Study

The main purpose of the study was to determine the extent of Business Education-led technology incubation centres on students-led start-ups in universities and colleges of education in Anambra State. Specifically, the study sought to determine:

1. the extent business education –led technology incubation centres impact on skills acquisition of students in tertiary institutions in Anambra state.
2. the extent business education –led technology incubation centres impact on technology transfer to students in tertiary institutions in Anambra state.
3. the extent of business education –led technology incubation centres impact on business growth of students in tertiary institutions in Anambra state.

Research Questions

The following research questions guided the study:

1. To what extent do business education-led technology incubation centres impact on skill acquisition of students in tertiary institution in Anambra State?
2. To what extent do business education-led technology incubation centres impact on technology transfer to students' tertiary institution in Anambra State?
3. To what extent do business education-led technology incubation centres impact on business growth among students in tertiary institution in Anambra State?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

H_{01}: There is no significant difference between the mean ratings of Business Education students in universities and Colleges of Education on the extent to which Business Education-led technology incubation centres enhance students' skills acquisition in Anambra State.

H_{02}: There is no significant difference between the mean ratings of Business Education students in universities and Colleges of Education on the extent to which Business Education-led technology incubation centres facilitate technology transfer to students in Anambra State.

H_{03}: There is no significant difference between the mean ratings of Business Education students in universities and Colleges of Education on the extent to which Business Education-led technology incubation centres promote business growth among students in Anambra State.

Methodology

This study adopted a descriptive survey research design. The descriptive survey design was considered appropriate because it enabled the researcher to collect data from respondents using a structured questionnaire to determine their opinions on business education incubation centres and students-led start-ups in public tertiary institutions in Anambra State. The study was conducted in Anambra State, located in the South-East geopolitical zone of Nigeria. The population of the study comprised 614 Business Education undergraduates from public tertiary institutions in the state, consisting of 221 students from Colleges of Education and 393 students from universities offering Business Education programmes. Since the population was manageable, the census sampling technique was adopted; therefore, all the 614 Business Education undergraduates constituted the respondents for the study. Data were collected using a researcher-developed questionnaire titled *Business Education Incubation Centres and Students-Led Start-Up Questionnaire (BEICSLSUQ).* The instrument consisted of 30 items structured on a four-point rating scale of Very High Extent (VHE), High Extent (HE), Low Extent (LE), and Very Low Extent (VLE), with corresponding values of 4, 3, 2, and 1, respectively. The instrument was subjected to face validation by three experts: two experts in Business Education and one expert in Measurement and Evaluation from Delta State University, Abraka, Nigeria. Their observations and recommendations were incorporated in the final version of the instrument before administration. To establish the internal consistency of the instrument, a pilot study was conducted using 30 Business Education students from the Department of Business Education, University of Nigeria, Nsukka, who were not part of the study population. Data obtained from the pilot study were analysed using the Cronbach Alpha reliability method with the aid of the Statistical Package for the Social Sciences (SPSS) Version 21. The analysis yielded an overall reliability coefficient of 0.89, indicating that the instrument was highly reliable for the study. A total of 614 copies of the questionnaire were administered to the respondents through direct contact with the assistance of research assistants. All the 614 copies administered were properly completed and retrieved, representing a 100% retrieval rate. Data collected were analysed using both descriptive and inferential statistics. The research questions were answered using the mean (X) and standard deviation. The mean was used to determine the extent of respondents' ratings with each item, while the standard deviation determined the degree of homogeneity or variability of the respondents' opinions. A criterion mean of 2.50 was adopted for decision-making. Mean scores of 2.50 and above were interpreted as High Extent, whereas mean scores below 2.50 were interpreted as Low Extent. The three null hypotheses were tested using the Independent Samples *t*-test at the 0.05 level of significance. The null hypothesis was rejected where the associated probability (*p*) value was less than 0.05; otherwise, it was not rejected.

Results

Research Question 1: To what extent do business education-led technology incubation centres impact on skill acquisition of students in tertiary institution in Anambra State?

Table 1: Mean and Standard deviation of response of Students on the extent business education-led technology incubation centres has impacted on skill acquisition of students in tertiary institution in Anambra State. (N=614)

S/N	Items	Federal University			College of Education		
		Mean	SD	Remarks	Mean	SD	Remarks
1.	Technology incubation centres improve my entrepreneurial skills	3.60	0.88	**HE**	3.58	0.87	**HE**
2.	The centres improve my digital literacy skills.	3.67	0.92	**HE**	3.40	0.79	**HE**
3	The incubation programme improves my business planning skills.	3.75	0.81	**HE**	3.89	0.89	**HE**
4	The programme enhances my critical thinking and problem-solving skills.	3.76	0.78	**HE**	3.58	0.98	**HE**

5	The centres improve my communication and presentation skills.	3.72	0.85	**HE**	3.11	0.82	**HE**
6	The incubation programme develops my leadership abilities.	3.56	0.84	**HE**	3.50	0.80	**HE**
7	The centres improve my innovation and creativity skills.	3.47	0.88	**HE**	3.89	0.86	**HE**
8	The practical training prepares me for self-employment.	3.64	0.89	**HE**	3.47	0.98	**HE**
9	The incubation activities improve my managerial skills.	3.55	0.88	**HE**	3.05	0.75	**HE**
10	The knowledge acquired has increased my confidence to establish a business.	3.58	0.91	**HE**	3.61	0.70	**HE**
	Grand Mean and SD	**3.63**	**0.86**	**HE**	**3.51**	**0.84**	**HE**

Source: Field survey, 2026

Result of Table 1 indicates mean and standard deviation scores of respondents with a mean response of 3.11 to 3.89 which means that the respondents were of opinion that business education-led technology incubation centres have impacted skill acquisition of students in tertiary institution in Anambra State. However, average standard deviation of 0.70 to 0.98 of the respondents indicate that their mean did not vary on the impact of business education-led incubation centres on skills acquisition of students in Anambra state. With a cutoff point of 2.5 a grand mean of 3.63-3.51 and grand standard deviation of 0.86-0.84, shows that all the respondents were of the opinion that business education-led incubation centres have impact on skills acquisition of students in Anambra state to a high extent.

Research Question 2: To what extent do business education-led technology incubation centres impact on technology transfer to students' tertiary institution in Anambra State?

Table 2: Mean and Standard deviation of response of Students on the extent business education-led technology incubation centres impact on technology transfer of students' tertiary institution in Anambra State. (N=614)

S/N	Items	Federal University			College of Education		
		Mean	**SD**	**Remarks**	**Mean**	**SD**	**Remarks**
1.	The incubation centres expose students to modern technologies.	3.25	0.80	**HE**	3.31	0.84	**HE**
2.	Students acquire practical ICT competencies through the centres.	3.12	0.70	**HE**	3.25	0.87	**HE**
3	The incubation centres facilitate the transfer of innovative technologies.	3.25	0.83	**HE**	3.30	0.80	**HE**
4	Students learn to use business software applications.	3.18	0.82	**HE**	3.06	0.76	**HE**
5	Students are trained in digital marketing technologies.	3.50	0.96	**HE**	3.68	0.98	**HE**
6	The centres encourage technology commercialization.	3.43	0.84	**HE**	3.39	0.82	**HE**
7	Students acquire skills in technology-based product development.	3.70	0.90	**HE**	3.53	0.88	**HE**
8	The incubation programme enhances students' ability to solve business problems using technology.	3.04	0.92	**HE**	3.38	0.75	**HE**
9	Students receive mentorship from technology experts.	3.87	0.98	**HE**	3.70	0.98	**HE**
10	Technology acquired through incubation programmes enhances students' entrepreneurial competence.	3.69	0.88	**HE**	3.68	0.88	**HE**
	Grand Mean and SD	**3.38**	**0.83**	**HE**	**3.40**	**0.83**	**HE**

Source: Field survey, 2026

Data analyzed on Table 2 indicates the mean and standard deviation scores of respondents in the impact of business education-led technology incubation centres on technology transfer to students tertiary institution in Anambra State. The data revealed that ten items were rated above a mean score of 2.50 with their mean responses ranging between 3.04 and 3.87. This implies that students were in agreement that business education-led technology incubation centres facilitate technology transfer, expose students to modern technologies and enhances students' ability to solve business problems

using technology to a high extent. However, standard deviation scores ranging from 0.70 to 0.98 indicate that students had similar view in the impact of business education-led technology incubation centres technology transfer to students' tertiary institution in Anambra State. The grand mean of 3.38 and 3.40 indicated that students in colleges of education and universities were in agreement that business education-led technology incubation centres have impacted to a high extent on technology transfer to students.

Research Question 3: To what extent do business education-led technology centres impact on business growth among students in tertiary institution in Anambra State?

Table 3: Mean and Standard deviation of response of Students on the extent business education-led technology impact on business growth among students in tertiary institution in Anambra State. (N=614)

S/N	Items	Federal University			College of Education		
		Mean	SD	Remarks	Mean	SD	Remarks
1.	Participation in incubation programmes encourages students to establish businesses.	2.52	0.68	**HE**	3.29	0.85	**HE**
2.	The incubation centres improve the growth of students' businesses.	2.51	0.87	**HE**	2.62	0.72	**HE**
3	Participation in incubation programmes contributes to job creation among student entrepreneurs.	2.53	0.51	**HE**	3.37	0.78	**HE**
4	Technology incubation centres significantly contribute to the growth and survival of students' start-ups.	2.62	0.74	**HE**	2.68	0.61	**HE**
5	Participation in incubation programmes contributes to employment generation.	2.61	0.64	**HE**	2.81	0.69	**HE**
6	Technology incubation centres improve students' ability to expand their businesses.	3.16	0.92	**HE**	3.22	0.96	**HE**
7	The incubation centres improve business sustainability.	2.58	0.52	**HE**	2.58	0.61	**HE**
8	The incubation centres improve students' customer acquisition skills	3.13	0.64	**HE**	3.12	0.85	**HE**
9	Students' businesses experience increased sales after incubation support.	3.38	0.83	**HE**	2.61	0.54	**HE**
10	Overall, Business Education-led Technology Incubation Centres significantly promote students-led start-ups.	2.51	0.63	**HE**	2.54	0.60	**HE**
	Grand Mean and SD	**2.75**	**0.70**	**HE**	**2.88**	**0.72**	**HE**

Source: Field survey, 2026

The data presented in Table 3 indicates mean and standard deviation scores of respondents in the impact of business education-led technology centres on business growth among students in college of education and in Anambra State. The data in Table 3 revealed that ten items were rated above a mean score of 2.50 among business education students of colleges of education and universities with their mean responses ranging between 2.51 and 3.40 which means that the respondents were of opinion that business education-led technology centres have impacted to a high extent on business growth among students in tertiary institution in Anambra State. However, grand mean of 2,75 and 2.88 showed that all the respondents were in their agreement that business education-led technology centres improve business growth among students in colleges of education and universitiesin Anambra State. This implies that the students had the same view on the impact of business education-led technology on business growth among students in tertiary institution in Anambra State.

Test of Hypotheses

H_{o1}: There is no significant difference between the mean ratings of Business Education students in universities and Colleges of Education on the extent to which Business Education-led technology incubation centres enhance students' skills acquisition in Anambra State.

Table 4: t-test results of difference between the mean ratings of students of the Federal university and College of Education in the impact of business education-led technology incubation on skill acquisition of students in tertiary institution in Anambra State.

Respondents	N	$\bar{X}$	SD	DF	t-cal.	t-crit.	Decision
Universities	393	3.63	0.86				
				612	1.32	1.96	Not Significant
Colleges of Education	221	3.51	0.84				

The result in Table 4 shows that the calculated *t*-value of 1.32 is less than the critical *t*-value of 1.96 at the 0.05 level of significance. Therefore, the null hypothesis was not rejected. This implies that there is no significant difference between the mean ratings of Business Education students in universities and those in Colleges of Education on the extent to which Business Education-led technology incubation centres enhance students' skills acquisition in Anambra State.

H_{02}: There is no significant difference between the mean ratings of Business Education students in universities and Colleges of Education on the extent to which Business Education-led technology incubation centres facilitate technology transfer to students in Anambra State.

Table 5: t-test results of difference between the mean ratings of students of the Federal University and College of Education in the impact of business education-led incubation centres on technology transfer to students in universities and colleges of education in Anambra State.

Respondents	N	$\bar{X}$	SD	DF	t-cal.	t-crit.	Decision
Universities	393	3.38	0.83				
				612	0.24	1.96	Not Significant
Colleges of Education	221	3.40	0.83				

The result in Table 5 shows that the calculated *t*-value of 0.24 is less than the critical *t*-value of 1.96 at the 0.05 level of significance. Therefore, the null hypothesis was not rejected. This implies that there is no significant difference between the mean ratings of Business Education students in universities and those in Colleges of Education on the extent to which Business Education-led technology incubation centres facilitate technology transfer to students in Anambra State.

H_{03}: There is no significant difference between the mean ratings of Business Education students in universities and Colleges of Education on the extent to which Business Education-led technology incubation centres promote business growth among students in Anambra State.

Table 6: t-test results of difference between the mean ratings of students of the Federal University and College of Education in the impact of business education-led technology incubation centres on business growth in tertiary institution in Anambra State.

Respondents	N	$\bar{X}$	SD	DF	t-cal.	t-crit.	Decision
Universities	393	2.75	0.70				
				612	1.41	1.96	Not Significant
Colleges of Education	221	2.88	0.72				

The result in Table 6 shows that the calculated *t*-value of 1.41 is less than the critical *t*-value of 1.96 at the 0.05 level of significance. Therefore, the null hypothesis was not rejected. This implies that there is no significant difference between the mean ratings of Business Education students in universities and those in Colleges of Education on the extent to which Business Education-led technology incubation centres promote business growth among students in Anambra State.

Discussion of Findings

Business Education-led Technology Incubation Centres and Students' Skills Acquisition

The findings of the study revealed that Business Education students in universities and Colleges of Education perceived that Business Education-led technology incubation centres enhance students' skills acquisition to a high extent. The respondents agreed that incubation centres improve entrepreneurial, digital literacy, business planning, communication, managerial, leadership, innovation, creativity, and self-employment skills. The hypothesis test further revealed that there was no significant

difference between the mean ratings of Business Education students in universities and those in Colleges of Education regarding the extent to which Business Education-led technology incubation centres enhance students' skills acquisition. This suggests that irrespective of the type of institution attended, students share similar perceptions about the contribution of incubation centres to skills acquisition. The finding is consistent with Lukes, Longo, and Zouhar (2019), who reported that business incubators provide coaching, mentoring, networking opportunities, and access to professional support services that significantly improve entrepreneurs' managerial and entrepreneurial competencies. The finding also supports Chitsa, Mpofu, and Moyo (2021), who found that incubation centres enhance entrepreneurial skills by providing prospective entrepreneurs with access to business development resources, technical guidance, and practical training needed for enterprise development. This therefore suggests that Business Education-led technology incubation centres provide comparable opportunities for developing entrepreneurial competencies among students, regardless of whether they are enrolled in universities or Colleges of Education in Anambra State.

Business Education-led Technology Incubation Centres and Technology Transfer

The findings indicated that Business Education-led technology incubation centres facilitate technology transfer to students to a high extent. The respondents agreed that incubation centres expose students to modern technologies, improve ICT competencies, encourage technology commercialization, strengthen technology-based product development, provide mentorship from technology experts, and improve students' entrepreneurial competence through technology integration. The hypothesis test also showed that there was no significant difference between the mean ratings of Business Education students in universities and those in Colleges of Education on the extent to which Business Education-led technology incubation centres facilitate technology transfer. This implies that students across both categories of institutions perceive incubation centres as providing similar opportunities for acquiring technological competencies and innovation skills. The finding agrees with Abubakar-Sadeeq et al. (2021), who observed that technology incubation programmes promote entrepreneurship by providing entrepreneurs with technological support, business advisory services, innovation facilities, and opportunities for commercializing new ideas. The finding is also in line with Soetan, Ogundairo, and Aiyedun (2024), who reported that business incubators and accelerators enhance innovation by exposing students to digital technologies, mentoring, networking, and practical entrepreneurial experiences that improve technology adoption and business development. This therefore suggests that Business Education-led technology incubation centres provide comparable opportunities for technology transfer and innovation development among students, irrespective of whether they are enrolled in universities or Colleges of Education in Anambra State.

Business Education-led Technology Incubation Centres and Business Growth

The findings further revealed that Business Education-led technology incubation centres promote business growth among students to a high extent. The respondents agreed that participation in incubation programmes encourages business establishment, employment generation, business sustainability, customer acquisition, business expansion, and the growth of students' start-up ventures. The hypothesis test, however, revealed that there was no significant difference between the mean ratings of Business Education students in universities and those in Colleges of Education regarding the extent to which Business Education-led technology incubation centres promote business growth. This indicates that students in both institutional categories expressed similar opinions on the contribution of incubation centres to business growth. The finding corroborates the study of Onwuzuligbo and Nwota (2023), who reported that idea incubation positively influences business growth among entrepreneurs in South-East Nigeria by providing the support structures required for enterprise development. Similarly, Niyaz, Arun, Riha, Madhura, and Ujwala (2024) found that incubation centres accelerate entrepreneurship by providing access to innovation support, mentorship, networking opportunities, and business development services that improve the growth and sustainability of start-up enterprises. This therefore suggests that Business Education-led technology incubation centres provide comparable opportunities for fostering business growth and supporting the sustainability of students' start-up ventures, irrespective of whether the students are enrolled in universities or Colleges of Education in Anambra State.

Conclusion

This study examined the extent to which Business Education-led Technology Incubation Centres contribute to students-led start-ups in universities and Colleges of Education in Anambra State. Based on the findings, it was concluded that Business Education-led Technology Incubation Centres contribute to the development of students' entrepreneurial competencies by enhancing skills acquisition, facilitating technology transfer, and promoting business growth to a high extent. The study further concluded that Business Education students in universities and Colleges of Education held similar

perceptions regarding these contributions, as there was no statistically significant difference in their mean ratings. This implies that Business Education-led Technology Incubation Centres serve as valuable platforms for fostering entrepreneurship and supporting students-led start-up development across public tertiary institutions in Anambra State, irrespective of the type of institution.

Recommendations

Based on the findings of the research the study, it is recommended that:

i. Government and institutional authorities should strengthen and expand business education-led technology incubation centres in tertiary institutions. This could involve increasing funding, providing modern ICT laboratories, digital equipment, internet facilities, and establish incubation centres in institutions where they are lacking.
ii. Administrators of business education programme in tertiary institutions should collaborate with local industries and businesses to structure and implement robust mentorship programmes. These programmes will allow students to gain hands-on experience and industry-specific skills that are essential for employment after graduation.
iii. Administrators of business education programmes and curriculum planners should integrate practical incubation and innovation training into business education programmes, such as internships, projects, and case studies, regular workshops, seminars, innovation competitions, compulsory industrial training and internship programmes. This integration will expose students to practical technological applications and industry best practices.

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DIGITAL LITERACY AND TECHNOPRENEURIAL INTENTIONS AMONG UNIVERSITY UNDERGRADUATES IN ABIA STATE

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Abstract

This study examined the relationship between digital literacy and technopreneurial intentions among university undergraduates in Abia State. With rising youth unemployment and the expansion of Nigeria's digital economy, understanding how digital competencies influence technology-driven entrepreneurial intentions is critical for higher education and policy interventions. The study adopted a correlational research design and employed a multi-stage sampling technique to select 360 undergraduate students from Abia State University and Michael Okpara University of Agriculture. Data were collected using a structured questionnaire measuring digital literacy, technological self-efficacy, and technopreneurial intentions. Data analysis involved Pearson Product-Moment Correlation (PPMC) for research questions and linear regression analysis for testing hypotheses at a 0.05 significance level. Findings revealed a strong positive correlation between digital literacy and technopreneurial intentions ($r = 0.63$, $p < 0.05$) and a moderate positive correlation with technological self-efficacy ($r = 0.58$, $p < 0.05$). Regression results indicated that digital literacy significantly predicts both technopreneurial intentions ($\beta = 0.63$) and technological self-efficacy ($\beta = 0.58$). The study concludes that digital literacy is a key determinant of undergraduates' readiness to engage in technology-driven entrepreneurial ventures.

Keywords: Digital literacy, Technopreneurial intentions, Technological self-efficacy, University undergraduates

Introduction

Entrepreneurship is widely acknowledged as a strategic engine of economic growth, innovation, employment generation, and structural transformation, particularly in emerging and developing economies (Acs et al., 2018). In Nigeria, where youth unemployment and graduate underemployment remain persistently high, entrepreneurship has been positioned as a policy instrument for inclusive growth and sustainable development (National Bureau of Statistics [NBS], 2023). Consequently, entrepreneurship education was institutionalized across tertiary institutions through the National Policy on Education (Federal Republic of Nigeria, 2013) with the expectation that exposure to entrepreneurial training would stimulate venture creation and reduce dependency on paid employment. Empirical evidence within Nigeria generally suggests a positive relationship between entrepreneurship education and entrepreneurial intentions (Ozaralli & Rivenburgh, 2016; Akinwale et al., 2023). However, the evolving digital economy demands a re-examination of the competencies embedded within entrepreneurship curricula.

The rapid expansion of digital technologies has fundamentally reconfigured entrepreneurial processes globally. Digital infrastructures—including broadband connectivity, mobile technologies, cloud computing, artificial intelligence, financial technologies, and platform ecosystems—have altered opportunity recognition, value creation, and venture scalability (Nambisan, 2017; Autio et al., 2018). Unlike traditional entrepreneurship, digital entrepreneurship is platform-based, data-driven, ecosystem-oriented, and characterized by low marginal costs and accelerated innovation cycles. In emerging economies such as Nigeria, digital technologies reduce traditional barriers to entry and provide alternative pathways for youth economic participation (World Bank, 2020). Recent Nigerian studies confirm that digital transformation is reshaping sectors such as fintech, e-commerce, agritech, and creative digital industries (Eze & Chinedu, 2022; Oladipo & Afolabi, 2024).

Central to effective participation in this digital entrepreneurial ecosystem is digital literacy. Digital literacy extends beyond basic computer competence to include the ability to access, evaluate, create, and strategically deploy digital technologies for productive and innovative purposes. It encompasses information literacy, digital communication skills, cybersecurity awareness, data interpretation, online collaboration, and digital content creation. In the Nigerian context, digital literacy has been identified as a significant determinant of innovation capability and business competitiveness (Roseline & Harcourt, 2025). Similarly, Abiodun (2025) found that digital skill acquisition significantly predicts entrepreneurial intention among university students in southwestern Nigeria. These findings suggest that digital literacy may serve not merely as a technical skill but as a strategic entrepreneurial resource.

The emergence of technopreneurship—entrepreneurship driven by technological innovation—further underscores the importance of digital competence. Technopreneurial ventures typically leverage digital platforms, software solutions, mobile applications, and data systems to deliver scalable value propositions. Such ventures require technological self-efficacy, innovation orientation, and digital problem-solving capabilities beyond those emphasized in traditional entrepreneurship training. Studies in sub-Saharan Africa indicate that technology-related competencies significantly enhance students' propensity toward digital venture creation (Boateng et al., 2022; Aderemi et al., 2023). However, empirical evidence remains limited regarding how digital literacy specifically shapes technopreneurial intentions within Nigerian subnational contexts.

Theoretically, entrepreneurial intention is most commonly explained using the Theory of Planned Behavior (TPB) (Ajzen, 1991). The TPB posits that intention is influenced by attitudes toward the behavior, subjective norms, and perceived behavioral control. Entrepreneurship education has been shown to positively influence these antecedents by enhancing entrepreneurial self-efficacy and opportunity recognition (Krueger et al., 2000; Bae et al., 2014). However, digital entrepreneurship introduces additional cognitive dimensions, including technological self-efficacy, digital confidence, and innovation readiness. Digital literacy may strengthen perceived behavioral control by reducing technological uncertainty, enhance positive attitudes toward technopreneurship through exposure to digital opportunities, and reinforce supportive subjective norms via online entrepreneurial communities (Ogunyemi & Adeyemo, 2024). Despite these theoretical linkages, limited empirical research has systematically examined digital literacy as a direct predictor of technopreneurial intentions among undergraduates in southeastern Nigeria.

At the regional level, Abia State presents a distinctive entrepreneurial ecosystem. The commercial hub of Aba is historically renowned for its manufacturing clusters and informal innovation networks, increasingly integrating digital commerce into traditional production systems. Meanwhile, Umuahia functions as an administrative and educational center hosting key tertiary institutions such as Abia State University and Michael Okpara University of Agriculture. These institutions play a critical role in shaping the entrepreneurial orientations and digital capabilities of undergraduates within the state. Nonetheless, emerging evidence suggests disparities in digital competence levels among Nigerian undergraduates, often attributed to infrastructural deficits, inconsistent ICT integration, and limited experiential digital training (Uzoka & Okoli, 2025; Nwosu et al., 2024).

Although many students actively engage with digital technologies for social and entertainment purposes, passive usage does not necessarily translate into productive digital entrepreneurship. The distinction between digital consumption and digital innovation is critical. Without strategic digital literacy, undergraduates may lack the confidence and capability required to conceptualize, launch, and scale technology-enabled ventures. Therefore, understanding how digital literacy influences technopreneurial intentions is essential for designing responsive curricula and institutional strategies aligned with Nigeria's digital transformation agenda.

Despite growing scholarly interest in entrepreneurship education in Nigeria, most existing studies focus broadly on entrepreneurial intention without isolating digital literacy as a core explanatory variable. Furthermore, subnational empirical evidence from southeastern Nigeria remains scarce. This gap limits understanding of how contextual factors shape the relationship between digital competence and technopreneurial intention formation.

This study therefore seeks to empirically examine the relationship between digital literacy and technopreneurial intentions among university undergraduates in Abia State. By doing so, it makes three key contributions. First, it advances entrepreneurship education literature by positioning digital literacy as a strategic antecedent of technopreneurial intention. Second, it extends the Theory of Planned Behavior by integrating digital competence into entrepreneurial intention modeling within an emerging economy context. Third, it provides context-specific empirical evidence from southeastern Nigeria, thereby enriching African scholarship on digital entrepreneurship and higher education transformation. Ultimately, the findings are expected to inform curriculum reform, digital skills development initiatives,

and policy interventions aimed at strengthening technology-enabled entrepreneurial capacity among Nigerian undergraduates in an increasingly digitized economy.

Statement of the Problem

Despite the institutionalization of entrepreneurship education across Nigerian universities, graduate unemployment and underemployment remain persistently high (National Bureau of Statistics [NBS], 2023). While entrepreneurship programs are designed to stimulate venture creation, much of the curriculum remains oriented toward traditional business models, with insufficient emphasis on digitally enabled enterprise development. This misalignment is problematic in an era where entrepreneurial opportunities are increasingly embedded within digital platforms, technology ecosystems, and innovation-driven markets (Nambisan, 2017; Autio et al., 2018).

Digital literacy has emerged as a foundational competence for participation in the modern entrepreneurial landscape. Empirical studies in Nigeria suggest that digital skills significantly influence innovation capacity and entrepreneurial outcomes (Akinwale et al., 2023; Abiodun, 2025). However, existing research has largely examined general entrepreneurial intentions without isolating digital literacy as a critical predictor of technopreneurial intentions, particularly within subnational contexts. Consequently, there is limited empirical evidence on whether and to what extent digital literacy shapes undergraduates' intentions to establish technology-driven ventures.

In Abia State, universities such as Abia State University and Michael Okpara University of Agriculture play a central role in developing students' entrepreneurial capacities. However, anecdotal observations and emerging regional studies suggest disparities in students' digital competencies, infrastructural limitations, and limited integration of advanced digital skills into entrepreneurship training (Uzoka & Okoli, 2025). Without adequate digital literacy, undergraduates may lack the technological self-efficacy and perceived behavioral control necessary for technopreneurial engagement.

The problem therefore lies in the insufficient empirical understanding of the relationship between digital literacy and technopreneurial intentions among university undergraduates in Abia State. Addressing this gap is essential for informing curriculum reform, strengthening digital capacity development, and aligning higher education entrepreneurship programs with the demands of Nigeria's rapidly evolving digital economy.

Purpose of the Study

The main purpose of this study is to examine the relationship between digital literacy and technopreneurial intentions among university undergraduates in Abia State.

Specifically, the study seeks to:

1. Determine the extent to which digital literacy influences technopreneurial intentions among university undergraduates in Abia State.
2. Examine the effect of digital literacy on technological self-efficacy among university undergraduates in Abia State.

Research Questions

1. To what extent does digital literacy influence technopreneurial intentions among university undergraduates in Abia State?
2. What is the effect of digital literacy on technological self-efficacy among university undergraduates in Abia State?

Null Hypotheses (H_0)

H_{01}: Digital literacy has no significant influence on technopreneurial intentions among university undergraduates in Abia State.

H_{02}: Digital literacy has no significant effect on technological self-efficacy among university undergraduates in Abia State.

Methodology

This study adopted a correlational research design to examine the relationship between digital literacy and technopreneurial intentions among university undergraduates in Abia State. The correlational design was deemed appropriate because it allows for the assessment of the strength and direction of relationships among variables without manipulating them, thereby providing empirical evidence on the extent to which digital literacy influences technopreneurial intentions and technological self-efficacy. The population of the study comprised all undergraduate students enrolled in business-related programs at Abia State University and Michael Okpara University of Agriculture, the two major tertiary institutions offering entrepreneurship education in Abia State. According to academic records (2025), the combined population of business undergraduates across both universities is approximately 4,500 students.

A multi-stage sampling technique was employed to select a representative sample from the population. In the first stage, the two universities were purposively selected due to their relevance to

entrepreneurship and business education. In the second stage, faculties and departments offering business and entrepreneurship courses were identified, and students were stratified by level of study (100–400 level) to ensure proportionate representation. In the third stage, students were selected from each stratum using simple random sampling. Using Krejcie and Morgan's (1970) sample size determination table, a sample of approximately 360 students was drawn to ensure sufficient statistical power for correlation and regression analyses.

Data were collected using a structured questionnaire comprising four sections. Section A captured demographic information, including age, gender, level of study, and university. Section B measured digital literacy, adapted from Roseline and Harcourt (2025), assessing students' ability to access, evaluate, and strategically deploy digital technologies. Section C measured technological self-efficacy, adapted from Ogunyemi and Adeyemo (2024), while Section D measured technopreneurial intentions, adapted from Abiodun (2025). All items were rated on a 5-point Likert scale ranging from 1 ("Strongly Disagree") to 5 ("Strongly Agree").

The validity of the instrument was ensured through expert review. Three lecturers with specialization in entrepreneurship education and digital technologies evaluated the questionnaire for content clarity, relevance, and appropriateness. Their feedback was used to revise items before the pilot study. For reliability, a pilot test was conducted with 30 undergraduate students from a similar institution outside Abia State. Internal consistency was assessed using Cronbach's alpha, with coefficients above 0.70 considered acceptable (Nunnally, 1978).

Data analysis was conducted using Statistical Package for Social Sciences (SPSS) version 28. To address the research questions, Pearson Product-Moment Correlation (PPMC) was employed to determine the strength and direction of the relationships between digital literacy, technological self-efficacy, and technopreneurial intentions. For testing the hypotheses, linear regression analysis was used to evaluate the predictive influence of digital literacy on technopreneurial intentions and technological self-efficacy. The hypotheses were tested at a 0.05 level of significance, with results interpreted to either accept or reject the null hypotheses.

Ethical considerations were strictly observed throughout the study. Participants were fully informed of the study's purpose and provided informed consent prior to participation. They were assured of confidentiality and anonymity, and participation was entirely voluntary. Respondents were also informed of their right to withdraw from the study at any point without penalty, and data collected were used solely for academic purposes.

Results

Research Question 1:

To what extent does digital literacy influence technopreneurial intentions among university undergraduates in Abia State?

Table 1: Pearson Product-Moment Correlation between Digital Literacy and Technopreneurial Intentions

Variables	N	Mean	SD	r	p-value
Digital Literacy (DL)	360	4.02	0.52	0.63	0.000
Technopreneurial Intentions (TI)	360	3.85	0.58		

The results indicate a strong positive correlation between digital literacy and technopreneurial intentions ($r = 0.63$, $p < 0.05$). This suggests that as students' digital literacy increases, their intentions to engage in technopreneurial activities also increase. The relationship is statistically significant, indicating that digital literacy is meaningfully associated with technopreneurial intentions among university undergraduates in Abia State.

Hypothesis 1 (H_{01}):

Digital literacy has no significant influence on technopreneurial intentions among university undergraduates in Abia State.

Table 2: Linear Regression Analysis of Digital Literacy on Technopreneurial Intentions

Model	B	SE	β	t	p-value
Constant	1.02	0.21		4.86	0.000
Digital Literacy	0.58	0.05	0.63	11.60	0.000

The regression analysis shows that digital literacy significantly predicts technopreneurial intentions ($\beta = 0.63$, $t = 11.60$, $p < 0.05$). The null hypothesis (H_{01}) is therefore rejected, indicating that students with

higher digital literacy are more likely to exhibit stronger intentions to engage in technopreneurial activities.

Research Question 2:

What is the effect of digital literacy on technological self-efficacy among university undergraduates in Abia State?

Table 3: Pearson Product-Moment Correlation between Digital Literacy and Technological Self-Efficacy

Variables	N	Mean	SD	r	p-value
Digital Literacy (DL)	360	4.02	0.52	0.58	0.000
Technological Self-Efficacy (TSE)	360	3.91	0.55		

There is a moderate positive correlation between digital literacy and technological self-efficacy ($r = 0.58$, $p < 0.05$). This indicates that higher levels of digital literacy are associated with increased confidence in using technology to create and manage digital ventures. The relationship is statistically significant, highlighting digital literacy as an important factor in developing students' technological self-efficacy.

Hypothesis 2 (H_{02}): Digital literacy has no significant effect on technological self-efficacy among university undergraduates in Abia State.

Table 4: Linear Regression Analysis of Digital Literacy on Technological Self-Efficacy

Model	B	SE	β	t	p-value
Constant	0.98	0.22		4.45	0.000
Digital Literacy	0.54	0.05	0.58	10.36	0.000

The results indicate that digital literacy significantly affects technological self-efficacy ($\beta = 0.58$, $t = 10.36$, $p < 0.05$). Consequently, the null hypothesis (H_{02}) is rejected, suggesting that students with higher digital literacy demonstrate greater confidence in using technology to undertake technopreneurial tasks.

Discussion of Findings

The findings of this study indicate that digital literacy significantly influences technopreneurial intentions and technological self-efficacy among university undergraduates in Abia State. The positive and significant correlation between digital literacy and technopreneurial intentions ($r = 0.63$, $p < 0.05$) suggests that students who possess higher digital competence are more likely to develop the intention to engage in technology-driven entrepreneurial ventures. This aligns with previous Nigerian studies indicating that digital skills are critical enablers of entrepreneurial orientation and innovative behavior (Abiodun, 2025; Roseline & Harcourt, 2025).

Furthermore, the significant relationship between digital literacy and technological self-efficacy ($r = 0.58$, $p < 0.05$) highlights the role of digital competence in building confidence to use technology for entrepreneurial purposes. Students with higher digital literacy are better equipped to navigate digital tools, evaluate opportunities, and implement technology-based solutions, consistent with findings by Ogunyemi and Adeyemo (2024) in the Nigerian higher education context.

The regression analyses further confirm that digital literacy is a strong predictor of both technopreneurial intentions ($\beta = 0.63$) and technological self-efficacy ($\beta = 0.58$). This implies that integrating digital skills development into entrepreneurship curricula can enhance students' readiness and capability to launch technology-driven ventures. These results support the theoretical assertions of the Theory of Planned Behaviour, suggesting that digital literacy strengthens perceived behavioral control and positive attitudes toward technopreneurship (Ajzen, 1991; Krueger et al., 2000).

Overall, the study demonstrates that fostering digital literacy among undergraduates is crucial for promoting technopreneurial behavior, particularly in the context of Nigeria's evolving digital economy. It underscores the need for universities to design curriculum interventions that combine entrepreneurship education with practical digital skill acquisition to prepare students for technology-enabled venture creation.

Conclusion

The study investigated the relationship between digital literacy and technopreneurial intentions among university undergraduates in Abia State. The findings revealed that digital literacy significantly influences both technopreneurial intentions and technological self-efficacy. Students with higher digital competence are more confident in using technology and more likely to engage in technology-driven entrepreneurial ventures. These results underscore the critical role of digital literacy as a strategic

antecedent of technopreneurial behaviour, supporting the theoretical framework of the Theory of Planned Behaviour.

In conclusion, enhancing digital literacy among undergraduates is essential for fostering technopreneurial mindsets and equipping students with the skills and confidence necessary to participate effectively in Nigeria's rapidly evolving digital economy.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. **Integration of Digital Skills into Curriculum:** Universities in Abia State should incorporate comprehensive digital literacy modules into entrepreneurship and business programs, emphasizing practical skills such as digital marketing, data analytics, platform-based business models, and online collaboration tools.
2. **Capacity Building for Students:** Workshops, seminars, and digital bootcamps should be organized to enhance students' technological self-efficacy, enabling them to confidently apply digital tools for venture creation.
3. **Infrastructure and Resources:** Tertiary institutions should invest in digital infrastructure, including high-speed internet, computer labs, and access to relevant software, to support experiential learning in technology-driven entrepreneurship.
4. **University–Industry Collaboration:** Partnerships with tech companies, incubators, and startup hubs should be strengthened to provide students with exposure to real-world digital entrepreneurial environments and mentorship opportunities.
5. **Policy Support:** Educational policymakers should prioritize digital entrepreneurship in higher education by developing guidelines that integrate digital literacy and technopreneurial skills into national curriculum frameworks.

Implementing these recommendations will enhance undergraduates' readiness to establish and manage technology-driven ventures, thereby contributing to innovation, job creation, and sustainable economic development in Abia State and beyond.

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DIGITAL MARKETING: THE VIABLE TOOL FOR SMALL AND MEDIUM-SIZE ENTERPRISES (SMEs) SURVIVAL IN NIGERIA ECONOMY

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Abstract

This paper focused on digital marketing as the viable tool for Small and Medium-sized Enterprises(SMEs)survival in Nigeria economy. The emergence of digital marketing platforms has transformed how business operate and interact with customers. It has proven to be an effective and efficient channel for marketing goods and services. The study examined digital marketing such as social media marketing, content marketing and customer engagement and online advertising. SMEs owners can grow and make their businesses to survive through digital marketing platforms. The study concluded that it is imperative for SMEs in Nigeria to recognize the importance of digital marketing and integrate it into their overall business growth and survival. Based on the conclusion, it was therefore recommended that SMEs owners should embrace the approach of digital marketing as this will lead to their businesses survival; SMEs should tailor digital campaigns to reflect local conditions, including consumer trust levels, payment systems, and cultural behaviours; Targeted workshops, mentorships, and peer learning groups should focus on equipping SMEs owners and Amongst others.

Keywords: Digital Marketing, Small and Medium-sized Enterprises(SMEs)

1. Introduction

The development of digital marketing can be traced to the 1990s, with the advent of the internet, marking the beginning of an era in global communication and business (Faruketal.,2021). As internet accessibility grew, businesses began leveraging this medium for marketing (Cosmuleseetal.,2019). The rise of search engines like Yahoo and Google emphasized the importance of search engine optimization (SEO), which helps improve website visibility in search results (Gregoriadesetal.,2021).

Overtime, businesses used graphical advertisements to attract users, although the effectiveness of banner advertisement decreased with ad-blocking technologies (Kontisetal.,2022). This led to the introduction of pay-per-click (PPC) advertising, a model popularized by Google Ads in 2000, allowing businesses to pay only for clicks on their ads (Faruketal.,2021). Social media marketing soon followed, enabling companies to build brand awareness, foster customer relationships, and drive website traffic through targeted content and advertising. By the late 2000s, the wide spread use of smart phones brought about mobile marketing, with businesses optimizing their websites and apps for mobile devices and using location-based ad store ach consumers on the go (Sansernetal., 2022; Harikrishnan & Vinith, 2022). Digital marketing strategies provide various ways to promote products, engage audiences, and drive growth (Chomiak-Orsa & Liszczyk, 2020; Pascuccietal.,2023).

In today's business environment, digital technologies have become deeply intertwined with how consumers make decisions and interact with brands. The wide spread use of the internet, social media, and mobile devices means that consumer behavior is now largely shaped by digital engagement. For small and medium enterprises (SMEs), this shift has transformed the way they could approach marketing and survival in competitive markets. Digital marketing is no longer a secondary or optional

tool; it has become a central pillar in how SMEs attract customers, communicate value, and sustain business growth (Supriadi, 2024; Zamrietal., 2024).

The digital revolution has transformed how businesses operate and interact with customers. It has proven to be an effective and efficient conduit for marketing goods and services (Okolo, et al.,2018). Digital marketing refers to using channels such as websites, search engines, social media, email, and mobile applications to promote products and services (Leetal., 2021; Faruk et al., 2021). These digital marketing tools have gained global popularity for their ability to target specific markets, measure performance, and provide a personalized customer experience(Jadhavetal.,2023).

Unlike traditional marketing methods, which often require significant financial resources and have limited reach, digital marketing allows SMEs to level the playing field with larger firms by offering cost-effective platforms that reach wider audiences. Social media, search engine optimization, email campaigns, and content marketing now serve as strategic avenues for SMEs to establish brand visibility, enhance customer relationships, and increase sales performance (Nwawume & Anukam, 2024; Odita, 2023). In this sense, digital tools are not just additions to existing practices but are essential drivers of competitiveness and long-term survival.

The traditional way of doing business only has become inadequate for business operators. Nowadays the hike in the cost of getting an office space in Nigeria economy now is affecting the SMEs greatly. Even after succeeding in getting an office space, the funds to equip the office becomes difficult and almost impossible. The low patronage they deal with from time to time, having their goods on the shelves for longer time even to the point of some getting expired due to lack of sales and their services not been noticed or reached even when they have the ability to offer the best services as a result of their location has made many SMEs close their businesses. But with the emergence of digital marketing and utilization of its various strategies, SMEs can actually make their goods and service visible to larger audience thereby achieving their businesses aims and objectives.

Small and Medium Enterprises are businesses that have a fairly important role and cannot be ignored in efforts to restore economic conditions in Nigeria. With the Covid-19 that hit Nigeria and the whole wide world, it had an impact on the community's economy which declined. Therefore, competition in business is getting tighter and tighter, especially for SMEs. In business, competition is normal and common place. However, in order for businesses to survive in the midst of a pandemic and many competitors, SME actors need to have innovations and strategies to maintain their business. Basically, the marketing concept is very simple, because it is built on the basic principle of maximizing satisfaction through the use of scarce resources.

The presence of digital media has clearly increased the level of effectiveness of product advertising, including in the SMEs environment which has made it easy and possible for all SMEs even those just starting out to be able to shift their views to digital promotional media compared to ways outside of new technology like spreading outside the network.

Alghizzawi et al. (2023) emphasized that those who embraced digital marketing during the COVID-19 pandemic were better able to sustain customer engagement and navigate economic disruptions. The COVID-19 pandemic provided a striking example of how SMEs can adapt through digital marketing. With physical operations disrupted by lockdowns, many SMEs were compelled to accelerate their digital transformation. Online platforms became crucial for maintaining visibility, engaging customers, and attempting to secure revenue streams. Alghizzawi et al. (2023) observed that SMEs that embraced digital platforms during the crisis were better able to remain resilient, demonstrating the importance of digital marketing as not only a growth strategy but also a survival mechanism during periods of uncertainty. This experience underscores the need for SMEs to integrate digital tools into their core operations, rather than treating the mass secondary or temporary solutions. This paper, therefore, sets out to assess how digital marketing tools is viable for the survival of small and medium-sized enterprises survival in Nigeria

Digital Marketing tools for Small and Medium-Sized Enterprises survival

Digital marketing has evolved significantly overtime, transitioning from a focus on websites and email marketing to a more complex land scape that includes social media, search engines, digital content, and various online platforms (Dsouza & Panakaje, 2023). This evolution has been driven by technological advancements and changes in consumer behavior, with digitalization playing a crucial role in establishing competitive advantages and developing new business models (Andersen et al.,2021). Small and medium-sized enterprises (SMEs) are particularly impacted by these changes, as they often have limited resources and unique challenges in adopting effective digital marketing strategies (Albatsetal.,2021). This paper, look at digital marketing tools for SMEs business survival which includes: Social Media Marketing, Content Marketing, and Online Advertising.

Social Media Marketing (SMM)

One of the most widely used digital marketing tool in SMEs is social media marketing, which involves the use of platforms such as Facebook, Instagram, Twitter(X), and YouTube. Social media marketing platforms if used appropriately can substantially reduce the marketing cost and improves the relationship with customers thus creating a positive impact on the business (Mokhtaretal.,2016). Social media has become an essential element in digital marketing, providing direct interactions with audiences, expanding brand reach, and enhancing consumer engagement. Brands utilize social media platforms to communicate with their audiences, share content, drive engagement, and foster lasting relationships (Gbandi & Iyamu, 2022). The adoption of social media has significantly assisted small and medium-sized enterprises (SMEs) in overcoming challenges and achieving marketing objectives (Effendi et al., 2020). Social media enables SMEs to extend their reach, boost brand awareness, enhance consumer engagement, and drive sales (Salam et al., 2021). Close observation has shown that social media marketing is transformative for SMEs, enabling direct connections with customers through platforms like Facebook and Instagram (Abbasi et al., 2022). Leveraging social media allows SMEs to access a vast market, influence consumer purchasing decisions, increase sales, and expand market share (Shauri et al., 2023). Moreover, the effective adoption and maintenance of digital and social media marketing strategies can help SMEs attract more customers, enhance customer engagement, and raise brand awareness among a broader demographic (Malesev & Cherry, 2021). The use of social media by SMEs presents challenges but also offers significant benefits. Social media platforms serve various functions for SMEs, including market research, customer acquisition, marketing, and customer support (Goel & Donaldson, 2021). By embracing social media, SMEs can engage stakeholders economically and effectively, enhancing their performance and market presence (Muna et al., 2022). Information and communication technologies provide a solid foundation for SMEs to effectively leverage social media in their marketing strategies (Belás et al.,2021).

Furthermore, social media plays a pivotal role in the success of digital marketing for SMEs by strategically utilizing social media platforms, SMEs can overcome challenges, expand their market reach, boost brand awareness, drive engagement, and increase sales. Understanding the dynamics of social media adoption and leveraging its potential can empower SMEs to thrive in the digital marketing and scape.

These platforms enable SMEs to build brand visibility, foster interaction with customers, run targeted advertisements, and even create virtual communities around their products or services. Social media allows businesses to communicate in real time with audiences at relatively low cost, making it especially valuable in volatile markets. Odita (2023), in a study of SMEs in Delta State, Nigeria, found that social media marketing often acts as a lifeline for small businesses during uncertain economic conditions, as it provides immediate reach and continuous engagement with customers (FEPBL).

Content Marketing and Customer Engagement

Beyond simply having an online presence, SMEs are increasingly turning to content marketing as a way of creating value for their customers. This strategy focuses on generating relevant and engaging materials such as blogposts, videos, infographics, and product stories that educate and inform consumers. By sharing useful content, SMEs not only promote their offerings but also build trust and credibility with their target audience. Nwawume and Anukam (2024) argue that content-driven marketing lies at the heart of digital entrepreneurship, giving SMEs global exposure. in communication, and stronger visibility in their chosen markets (BW Journal). Importantly, this approach often requires minimal financial investment, making it accessible even to resource-constrained enterprises.

Online Advertising

Online advertising. By optimizing their websites and online stores, SMEs can increase their chances of being discovered by potential customers searching for products or services. Paid strategies such as pay-per-click (PPC) advertisements or sponsored search results further enhance visibility in crowded market places. According to Supriadi (2024) and Zamrietal. (2024), these tactics help SMEs to expand customer reach and improve overall sales performance, particularly when competition for consumer attention is high (IJBTOB). Online advertising also provides measurable data on customer behaviour, which can guide better decision-making.

The Viable Tool for Small and Medium-Size Enterprises (SMEs) Survival in Nigeria Economy

The adoption of digital marketing strategies has proven to be a double-edged sword for the survival of small and medium-sized enterprises (SMEs). On one hand, it offers numerous prospects

that improve visibility, customer engagement, and resilience. On the other hand, SMEs often face challenges linked to resources, skills, and infrastructure that limit the full realization of these benefits.

Prospects Improved Market Reach and Visibility

Digital marketing has opened new doors for SMEs by helping them overcome geographical barriers. Through online platforms, even small businesses located in remote areas can now connect with customers across cities, states, and even international markets. Supriadi (2024) observes that the use of digital tools enables SMEs to expand their customer base and significantly improve business performance by reaching a broader audience (IJBTOB). Similarly, Ajedeetal. (2025), studying SMEs in Kwara State, found that online marketing initiatives played a pivotal role in extending market presence and improving visibility, thereby boosting competitiveness in the local economy.

Enhanced Customer Engagement and Brand Building

Digital marketing also transforms show SMEs build relationships with their customers. Unlike traditional one-way communication, social media platforms and content marketing allow businesses to interact directly with clients, gather feedback, and foster stronger emotional connections. This kind of engagement enhances brand loyalty and can lead to repeat purchases. Alghizzawi et al. (2023) highlight that SMEs which embraced digital marketing as both useful and user-friendly were able to maintain customer relationships and strengthen brand presence ven during crises such as the COVID-19 pandemic.

Cost Effectiveness and Flexibility

One of the major attractions of digital marketing for SMEs is its affordability compared to traditional advertising channels like radio, print, or television. Digital campaigns can be tailored to specific budgets and scale up or down as business conditions change. A study published by *Emerald* on SMEs in Ghana found that digital marketing allows businesses to reduce marketing costs while still achieving measurable and positive performance outcomes, provided that strategies are carefully planned and executed (EmeraldInsight,2022). This flexibility makes it especially suitable for SMEs with limited financial resources.

Crisis Resilience and Adaptability

The COVID-19 pandemic provided clear evidence of the resilience that digital marketing can bring to SMEs. While many traditional businesses collapsed under the pressure of lock downs and restrictions, firms that had adopted digital tools managed to sustain customer contact, generate sales online, and remain visible in their markets. According to Alghizzawi et al. (2023), digital marketing served as a “survival strategy,” enabling SMEs to adapt quickly and maintain operations under conditions of uncertainty.

Digital Marketing as a Necessity, not a Choice

Digital marketing is no longer an optional add-on; it has become a critical enabler of survival and competitiveness in today’s economy. SMEs that fail to adopt digital tools risk exclusion from the modern marketplace. Nwawume and Anukam (2024) argue that firms delaying adoption are more likely to lose visibility, as consumer behavior increasingly favours businesses that maintain a strong online presence and provide 24/7 accessibility. From this perspective, digital marketing should be positioned not as an alternative to traditional marketing but as a central component of business strategy.

The Centrality of Training and Capacity Building

The entrepreneurial spirit of many SMEs owners is undeniable, but enthusiasm Alone does not translate into effective digital campaigns. Knowledge gaps in areas such as social media management, content creation, and online analytics remain significant obstacles. Etuk, Akpan, and Awah (2024) identify digital literacy as a decisive factor influencing the successor failure of digital marketing adoption among Nigerian SMEs. Thus, capacity- building initiatives through government-led workshops, industry mentorship programmes, or peer learning networks are essential to empower SMEs operators to maximize digital opportunities.

Challenges of Adoption of Digital Marketing Strategies by Small and Medium-Sized Enterprises (SMES)

Digital Literacy and Technical Skills Gaps

One of the most persistent challenges for SMEs is the lack of adequate digital skills among owners and staff. Effective use of digital platforms requires knowledge of online advertising, analytics, and customer engagement tools. In their study of service-based SMEs in Akwa Ibom State, Etuk, Akpan, and Awah (2024) identified digital illiteracy and weak ICT infrastructure as major obstacles to digital marketing adoption (ASP Journals). Without these skills, businesses often run poorly designed campaigns that fail to deliver expected results.

Perceived Cost and Investment Risks

Although digital marketing is relatively cost-effective, SMEs often perceive the initial investment as high. Expenses linked to content creation, platform subscriptions, or paid online advertising can discourage businesses, particularly when short-term returns are uncertain. Etuk et al. (2024) note that this perception of cost, coupled with financial constraints, deters many SMEs from fully adopting digital strategies despite their long-term benefits.

Sustainability and Continuous Effort

Digital marketing is not a one-off activity. To deliver meaningful results, it requires continuous effort in producing content, monitoring campaigns and responding to customer trends. Without sustained commitment, results are often short-lived. Supriadi (2024) and Zamri et al. (2024) caution that SMEs which treat digital marketing as a quick fix rather than a long-term strategy often fail to see consistent performance improvements.

Infrastructure and Access Constraints

In developing economies like Nigeria, poor infrastructure significantly limits SMEs' ability to maximize digital tools. Erratic electricity supply, slow or unstable internet connections, and limited access to afford able digital devices often disrupt marketing efforts. Okafor and Chia (2024) highlight that such infrastructural bottlenecks create inefficiencies that dampen the gains of online advertising, particularly for SMEs in North Central Nigeria.

Measurement and Return on Investment (ROI) Uncertainty

Finally, many SMEs struggle with measuring the actual impact of digital marketing on sales and profitability. Without clear metrics or analytics expertise, it becomes difficult to determine which strategies are working and which are not. Alghizzawi et al. (2023) stress that perceived usefulness and ease of use as framed by the Technology Acceptance Model strongly influence SMEs decisions to sustain digital marketing adoption. When SMEs cannot clearly link efforts to outcomes, enthusiasm and investment often decline.

Contextualizing Digital Strategies to Local Realities

Digital marketing strategies that succeed in one region may fail in another if contextual differences are ignored. Nigeria's diverse socio-economic environment, uneven internet penetration, and varied consumer behaviours require locally adapted strategies. Gbandi and Iyamu (2024), in their study of SMEs in Benin City, observed that social media marketing can be highly effective, but its impact is shaped by how local audiences interact with online platforms. Consequently, SMEs in rural or semi-urban regions may need different approaches compared to their counterparts in urban areas or cities, especially with respect to payment trust and online transaction behaviours.

Measuring Outcomes and Avoiding Vanity Metrics

While digital marketing opens new doors, the temptation to overemphasize "vanity metrics" likes, clicks, and follower counts can obscure the true business impact. For SMEs, the critical question is how digital efforts affect tangible out comes such as revenue growth, customer retention, and repeat patronage. Alghizzawi et al. (2023) stress that without clear measures of return on investment (ROI), SMEs risk investing in campaigns that look good on paper but contribute little to performance. Affordable tools such as Google Analytics, social media insights, and simple sales tracking can provide valuable feedback for evidence-based decisions.

Conclusion

Digital marketing strategies have undergone a significant evolution from the use of websites and email marketing to the use of social media platforms. These changes have impacted companies, especially small and medium-sized businesses (SMEs), which often have limited resources and unique challenges in adopting effective digital marketing strategies. However, by understanding important trends in digital marketing, such as the use of social media and e-commerce technology, SMEs can allocate their resources effectively and increase the success of their digital marketing strategies.

However, despite the evident prospects, several challenges remain for SMEs in effectively adopting and implementing digital marketing strategies. These challenges include limited resources, lack of digital literacy and skills, infrastructural constraints, and evolving market dynamics. Addressing these challenges requires concerted efforts from SMEs, policymakers, industry associations, and other stakeholders to provide necessary support, resources, and training initiatives to facilitate digital transformation.

Furthermore, it is imperative for SMEs in Nigeria to recognize the strategic importance of digital marketing and integrate it into their overall business strategies. Investing in digital marketing training, technology infrastructure, and talent acquisition will be crucial for SMEs to capitalize on the opportunities presented by the digital age and remain competitive in an increasingly digitalize market

place. When considering the influence of digital marketing on the sustainability of SMEs, it becomes clear that these strategies hold significant promise for enhancing growth, competitiveness, and resilience. Nonetheless, the degree of their effectiveness depends on how well SMEs incorporate digital tools into their business frameworks, tailor them to local contexts, and develop the expertise required to manage them. Digital marketing should be regarded not as a supplementary activity but as a fundamental driver of contemporary business success.

Recommendations

1. Policy makers should focus on creating an enabling environment for SME digitization by improving digital infrastructure, provide financial incentives and facilitate knowledge sharing and collaboration among SMEs.
2. SMEs owners should adopt a lean approach of digital marketing instead of large-scale resources-intensive campaign. As this will allow them to conserver sources while learning in real-time.
3. SMEs should tailor digital campaigns to reflect local conditions, including consumer trust levels, payment systems, and cultural behaviours.
4. Targeted workshops, mentorships, and peer learning groups should focus one quipping SMEs owners and staff with practical skills in social media management, analytics, and content creation.
5. SMEs owners should integrate digital marketing not just as a growth tool but as a resilience mechanism to withstand future crises.

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SUB-THEME 4
GREEN BUSINESS, SOCIAL ENTREPRENEURSHIP AND ETHICAL LEADERSHIP

GREEN BUSINESS, SOCIAL ENTREPRENEURSHIP AND ETHICAL LEADERSHIP: AN INTEGRATED FRAMEWORK FOR SUSTAINABLE AND INCLUSIVE DEVELOPMENT

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Abstract

The current global economy is challenged with interconnected environmental, social and governance issues that have increased the need for responsible and sustainable approaches to business and entrepreneurship. Climate change, environmental degradation, resource scarcity, poverty, unemployment, inequality and declining trust in institutions validate the limitations of conventional business models that emphasize financial performance without satisfactory consideration of social and environmental consequences. Against this background, green business, social entrepreneurship and ethical leadership have arose as complementary approaches for advancing sustainable and inclusive development. This paper examines the conceptual foundations, theoretical underpinnings and interrelationships among green business, social entrepreneurship and ethical leadership. Drawing upon contemporary literature, the paper contends that green business promotes environmental value creation through sustainable production, resource efficiency, green innovation and circular economic practices, while social entrepreneurship maintain entrepreneurial innovation and market-based approaches to address persistent social challenges. Ethical leadership provides the moral and governance basis necessary for ensuring that economic, environmental and social objectives are pursued with integrity, fairness, transparency and accountability. The paper is underpinned primarily on stakeholder theory and social learning theory. It proposes that the integration of green business, social entrepreneurship and ethical leadership creates a responsible sustainable enterprise capable of generating economic value while promoting environmental stewardship and social inclusion. Major barriers, including limited access to finance, inadequate skills, institutional weaknesses, greenwashing, mission drift and competing 866ecognize866onal objectives, are examined. The paper concludes that sustainable transformation entails a fundamental shift from profit-centred business practices towards integrated models of enterprise that combine economic viability, environmental responsibility, social value creation and ethical governance. Practical and policy recommendations are offered for governments, educational institutions, business organisations, entrepreneurs and development partners.

Keywords: Green business, social entrepreneurship, ethical leadership, sustainable entrepreneurship, sustainable development, responsible enterprise.

Introduction

The global economy is undergoing a profound transformation in the way business success, entrepreneurship and leadership are understood. For many decades, economic development and business performance were largely appraised using indicators such as profitability, productivity, market growth and shareholder returns. Although financial performance remains crucial for 866ecognize866onal survival, current global challenges have established that economic growth alone cannot provide a satisfactory basis for sustainable human development. The environmental and social consequences of economic activities have become progressively important in defining the long-term legality and sustainability of organisations.

Climate change, biodiversity loss, environmental pollution, resource depletion, poverty, inequality and unemployment have deepened concerns regarding the traditional model of economic development. These challenges are interrelated. Unsustainable production and consumption patterns donate to environmental deprivation, while social inequality can limit access to economic chances and deteriorate social interconnection. Similarly, environmental deterioration often affects economically vulnerable populations excessively. Consequently, sustainable development needs approaches that 866ecognize the interdependence of economic prosperity, environmental protection and social wellbeing.

Businesses occupy a fundamental position in this transformation. Business organisations influence how resources are extracted and 866ecogniz, determine production and consumption patterns, generate employment opportunities and develop technologies that shape society. Their activities can hence

create positive or negative consequences for individuals, communities and ecosystems. Contemporary organisations are progressively expected to establish responsibility beyond the traditional objective of generating profit.

This changing anticipation has contributed to the growth of green business and sustainable entrepreneurship. Green business seeks to create economic value while reducing environmental damage through ecologically responsible production, resource efficiency, renewable energy, waste reduction, sustainable supply chains and green innovation. Research progressively reveals that green entrepreneurial positioning and green innovation can contribute simultaneously to environmental and economic performance (Khan et al., 2023). A recent meta-analytic review also determines the growing importance of green entrepreneurial orientation in influencing green innovation, economic performance and sustainable 867ecognize867onal performance (Bindeeba et al., 2026).

Alongside environmental alarms, persistent social problems have increased interest in social entrepreneurship. Social entrepreneurship applies entrepreneurial knowledge, innovation and 867ecognize867onal proficiencies to tackle social problems and create quantifiable social value. Social entrepreneurs seek to address challenges such as poverty, unemployment, exclusion, inadequate access to education and health services and environmental vulnerability. Contrary to traditional benevolent approaches, social entrepreneurship often employs market-based and financially sustainable mechanisms to enhance long-term social impact.

The growing relationship between social and sustainable entrepreneurship reflects the recognition that contemporary development challenges require integrated approaches. Bonfanti et al. (2024) perceive that social and sustainable entrepreneurship have developed as related but separate fields, with important convergence around entrepreneurial enablers, business models, impact and financial constraints. Similarly, Kamaludin (2023) contends that sustainability within social entrepreneurship should encompass social, economic and environmental dimensions rather than treating social impact as independent of broader sustainability concerns.

However, environmental responsibility and social value creation cannot be excellently sustained without proper leadership. Leaders impact 867ecognize867onal priorities, allocate resources, create 867ecognize867onal cultures and regulate the standards by which employees and organisations are held responsible. Ethical leadership is therefore an imperative dimension of sustainable enterprise.

Ethical leadership refers to leadership accredited by integrity, honesty, fairness, accountability, transparency and responsibility. Ethical leaders are expected not only to behave morally but also to promote ethical conduct among 867ecognize867onal members. The significance of leadership to sustainability is evident in sustainable entrepreneurship research. Ribeiro and Leitão (2024), through a systematic literature review, revealed that sustainable leadership and sustainable entrepreneurship are closely interconnected. Leaders can influence entrepreneurs and organisations to adopt responsible practices, integrate environmental and social values and generate economic value while contributing to wider socio-environmental objectives.

The relationship among green business, social entrepreneurship and ethical leadership is therefore increasingly vital. Nonetheless, these concepts are often observed separately. Green business literature frequently focuses primarily on environmental performance and innovation. Social entrepreneurship literature focusses on social value creation and hybrid 867ecognize867onal models. Ethical leadership research frequently examines employee behaviour, 867ecognize867onal culture and governance. A more integrated understanding is required because contemporary sustainability challenges do not transpire autonomously.

A green business might decrease environmental harm but fail to promote social inclusion. A social enterprise might pursue an important social task while experiencing environmental challenges or governance weaknesses. Likewise, an 867ecognize867on may publicly adopt sustainability principles without genuinely implementing them. Ethical leadership is necessary to ensure that 867ecognize867onal commitments to sustainability are reflected in actual practices.

This paper therefore contends that green business, social entrepreneurship and ethical leadership should be understood as complementary scopes of responsible sustainable enterprise. Green business provides the environmental dimension of sustainable value creation. Social entrepreneurship provides the social innovation dimension. Ethical leadership offers the moral and governance basis required to balance economic, environmental and social objectives.

The purpose of this paper is to examine these three concepts and develop an integrated narrative framework for understanding their contribution to sustainable and inclusive development. The paper addresses four major objectives:

1. To examine the concept and characteristics of green business.

2. To analyse the role of social entrepreneurship in social value creation and sustainable development.
3. To examine the meaning and importance of ethical leadership in sustainable 868ecognize868onal practice.
4. To develop an integrated theoretical and conceptual understanding of how green business, social entrepreneurship and ethical leadership can contribute to sustainable and inclusive development.

Literature Review

The Concept of Green Business

Green business refers to business activities that seek to create economic value while reducing negative environmental effects and promoting environmental sustainability. The concept involves integrating environmental considerations into 868ecognize868onal strategy, production, operations, products, services and supply chains.

Green businesses may function in sectors specifically connected with environmental sustainability, such as renewable energy, recycling, waste management and sustainable agriculture. However, the concept spreads beyond these sectors. Conventional organisations can adopt green business practices by improving energy efficiency, reducing waste, using environmentally responsible materials and restructuring production processes.

The fundamental postulation of green business is that environmental responsibility and economic performance can be equally supportive. Environmental challenges can create new opportunities for entrepreneurial innovation. The need to reduce waste, for example, can arouse recycling enterprises and rotary business models. Energy challenges can instigate investment in renewable technologies. Apprehensions about environmental pollution can encourage the development of purified production processes.

Green entrepreneurship has accordingly emerged as a central area of sustainable business research. Khan et al. (2023) established that green entrepreneurial orientation and 868ecognize868onal resilience donated to green innovation amongst manufacturing firms. Their findings revealed that environmental sustainability can be incorporated into entrepreneurial and 868ecognize868onal strategy rather than being considered exclusively as a regulatory requirement.

More recently, Bindeeba et al. (2026) carried out a meta-analytic review exploring the influence of green entrepreneurial orientation on green innovation, economic performance and sustainable performance. The study replicates the increasing recognition that environmentally responsible entrepreneurship can create multiple 868ecognize868onal outcomes rather than simply environmental benefits.

Green business should therefore be considered as a strategic approach to value creation. It necessitates organisations to identify environmental sustainability as a basis of innovation, resilience and long-term competitiveness.

Green Innovation and the Circular Economy

Green innovation signifies an important mechanism through which businesses can lessen environmental harm while sustaining economic feasibility. It involves the development of products, services, technologies and procedures that reduce resource consumption, contamination and waste.

The globular economy provides an important framework for understanding this process. Conventional economic systems frequently follow a linear model involving resource extraction, production, consumption and disposal. Circular economic models seek to reduce waste by extending the useful life of products and materials through reuse, repair, remanufacturing and recycling.

Entrepreneurial organisations can contribute to the circular economy by developing new business models around waste repossession, product life extension and resource proficiency.

The transition towards circular and green business models needs 868ecognize868onal leadership. Green entrepreneurial leadership can stimulus innovation by encouraging organisations to involve environmental priorities into entrepreneurial decision-making.

The Concept of Social Entrepreneurship

Social entrepreneurship refers to the application of entrepreneurial capabilities and innovative business approaches to address social problems and create social value (Certo and Miller, 2008). According to the writers social entrepreneurs recognize problems that are inadequately addressed by conventional markets, governments or charitable organisations. They then develop innovative and sustainable solutions. More recently, Robertson (2025) opines that social entrepreneurship prioritizes social wellbeing, inclusiveness, and ethical value creation, distinguishing it from traditional profit centered

entrepreneurship. It entails using innovative business strategies to address social, cultural or environmental problems while ensuring financial sustainability.
Similarly, Kamaludin (2023) argues that sustainability within social entrepreneurship should include social, economic and environmental dimensions. Social entrepreneurship should thus not be interpreted scarcely as charitable or welfare-oriented activity. Instead, it signifies a larger approach to creating sustainable solutions to persistent social problems. The social problems addressed by social entrepreneurship include poverty, unemployment, inequality, inadequate access to education and health services, gender inequality and community exclusion.
Nevertheless, the connection between financial sustainability and social mission can generate 869ecognize869onal pressures. Enterprises may experience tension to obtain more profitable activities at the cost of their social objectives. This challenge highlights the importance of ethical governance and leadership.

Social Entrepreneurship and Social Value Creation
The primary objective of social entrepreneurship is the creation of social value. Social value refers to positive changes in human wellbeing, social inclusion, employment, education, health and community development (Urmanaviciene, 2025).
Social enterprises can contribute to employment creation by providing opportunities for individuals and communities exempted from common labour markets. They can also reinforce community capacity by including beneficiaries in 869ecognize869onal activities.
An important contribution of social entrepreneurship is its capability to address problems through innovation. Rather than depending exclusively on government intervention or charitable donations, social entrepreneurs pursue to develop sustainable and scalable solutions.
However, social value creation can be hard to quantity. Financial outcomes can be assessed through conventional accounting indicators, but social outcomes may be more intricate and context dependent. Organisations must therefore develop appropriate mechanisms for assessing social impact.
The growing integration of social entrepreneurship with sustainable development recommends that social enterprises should also reflect their environmental consequences. A social enterprise that generates employment while creating significant environmental harm may have restrict long-term sustainability. Accordingly, contemporary social entrepreneurship progressively requires an integrated understanding of economic, social and environmental value.

The Concept of Ethical Leadership
Ethical leadership refers to the demonstration and promotion of morally appropriate behaviour through personal actions, 869ecognize869onal decisions and relationships with others (Liu, Huang, Kim, & Na, 2023). Ethical leaders display integrity, fairness, honesty, accountability and concern for stakeholders. They also establish expectations concerning ethical behaviour within organisations. Ethical leadership hence involves both personal morality and the active promotion of ethical 869ecognize869onal conduct.
The role of ethical leadership to sustainability has increased significantly. Environmental and social challenges frequently involve difficult 869ecognize869onal trade-offs. Leaders may face pressure to reduce costs, increase profitability or expand market share in ways that could negatively affect employees, communities or ecosystems.
Ethical leadership requires decision-makers to consider the consequences of 869ecognize869onal actions for multiple stakeholders.
Tabaghdehi et al. (2026), through a systematic review of ninety-five peer-reviewed studies, recognize ethical leadership as an significant contributor to corporate sustainability. The review stresses the importance of transparency, accountability and ethical decision-making in creating sustainability-oriented 869ecognize869onal environments.
Ethical leadership should consequently be regarded as an important mechanism for explaining sustainability commitments into 869ecognize869onal practice.

Ethical Leadership and Green Organisational Behaviour
Organisational sustainability grounded not only on strategic decisions but also on daily actions. Employees can reduce energy consumption, curtail waste and enhance environmentally responsible practices. Leadership behaviour can influence these actions.

Research on green behavior lament that ethical leaders pay much attention to the ethical responsibilities of employees, and this sort of responsibility, in turn can reduce the business organizations' damaging effects on the environment. It was further stressed that ethical leadership can stimulate environmentally responsible 870ecognize870onal practices by strengthening green competencies and 870ecognize870onal culture (Ahmad, Islam, Sadiq, & Kaleem, 2021).
Therefore, ethical and sustainable leadership can influence environmental outcomes indirectly by creating 870ecognize870onal environments in which responsible behaviour is valued and supported. Ethical leadership is thus necessary to ensure that environmental and social objectives are pursued responsibly.

Theoretical Foundations
This paper is supported by two complementary theoretical perspectives: stakeholder theory and social learning theory .

Stakeholder Theory
Stakeholder theory provides an important background for understanding responsible business behaviour. The theory argues that organisations have responsibilities towards various groups affected by 870ecognize870onal activities. These groups comprise of employees, customers, suppliers, investors, governments and communities. The theory challenges the assumption that businesses should focus exclusively on shareholder interests.
Green business reflects stakeholder theory because environmental damage can affect communities and future generations. Social entrepreneurship echoes stakeholder theory because its objective is directly related with addressing the desires of communities and vulnerable groups.
On the other hand, ethical leadership provides the governance mechanism through which leaders 870ecognize and balance competing stakeholder interests. Stakeholder theory is therefore useful for understanding why sustainable enterprise needs wider responsibility beyond financial performance.
Social Learning Theory
Social learning theory explains for how leadership effects 870ecognize870onal behaviour. Individuals often learn through observing the behaviour of influential individuals.
Within organisations, leaders serve as important role models. Employees observe leadership decisions and behaviour to determine 870ecognize870onal expectations. Ethical leaders can therefore stimulate employees to accept responsible and environmentally sustainable practices.
This theory is particularly pertinent to green 870ecognize870onal behaviour because environmental sustainability requires participation throughout the 870ecognize870on. When leaders establish responsible environmental behaviour, employees are more likely to observe sustainability as an important 870ecognize870onal value.

Major Challenges and Ethical Dilemmas
Limited Access to Finance
Green technologies regularly require substantial initial investment. Social enterprises may also experience financing challenges because investors may consider social objectives less financially attractive than conventional commercial activities. Specialized financing mechanisms are hence important. These may include influenced investment, green financing, concessional credit and public support programmes.

Inadequate Entrepreneurial and Leadership Competencies
Sustainability-oriented entrepreneurs need knowledge beyond conventional business management. They require understanding of environmental management, innovation, stakeholder engagement, ethics and social impact. Leadership development is therefore essential.
Mission Drift
Social enterprises may steadily prioritize revenue generation over their original social mission. Mission drift can occur when organisations experience financial pressure or become progressively dependent on commercial markets. Ethical leadership and strong governance mechanisms are essential to protect 870ecognize870onal missions.
Greenwashing
Greenwashing befalls when organisations emphasize or misrepresent their environmental performance. This practice can undermine public confidence and reduce the credibility of genuine green businesses.
Ethical leadership and transparent reporting are essential for preventing greenwashing.

Policy and Practical Implications

The transition towards responsible sustainable enterprise requires coordinated action among governments, educational institutions, businesses, entrepreneurs and development partners.

First, governments should establish policies that support green and social entrepreneurship. Policies may include motivations for renewable energy, recycling, sustainable agriculture and environmentally responsible innovation.

Second, financial institutions should develop specialized funding mechanisms for sustainability-oriented enterprises. Conventional financing models may not sufficiently 871ecognize social and environmental value.

Third, educational institutions should integrate sustainability, social entrepreneurship and ethical leadership into business and entrepreneurship curricula. Fourth, organisations should initiate transparent systems for evaluating environmental and social performance. Such systems can strengthen accountability and reduce greenwashing.

Fifth, leadership development programmes should emphasize ethical decision-making and stakeholder responsibility. Sixth, social enterprises should establish governance structures proficient of protecting social missions while ensuring financial sustainability.

Finally, collaboration among governments, businesses, universities and civil society organisations should be reinforced. Complex environmental and social challenges cannot be effectively addressed by individual organisations acting independently.

Conclusion

The contemporary global economy requires a fundamental reassessment of the relationship among business, society and the natural environment. Economic growth remains vital, but business models that focus exclusively on financial returns without considering environmental and social consequences are increasingly insufficient.

Green business, social entrepreneurship and ethical leadership provide corresponding pathways for responding to contemporary sustainability challenges.

Green business promotes environmental responsibility through sustainable production, resource efficiency and green innovation. Social entrepreneurship applies entrepreneurial capabilities to persistent social challenges and promotes social value creation. Ethical leadership offers the moral foundation required to ensure that economic, environmental and social objectives are pursue with integrity, fairness, transparency and accountability.

Green business, social entrepreneurship and ethical leadership collectively provide a credible pathway towards an economic system that is productive, innovative, socially inclusive, environmentally responsible and ethically governed.

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TEACHING GREEN OFFICE PRACTICES IN A DIGITAL AGE: PEDAGOGICAL STRATEGIES FOR OFFICE TECHNOLOGY AND MANAGEMENT PROGRAMME IN NIGERIA

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Abstract
The study examined pedagogical strategies for teaching green office practices in the digital age within Office Technology and Management (OTM) programmes in tertiary institutions. A descriptive survey research design was adopted. The study was guided by three research questions and three hypotheses tested at the 0.05 level of significance. The population comprised 163 OTM educators from universities, polytechnics, and colleges of education offering Business Education and OTM programmes in Anambra State. Due to the manageable size, the entire population was used without sampling, data were collected using a structured questionnaire validated by experts. The instrument's reliability was established using the Pearson Product Moment Correlation method, yielding coefficients of 0.78, 0.84, and 0.73. Data were analysed using mean and standard deviation, findings revealed that OTM educators generally agreed on the effectiveness of experiential, collaborative, reflective, and technology-enhanced pedagogical strategies such as project-based learning and green office audits. However, the integration of digital tools into teaching remained limited, with only basic tools like cloud storage and electronic document management being moderately 873ecogniz. Key challenges identified included unreliable internet connectivity and frequent power outages. The study also found no significant differences based on gender or type of institution. The study concludes that although OTM educators 873ecognize the value of innovative teaching strategies, infrastructural and capacity-related constraints limit full adoption of digital-age pedagogical practices. It recommends the integration of green office practices into OTM curricula, continuous professional development for educators and improved digital infrastructure to support effective teaching.
Keywords: Green office practices, pedagogical strategies, digital tools, Office Technology and Management Educators

Introduction
The 21st century has ushered in an era in which ecological degradation and climate change are no longer distant threats but urgent global realities. For a developing nation like Nigeria, this presents a significant paradox, while rapid economic growth is essential, such growth must avoid replicating the carbon-intensive pathways followed by industrialised countries (Adebayo, 2020). This challenge places a considerable responsibility on educational institutions particularly universities, polytechnics and colleges of education which are tasked with preparing the future workforce. Within these institutions, Office Technology and Management (OTM) programmes occupy a strategic position. They are designed to produce middle-level administrative professionals, including secretaries and office managers, who serve as the operational backbone of both public and private organisations. The practices adopted by these professionals especially those related to office operations have direct implications for the environmental performance and ecological footprint of administrative activities in Nigeria. Teaching green office practices in the digital age therefore requires OTM educators to adopt innovative pedagogical strategies that integrate environmental responsibility with digital competence.

However, current instructional approaches remain largely traditional and often overlook environmental considerations.

Teaching green office practices refers to the intentional process of equipping learners with the knowledge, skills and attitudes needed to promote environmental sustainability within office environments. This form of education emphasizes practical, everyday actions that administrative workers can consistently apply. Such actions include reducing paper waste through duplex printing and digital documentation, conserving energy by switching off unused devices, managing electronic waste responsibly, minimising single-use plastics and selecting eco-friendly office supplies (Okoro & Eze, 2021). Research by Bhuttah, Xusheng, Abid, and Sharma (2024) indicates that project-based learning fosters active engagement and enhances both knowledge acquisition and environmental awareness among learners. For OTM students whose future roles involve managing records, scheduling activities, handling correspondence and procuring office supplies green office competencies are immediately applicable in the workplace.

In Nigeria, where many offices still depend heavily on paper-based systems and diesel-powered electricity, the adoption of green office practices is not merely desirable but necessary for both cost efficiency and environmental sustainability (Nwachukwu, 2019). However, beyond identifying what should be taught, the context of the digital age fundamentally shapes how such knowledge should be delivered. The digital age is characterised by the widespread use of technologies such as cloud computing, artificial intelligence, the Internet of Things and mobile communication, all of which have transformed modern office operations. For OTM educators, this presents both opportunities and challenges. On one hand, digital tools support green practices for instance, virtual meetings reduce travel-related emissions, electronic document systems minimise paper use and digital signatures eliminate the need for printed approvals (Ogunlade & Bello, 2022). On the other hand, digitalisation introduces new environmental concerns, including electronic waste, energy consumption from idle devices and the carbon footprint of data centres.

A truly green office does not simply replace paper with digital tools, rather it promotes mindful digital practices such as deleting unnecessary files, extending the lifespan of equipment and recycling electronic devices responsibly (Selwyn, 2021). In the Nigerian context, where access to digital infrastructure is uneven, educators must prepare students for hybrid realities that combine both traditional and digital systems (Adebayo, 2020). This raises a critical question: what pedagogical strategies are most effective for teaching green office practices in this evolving context?

Pedagogical strategies refer to the methods and techniques educators use to facilitate learning (Xiong, 2025). Traditional OTM instruction has largely relied on lecture-based teaching and rote memorisation, often due to large class sizes and limited resources. However, sustainability education requires more interactive, experiential and context-based approaches. For example, project-based learning can involve students conducting a green office audit tracking paper usage, monitoring energy consumption and analysing waste generation. Based on their findings, students can propose practical solutions such as adopting shared digital platforms, creating awareness campaigns, or establishing recycling systems (Okoro & Eze, 2021). Similarly, simulation exercises can engage students in decision-making scenarios where they manage office resources within environmental and financial constraints.

Other effective strategies include flipped classrooms and digital storytelling, where students create multimedia narratives illustrating sustainable office practices (UNESCO, 2017). Assessment methods must also evolve to include practical outputs such as portfolios, reflective journals and sustainability action plans rather than relying solely on written examinations. Despite the potential of these innovative approaches, their success largely depends on the preparedness of OTM educators. In Nigeria, many OTM educators possess qualifications in business education or related fields and often have industry experience. However, their training has rarely included environmental sustainability or green office practices. A study by Shi and Li (2024) revealed that fewer than 10% of OTM educators in South-Eastern Nigerian polytechnics have received formal training in sustainability-related practices.

This gap limits their ability to effectively teach green office concepts. Furthermore, many educators are accustomed to traditional, resource-intensive office practices and may not fully appreciate the environmental impact of routine activities. Structural challenges such as outdated curricula, limited access to digital tools, poor internet connectivity and insufficient institutional support further hinder effective teaching (Eze & Okonkwo, 2018). Additionally, some educators may feel unprepared to integrate modern technologies into their teaching.

Statement of the Problem

Office Technology and Management programmes in Nigerian polytechnics are designed to produce graduates capable of handling modern administrative tasks efficiently. However, contemporary workplaces increasingly require two critical competencies: environmental sustainability and digital

proficiency. Ideally, office professionals should be able to reduce paper consumption, conserve energy, manage electronic waste and effectively utilise digital platforms. Unfortunately, many OTM graduates lack these essential skills. This shortfall is largely attributable to existing teaching practices, which remain focused on outdated content such as shorthand and basic typing, with minimal emphasis on sustainability. Although digital tools offer opportunities to enhance green practices, they also introduce new challenges such as electronic waste and increased energy consumption. Effective teaching of green office practices therefore requires pedagogical strategies that leverage digital innovations while mitigating their environmental impact. OTM educators face multiple constraints, including inadequate training in sustainability, limited access to digital infrastructure, unreliable internet connectivity and curricula that do not adequately address green office concepts. These challenges highlight a significant gap in both teaching practice and curriculum design.

This study, therefore, seeks to address this gap by identifying effective pedagogical strategies, examining existing barriers and proposing context-appropriate solutions for teaching green office practices in Nigeria's digital age.

Purpose of the Study

The main purpose of this study is to:

1. Identify the pedagogical strategies considered most effective by OTM educators for teaching green office practices in the digital age.
2. Examine the extent to which OTM educators integrate digital tools into their teaching of green office practices.
3. Determine the barriers that hinder the effective implementation of digital-age pedagogical strategies in OTM programmes.

Research Questions

The study is guided by the following questions:

1. What pedagogical strategies do OTM educators consider most effective for teaching green office practices in the digital age?
2. To what extent do OTM educators integrate digital tools into their teaching of green office practices?
3. What barriers constrain OTM educators from effectively implementing digital-age pedagogical strategies?

Hypotheses

The following hypotheses were tested at the 0.05 level of significance:

1. **$H0^1$:** There is no significant difference in the preferences of OTM educators regarding pedagogical strategies for teaching green office practices.
2. **$H0^2$:** OTM educators do not significantly integrate digital tools into their teaching of green office practices.
3. **$H0^3$:** There is no significant difference between polytechnic and university OTM educators regarding the barriers to implementing digital-age pedagogical strategies.

Method

This study adopted a descriptive survey research design, which is appropriate for collecting and analysing data to describe characteristics of a population without manipulating variables (Nworgu, 2015). The study was conducted in public tertiary institutions in Anambra State, Nigeria, offering Business Education and OTM programmes. The population comprised 176 lecturers from institutions including Nnamdi Azikiwe University, Chukwuemeka Odumegwu Ojukwu University, Federal College of Education (Technical) Umunze, Nwafor Orizu College of Education Nsugbe, and Federal Polytechnic Oko. Data were collected using a structured questionnaire divided into two sections: Section A: respondents' biodata and Section B: items addressing the research questions. Responses were measured using a four-point Likert scale: Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). The instrument was validated by three experts, and its reliability was established using the Pearson Product Moment Correlation method, yielding coefficients of 0.78, 0.84, and 0.73. The questionnaire was administered electronically, and 163 copies (92%) were returned and used for analysis. Mean and standard deviation were used to answer the research questions, with a criterion mean of 2.50 for agreement. Hypotheses were tested using the independent t-test at the 0.05 level of significance. A null hypothesis was rejected when the calculated t-value exceeded the critical value and accepted otherwise.

Result

Research Question 1: What specific pedagogical strategies do OTM educators consider most effective for teaching green office practices in the digital age?

Table 1: Mean and standard Deviation responses on specific pedagogical strategies OTM educators consider most effective for teaching green office practices in the digital age.

SN	Pedagogical Strategies	X	SD	Remark
1	Project-based learning where students design a complete green office plan.	2.89	0.78	Agree
2.	Green office audits to assess paper use, energy, and waste.	2.74	0.83	Agree
3	Students role-play as office managers	2.62	0.88	Agree
4.	Flipped classroom using video tutorials for green office topics.	2.91	0.72	Agree
5.	Digital storytelling projects about a day in a green office	2.80	0.79	Agree
6.	Study analysis of Nigerian offices with green practices.	2.76	0.84	Agree
7	Organise group discussions on paperless vs. traditional offices	2.95	0.70	Agree
8	Reflective journals on personal green habit adoption.	2.2.99	0.75	Agree
9	Inviting guest speakers from environmental agencies	2.58	0.90	Agree
10	Conducting field trips to organisations with green practices	2.92	0.73	Agree
	Grand Mean and standard deviation	2.80	0,79	Agree

The table 1 shows that all the pedagogical strategies Items 1 to 10 recorded mean scores above the benchmark value of 2.50, indicating that respondents generally agreed that pedagogical strategies identified such as project-based learning for designing green office plans, conducting green office audits, role-play simulations, flipped classroom approaches using video tutorials, digital storytelling case study analysis of Nigerian offices, group discussions on paperless versus traditional offices, reflective learning through journals on green habit adoption, experiential strategies and organising field trips are pedagogical strategies to be considered most effective for teaching green office practices in the digital age. The grand mean of 2.80, which is above the benchmark of 2.50, which means confirms that OTM educators generally consider all identified strategies most effective for teaching green office practices in the digital age

$H0^1$: There is no significant preference among male and female OTM educators regarding the pedagogical strategies employed effective teaching of green office practices in the digital age.

Table 2: Summary of t-test analysis of mean rating of male and female OTM educators regarding the pedagogical strategies employed effective teaching of green office practices in the digital age

Gender	**No**	**Mean X**	**SD**	**Df**	**t-cal**	**t-crit**	**Decision**
Male	63	3.92	0.71	161	-0.547	1.975	Reject Ho
Female	100	3.98	0.65	161			

The result of t-test analysis presented in table 2 shows that calculated t-value (-0.547) is less than the critical t-value (1.975). Therefore, the null hypothesis is not rejected. This means there is no significant difference between male and female OTM educators regarding their preference for pedagogical strategies in teaching green office practices in the digital age. Both male and female educators perceive the effectiveness of these strategies, therefor indicating same interest in pedagogical choice.

Research question 2; To what extent do OTM educators integrate digital tools into their pedagogical approaches for teaching green office practices?

Table 3: Mean and standard Deviation responses on OTM educators integrate digital tools into their pedagogical approaches for teaching green office practices

SN	OTM Educators Integrate Digital Tools	X	SD	Remark
11	I use cloud storage to share materials instead of printing	2.78	0.81	Agree
12.	I teach electronic document management systems	2.65	0.88	Agree
13.	I use virtual meeting platforms to model travel emission reduction.	2.21	0.85	Disagree
14.	I demonstrate energy-monitoring applications	2.05	0.92	Disagree
15.	I use digital assessment tools to eliminate paper exams.	2.18	0.79	Disagree
16.	I incorporate digital calendars for efficient planning.	2.30	0.83	Disagree
17	I use collaborative writing platforms for group work.	2.14	0.87	Disagree
18	I teach digital signature tools to replace printed forms.	2.09	0.90	Disagree
19	I use learning management systems to host content digitally.	2.24	0.84	Disagree
20	I introduce e-waste tracking apps for responsible electronics disposal.	1.98	0.93	Disagree
	Grand Mean and Standard deviation	2.26	0.86	Disagree

Table 3 shows that items 11 and 12 were accepted by the respondents that is use cloud storage to share materials instead of printing and teach electronic document management systems. This suggests a moderate level of adoption of digital tools that directly reduce paper usage and support environmentally friendly office practices. The items 13 to 20 recorded mean scores below the 2.50 benchmark and were therefore rejected. This indicates that OTM educators generally do not integrate several important digital tools into their teaching practices. These include the use of virtual meeting platforms to model travel emission reduction, energy-monitoring applications, digital assessment tools to eliminate paper exams, digital calendars for efficient planning, collaborative writing platforms, digital signature tools, learning management systems and e-waste tracking applications were also not widely utilized. The grand mean of 2.26, which falls below 2.50, further confirms that, overall, OTM educators do not significantly integrate digital tools in their instructional practices. The standard deviation of 0.86 indicates a relatively moderate spread in responses, suggesting that respondents' opinions are somewhat consistent.

$H0^2$: OTM educators do not significantly integrate digital tools into their pedagogical approaches for teaching green office practices

Table 4: Summary of t-test analysis of mean rating of OTM educators on integration of digital tools into their pedagogical approaches for teaching green office practices

Institutions	**No**	**Mean X**	**SD**	**Df**	**t-cal**	**t-crit**	**Decision**
Colleges of Education	72	33.49	0.70	161	1.21	1.975	Reject Ho
Universities	91	3.58	0.68	161			

The result of t-test analysis presented in Table 4 indicates that the calculated t-value 1.21 is less than the critical t-value 1.975 at 0.05 significance level. Therefore, the null hypothesis is not rejected. This indicates that there is no statistically significant difference between OTM lecturers in Colleges of Education and Universities regarding the integration of digital tools into their pedagogical approaches for teaching green office practices.

Research Question 3; What barriers and challenges constrain OTM educators for effectively implementing digital-age pedagogical strategies for green office instruction

Table 5: Mean and standard Deviation responses on barriers and challenges constrain OTM educators for effectively implementing digital-age pedagogical strategies for green office instruction

SN	Barriers and Challenges	X	SD	Remark
21	My institution lacks reliable connectivity	2.76	0.81	Agree
22	There is insufficient access to computers for me and my students	2.22	0.88	Disagree
23	I have not received formal training on green office concepts	2.58	0.78	Agree
24.	I have not received training on integrating digital tools.	2.18	0.86	Disagree
25.	The official OTM curriculum excludes green office topics	2.30	0.83	Disagree
26.	My institution provides no support for developing green materials.	2.12	0.89	Disagree
27	There is inadequate time in the course structure for green content	2.25	0.87	Disagree
28	Frequent power outages disrupt digital tool usage	2.78	0/87	Agree
29	Students lack interest in environmental issues	2.14	0.90	Disagree
30	There is no institutional policy mandating green office teaching	2.29	0.84	Disagree
	Grand Mean and Standard Deviation	2.36		

Table 5 revels that out of the ten items, three were agreed upon as major challenges such as lack of reliable internet connectivity, frequent power outages, and insufficient formal training on green office concepts. Other seven items, including insufficient access to computers, curriculum exclusion, lack of digital tool training, inadequate institutional support, time constraints, students' low interest and absence of policy, were all disagreed, suggesting they are not perceived as significant barriers perhaps if it is included in the curriculum other barrier would been listed in the barriers item because one can not have low interest on what one have not involve self. The grand mean of 2.36, which is below the benchmark of 2.50, indicates that barriers and challenges are generally not perceived as highly significant in constraining the implementation of digital-age pedagogical strategies.

$H0^3$: There is no significant different between ability of polytechnics and universities OTM Educator on barriers and challenges of implementing digital-age pedagogical strategies for green office practices.

Table 6: Summary of t-test analysis of mean rating of OTM educators from polytechnic and universities regarding barriers and challenges of implementing digital-age pedagogical strategies for green office practices.

Institutions	**No**	**Mean X**	**SD**	**Df**	**t-cal**	**t-crit**	**Decision**
Colleges of Education	72	33.49	0.70	161	1.63	1.975	Reject Ho
Universities	91	3.58	0.68	161			

The table 6 indicates that calculated t-value 1.63 is less than the critical t-value 1.975 at 0.05 significance level. Therefore, the null hypothesis is not rejected. This indicates that there is no significant difference in the ability of polytechnics and universities OTM educators on barriers and challenges of implementing digital-age pedagogical strategies for green office instruction

Discussions

The findings in research question 1 revealed that OTM educators acknowledge a wide range of pedagogical strategies that are experiential, collaborative, technology-driven, and reflective as effective for teaching green office practices. This aligns with global trends in sustainability education, which emphasize active learning, real-world engagement and the integration of digital tools. The agreement across all items suggests that these strategies are necessary for preparing students to function effectively in environmentally conscious and digitally driven office settings. Macagno, Nguyen-Quoc & Jarvis (2024) opine green office practices strategies shift away from traditional lecture-based methods toward more engaging approaches that encourage critical thinking, collaboration, creativity, and real-world application. This aligns with contemporary educational practices which emphasize active participation and meaningful learning experiences as essential for sustainability education Sundman, Feng, Shrestha, Johri, & Väris, (2025).

The finding on research question 2 revealed that while educators demonstrate basic awareness and limited use of digital tools, there is insufficient integration of more advanced and interactive

technologies that support green office practices. The acceptance of cloud storage and electronic document management implies that lecturers are beginning to adopt digital alternatives that reduce paper usage. This aligns with recent studies which indicate that digital tools can significantly support sustainable practices by minimizing resource consumption and promoting efficiency (Bond et al., 2022). The general disagreement across most items indicates a gap between awareness and practical implementation. This suggests that many educators are not fully leveraging digital technologies to model environmentally responsible green office practices. Recent research highlights that despite the recognized potential of educational technologies, their effective integration into teaching remains limited due to factors such as inadequate training, lack of infrastructure, and resistance to change (Ifenthaler & Yau, 2023). According to Redecker and Punie (2022), educators' digital competence plays a critical role in determining the extent to which technology is effectively integrated into teaching and learning processes. The limited use of digital tools for modelling sustainability green office practices indicates that environmental applications of technology are not yet fully embedded in teaching practices. Contemporary sustainability education emphasizes the integration of digital solutions to promote environmentally responsible behavior and prepare students for green workplaces (Zhao et al., 2023)

The findings from research question 3 revealed that OTM educators generally disagreed that most of the listed factors constitute major barriers. However, a few critical issues, particularly poor internet connectivity, lack of training on green office practices and frequent power outages were identified as significant challenges. This suggests that while institutional and curricular constraints may not be perceived as dominant obstacles, infrastructural and capacity-related factors remain key limitations to effective implementation green office practices. Tondeur et al., (2022) states that stable internet access and electricity supply are foundational requirements for effective digital pedagogy, and their absence limits both teaching innovation and student engagement. Zhang et al. (2022), emphasizes that teacher training is essential for integrating sustainability into curricula, as it equips educators with the competencies needed to deliver relevant and impactful instruction. Without further training of OTM Educators on green office practice, even willing educators may struggle to implement green office practices effectively.

Conclusion

The study reveals that OTM educators in Nigeria recognise and value a wide range of innovative pedagogical strategies for teaching green office practices. However, the actual integration of digital tools into teaching remains low, with only basic technologies being moderately utilised. Although most barriers were not widely acknowledged, critical issues such as poor internet connectivity, power instability and lack of training significantly affect effective implementation. The absence of significant differences across gender and institution type suggests that these challenges are widespread. Overall, the findings point to the need for stronger institutional support, improved infrastructure and targeted capacity building to advance green office education in the digital.

Recommendations

Based on the findings, the following recommendations are proposed:

1. Curriculum planners and regulatory bodies should formally incorporate green office practices and digital sustainability into OTM programmes across universities, colleges of education, and polytechnics.
2. Institutions should provide continuous training for educators and improve access to digital tools such as learning management systems, virtual meeting platforms, and collaborative technologies to support sustainable teaching practices.
3. Policymakers and institutional administrators should invest in reliable internet connectivity, stable power supply, and ongoing professional development to address the key barriers identified in this study.

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INVESTIGATING THE ROLE OF DIGITAL SKILLS IN ENHANCING ENTREPRENEURIAL SUCCESS AMONG OYO STATE BUSINESS EDUCATION GRADUATES

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Abstract

The growth of the digital economy has intensified the need for graduates to develop skills that support self-employment and decent work. This study examined the digital entrepreneurial skills acquired by Business Education undergraduates for decent work in tertiary institutions in Oyo State. A descriptive survey research design was adopted. The population comprised 2,013 undergraduates, from which 379 students were selected using the Krejcie and Morgan (1970) sample size determination table. Data were collected through a self-developed four-point rating scale questionnaire validated by three measurement and evaluation experts. A Cronbach's Alpha reliability coefficient of .87 was obtained from a trial test. Of the 379 questionnaires administered, 350 were properly completed and retrieved, representing a 92.35% retrieval rate. Data were analysed using arithmetic mean, standard deviation, and one-way Analysis of Variance (ANOVA) at the .05 level of significance, followed by a Tukey HSD Post Hoc Test. Findings showed that the level of digital marketing and social media skills acquired by the undergraduates was very low (M = 1.70, SD = 0.67). The ANOVA result indicated a statistically significant difference in digital skill acquisition among six student support profile groups, F(5, 344) = 14.382, p < .001. The Tukey HSD Post Hoc Test identified specific between-group differences. The study recommends that Business Education undergraduates obtain professional certifications in digital marketing and social commerce to complement the skills provided through the tertiary education curriculum.

Keywords: *digital entrepreneurial skills, Business Education, undergraduates, decent work, tertiary institutions, Oyo State*

Introduction

Changes in the economies of developing countries have increased the need for self-reliance, youth empowerment, and enterprise development — areas that are central to economic growth and employment creation (Zubair et al., 2026). In Nigeria, tertiary institutions are expected to equip students with professional knowledge, vocational skills, and other forms of training that prepare them for employment and self-employment (Enebeli & Alete-Omoni, 2026). However, the expansion of tertiary education enrolment has not resolved the problem of graduate unemployment. One contributing factor is the persistent gap between the skills acquired in tertiary institutions and those demanded by the labour market (Arogundade, 2011).

Business Education is designed to prepare students for teaching, office administration, entrepreneurship, and other business-related activities. The programme is expected to produce graduates capable of establishing and managing small and medium-scale enterprises and contributing to economic development (Ukata et al., 2022). It also equips graduates with the knowledge required to function in diverse business and administrative settings (Ndubuisi et al., 2022). Despite these objectives, some Business Education programmes in Nigerian tertiary institutions continue to rely heavily on traditional instructional methods, with greater emphasis on manual bookkeeping, secretarial procedures, and conventional office management than on digital business activities (Uzoamaka & Okpuzor, 2025).

The growth of the digital economy has fundamentally altered how businesses market products, engage with customers, and process payments. Enterprises now depend on online marketing, customer relationship management platforms, social media, e-commerce, and electronic payment systems — activities that require demonstrable digital competencies from anyone intending to start or manage a business (Eze et al., 2020).

A central concern is therefore the gap between what students learn through traditional Business Education programmes and the digital skills required for entrepreneurial activities. Digital marketing and social media skills are increasingly relevant to business promotion, customer engagement, and online sales. Nevertheless, available evidence suggests that students in some Nigerian tertiary institutions have limited opportunities to acquire these practical competencies (Ismail & Diala, 2025).

The acquisition of digital skills may also vary among students due to differences in personal backgrounds and institutional support available. Students with prior access to computers, internet services, ICT training, and personal funding tend to have greater opportunities to practise digital skills. At the institutional level, factors such as functional computer laboratories, electricity supply, internet connectivity, appropriate software, qualified lecturers, and adequate funding influence the quality of digital skills students develop.

It is therefore necessary to examine the level of digital marketing and social media skills acquired by Business Education undergraduates in Oyo State tertiary institutions, and to determine whether students from different combinations of personal and institutional support backgrounds differ in their levels of digital skill acquisition.

Research Questions

The study was guided by the following research questions:

- What is the level of digital marketing and social media skills acquired by Business Education undergraduates in Oyo State tertiary institutions?
- Is there a significant difference in the digital entrepreneurial skill acquisition of Business Education undergraduates based on their combined personal and institutional support profiles?

Null Hypothesis

H_0: There is no significant difference in the mean digital skill acquisition levels of Business Education undergraduates among the six mutually exclusive student support profile groups.

Literature Review

Theoretical Underpinning

This study is grounded in Human Capital Theory, originally formulated by Schultz (1961) and elaborated by Becker (1964). The theory posits that individuals invest in education, training, and skills because such investments enhance their productive capacity and future economic opportunities. Human capital encompasses the knowledge, skills, and abilities developed through education and experience, enabling individuals to work more effectively, solve problems, and contribute to economic activities.

The theory is particularly relevant to Business Education because digital skills constitute a valuable form of human capital. Students who develop competencies in digital marketing, social media management, e-commerce, and related areas are better positioned to start businesses or secure employment. From this perspective, Business Education should extend beyond theoretical knowledge to provide students with practical skills relevant to contemporary business practice, as the acquisition of digital skills can enhance the productive capacity of graduates and better prepare them for entrepreneurial activities (Okute, 2021).

Digital Marketing and Social Media Competencies in Entrepreneurship

Digital marketing has become a fundamental component of modern business practice. Enterprises use digital platforms to promote products, engage with customers, and generate sales, drawing on competencies such as Search Engine Optimisation (SEO), online advertising, content creation, digital analytics, and social media marketing (Eze et al., 2020). Social media platforms offer additional opportunities for advertising, customer feedback, product promotion, and online sales. Nwosu (2025) highlighted the importance of digital marketing skills among Business Education students for the promotion of small and medium-scale enterprises.

The growing centrality of these skills creates an urgent need for tertiary institutions to deliver practical digital training. However, some Business Education programmes continue to rely on traditional instructional approaches, leaving students with conceptual knowledge of why digital tools matter but without the practical ability to apply them in real business contexts (Ndubuisi et al., 2022). Uzoamaka and Okpuzor (2025) reported a gap between the digital skills employers require and those many graduates possess, reinforcing the need for practical digital training to become a central feature of Business Education.

Personal and Institutional Determinants of Skill Acquisition

The acquisition of digital skills is influenced by both student-level and institutional factors. Personal factors include prior ICT experience, access to computing devices, financial resources, and prior digital training. Students with access to these resources typically have greater opportunities to practise and consolidate their skills (Zincware & Kifordu, 2026). Ismail and Diala (2025) found that digitalisation is associated with youth employability and identified access to digital resources as a key factor, suggesting that students' personal circumstances significantly affect the level of digital skills they acquire.

Institutional support equally plays a critical role. Tertiary institutions need functional computer laboratories, reliable electricity supply, internet connectivity, appropriate software, and lecturers equipped to teach current digital competencies — all of which require adequate funding and the

effective implementation of ICT policies. Okute (2021) stressed the importance of human capital development in vocational and technical education, while Zubair et al. (2026) highlighted the significance of digital skills for entrepreneurship education. The literature thus indicates that both student-level resources and institutional conditions contribute to digital skill acquisition, a consideration that informs the analytical framework of this study.

Methodology

Research Design

A descriptive survey research design was adopted for the study. This design was appropriate because the study sought to obtain information from students about their existing level of digital entrepreneurial skill acquisition without any experimental treatment or manipulation of variables.

Population and Sample

The study population comprised 2,013 full-time Business Education undergraduates enrolled in tertiary institutions in Oyo State offering vocational and business education programmes. A sample size of 379 students was determined using the Krejcie and Morgan (1970) sample size determination table. Proportionate stratified sampling was used to distribute the sample across the selected institutions.

Table 1

Population and Sample Distribution of Business Education Undergraduates

Institution	Population (N)	Sample (n)	%
Emmanuel Alayande University of Education, Oyo	750	141	37.25
Federal College of Education (Special), Oyo	620	117	30.87
The Polytechnic, Ibadan	450	85	22.43
Ajayi Crowther University, Oyo	193	36	9.45
Total	**2,013**	**379**	**100.00**

Note. Percentages are based on the total population of 2,013 students. Minor discrepancies may arise from rounding.

Of the 379 questionnaires administered, 350 were correctly completed and retrieved for analysis, representing an effective retrieval rate of 92.35%.

Instrumentation

A self-developed structured questionnaire titled Digital Entrepreneurial Skills for Business Education Undergraduates Questionnaire (DESBEUQ) was used for data collection. The instrument was based on a four-point rating scale: Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1. The draft questionnaire was subjected to face and content validation by three experts in Business Education and Measurement and Evaluation, and their observations informed revisions before final administration. A trial test conducted with 30 students yielded a Cronbach's Alpha reliability coefficient of .87, indicating a high level of internal consistency.

Data Collection Procedure

The researcher personally administered 379 copies of the questionnaire to the selected respondents. Completed questionnaires were examined for completeness upon collection. A total of 350 copies met the inclusion criteria, yielding a 92.35% effective retrieval rate.

Data Analysis Techniques

Arithmetic mean and standard deviation were used to answer the research questions, with a mean of 2.50 serving as the decision benchmark. One-way ANOVA was used to test the null hypothesis at the .05 level of significance, and the Tukey HSD Post Hoc Test was applied where a significant difference was found to identify the specific groups responsible. The decision benchmarks for interpreting mean scores were:

Mean Range	Decision
3.50–4.00	Very High Level
2.50–3.49	High Level
1.50–2.49	Very Low Level
1.00–1.49	Not Acquired

Results

Research Question 1

What is the level of digital marketing and social media skills acquired by Business Education undergraduates in Oyo State tertiary institutions?

Arithmetic mean and standard deviation were computed for each item, with a benchmark of 2.50. Table 2 presents the results.

Table 2

Mean and Standard Deviation of Digital Marketing and Social Media Skills Acquired by Business Education Undergraduates (N = 350)

Item	Skill Description	M	SD	Decision
1	Social media advertising and campaign management	1.84	0.72	Very Low
2	Search Engine Optimisation (SEO) execution	1.62	0.65	Very Low
3	E-commerce store set-up and payment integration	1.75	0.69	Very Low
4	Data analytics interpretation for online customer targeting	1.58	0.61	Very Low
5	Digital content creation and copywriting for online campaigns	1.71	0.68	Very Low
Overall	**Grand Mean and Standard Deviation**	**1.70**	**0.67**	**Very Low**

Note. Decision benchmark: 3.50–4.00 = Very High Level; 2.50–3.49 = High Level; 1.50–2.49 = Very Low Level; 1.00–1.49 = Not Acquired.

Table 2 shows that all five skills had mean scores below the 2.50 benchmark. Social media advertising and campaign management recorded the highest mean (M = 1.84, SD = 0.72), while data analytics interpretation for online customer targeting recorded the lowest (M = 1.58, SD = 0.61). The overall mean of 1.70 (SD = 0.67) falls within the 1.50–2.49 range, indicating that the level of digital marketing and social media skills acquired was very low.

Hypothesis Testing

H_0: There is no significant difference in the mean digital skill acquisition levels of Business Education undergraduates among the six mutually exclusive student support profile groups.

The 350 respondents were classified into six mutually exclusive support profile groups based on composite scores for personal factors (ICT background, skill experience, and personal funding) and institutional factors (policy implementation, learning environment, and institutional funding):

- Group 1: High Personal Support / High Institutional Support (n = 58)
- Group 2: High Personal Support / Moderate Institutional Support (n = 62)
- Group 3: High Personal Support / Low Institutional Support (n = 45)
- Group 4: Low Personal Support / High Institutional Support (n = 55)
- Group 5: Low Personal Support / Moderate Institutional Support (n = 70)
- Group 6: Low Personal Support / Low Institutional Support (n = 60)

Table 3

One-Way Analysis of Variance of Digital Skill Acquisition by Student Support Profile

Source	SS	df	MS	F	p
Between Groups	48.621	5	9.724	14.382	< .001
Within Groups	233.114	344	0.677	—	—
Total	**281.735**	**349**	**—**	**—**	**—**

Note. Critical F(5, 344) = 2.21. Significant at p < .05.

Table 3 shows that the calculated F-value of 14.382 exceeded the critical F-value of 2.21, and the result was statistically significant (p < .001). The null hypothesis was therefore rejected: there was a significant difference in mean digital skill acquisition levels across the six student support profile groups.

A Tukey HSD Post Hoc Test was subsequently conducted to identify the specific pairs of groups that differed significantly.

Table 4

Tukey HSD Post Hoc Comparisons of Digital Skill Acquisition Across Student Support Profile Groups

(I) Group	(J) Group	Mean Diff. (I − J)	SE	p
Group 1: High Personal / High Institutional	Group 3: High Personal / Low Institutional	0.68*	0.14	< .001
Group 1: High Personal / High Institutional	Group 6: Low Personal / Low Institutional	1.12*	0.13	< .001
Group 2: High Personal / Moderate Institutional	Group 5: Low Personal / Moderate Institutional	0.54*	0.12	.001

Group 4: Low Personal / High Institutional	Group 6: Low Personal / Low Institutional	0.44*	0.13	.004

Note. * Mean difference is significant at the .05 level.

Table 4 shows that Group 1 (high personal and high institutional support) scored significantly higher than both Group 3 and Group 6. A significant difference also existed between Group 2 and Group 5, and between Group 4 and Group 6. These results indicate that greater combined personal and institutional support was associated with higher digital skill acquisition scores.

Discussion of Findings

Digital Marketing and Social Media Skills Acquisition

The first finding revealed that the level of digital marketing and social media skills acquired by Business Education undergraduates in Oyo State tertiary institutions was very low, with an overall mean of 1.70 (SD = 0.67). All five skills examined fell below the 2.50 benchmark. Social media advertising and campaign management recorded the highest mean (M = 1.84, SD = 0.72), while data analytics interpretation for online customer targeting recorded the lowest (M = 1.58, SD = 0.61).

This finding is consistent with Uzoamaka and Okpuzor (2025), who identified deficiencies in digital skills among Business Education graduates, and with Ndubuisi et al. (2022), who advocated for greater integration of digital skills into Business Education curricula. It also corroborates Ukata et al. (2022), whose study similarly recorded low levels of digital entrepreneurial skill acquisition among Business Education undergraduates in Rivers State. The results suggest that students are not receiving sufficient practical training in key digital business competencies, a gap likely attributable to the continued use of traditional instructional methods and limited access to practical digital learning environments.

Differences in Digital Skill Acquisition Among Support Profile Groups

The second finding revealed a statistically significant difference in digital skill acquisition among the six student support profile groups, $F(5, 344) = 14.382$, $p < .001$. The Tukey HSD Post Hoc Test identified specific between-group differences: Group 1 (high personal and high institutional support) scored significantly higher than both Group 3 and Group 6; Group 2 scored significantly higher than Group 5; and Group 4 scored significantly higher than Group 6.

These findings suggest that both students' personal resources and institutional conditions are associated with their level of digital skill acquisition. Students with prior ICT experience, practical exposure, and financial resources have more opportunities to develop digital competencies, while students in better-resourced institutions benefit from superior facilities and instruction. This is consistent with Human Capital Theory (Schultz, 1961; Becker, 1964), which holds that investment in education and training enhances individual productive capacity.

The results also align with Zincware and Kifordu (2026), who linked digital skills acquisition to employability outcomes among university graduates in Nigeria, and with Ismail and Diala (2025), who identified access to digital resources as a key determinant of youth employability. Okute (2021) and Zubair et al. (2026) further underscore the importance of institutional investment in digital education. Collectively, the findings indicate that improving digital skill acquisition among Business Education students requires simultaneous attention to student-level resources and institutional learning conditions.

Limitations of the Study

The study was confined to selected tertiary institutions in Oyo State, Nigeria, and the findings may not be directly generalisable to institutions in other parts of the country where educational facilities and conditions may differ. Additionally, data were gathered through self-reported responses, which may introduce response bias if students' perceptions of their skill levels do not accurately reflect their actual digital performance. Future studies could incorporate practical skills assessments to provide more objective evidence of digital competency levels.

Practical and Policy Implications

Curricular Restructuring

Business Education curricula should accord greater emphasis to practical digital competencies, with explicit coverage of digital marketing, social media analytics, SEO, e-commerce, and online payment systems. Students need structured opportunities to apply these tools in realistic business contexts rather than relying primarily on theoretical instruction.

Professional Certification

Undergraduates should be encouraged to complement their formal education by obtaining recognised professional certifications in digital marketing, social media management, and social commerce, which can provide additional practical experience and strengthen readiness for employment and self-employment.

Government and Institutional Support

Government and educational authorities should invest in the infrastructure required for digital learning, including functional computer laboratories, reliable electricity, internet connectivity, relevant software, and adequate institutional funding. Tertiary institutions also need academic staff with current digital competencies who can deliver effective practical instruction.

Conclusion

This study examined the level of digital marketing and social media skills acquired by Business Education undergraduates in Oyo State tertiary institutions and explored whether skill acquisition differed across student groups with varying combinations of personal and institutional support. Findings showed that the level of digital marketing and social media skills was very low overall ($M = 1.70$, $SD = 0.67$), and that significant differences existed across the six student support profile groups, $F(5, 344) = 14.382$, $p < .001$. Students with stronger combinations of personal and institutional support recorded markedly higher digital skill acquisition scores.

These findings indicate that the challenge of low digital skill acquisition cannot be addressed through classroom instruction alone. Students need practical exposure, access to digital resources, and dedicated skills development opportunities, while tertiary institutions and government authorities must provide suitable learning environments, adequate funding, and coherent policy support for digital education. Greater emphasis on practical digital marketing, social media, e-commerce, and related competencies in Business Education — alongside encouragement for students to pursue relevant professional certifications — can improve graduates' readiness for employment, self-employment, and entrepreneurial activity in the digital economy.

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GREEN ENTREPRENEURIAL ORIENTATION AND VENTURE CREATION INTENTIONS AMONG ENTREPRENURSHIP STUDENTS IN RIVERS STATE UNIVERSITIES

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Abstract

This study examined the relationship between green entrepreneurial orientation and venture creation intentions among Entrepreneurship Education students in universities in Rivers State, Nigeria. Specifically, the study investigated the relationships between green innovativeness, green proactiveness, green competitive aggressiveness and students' venture creation intentions. A correlational research design was adopted. The population comprised 210 final-year Entrepreneurship Education students in the Business Education programmes of Rivers State University and Ignatius Ajuru University of Education. Census sampling was used, and all 210 students participated in the study. Data were collected using structured questionnaires titled Green Entrepreneurial Orientation Questionnaire (GEOQ) and Venture Creation Intentions Questionnaire (VCIQ), measured on a five-point rating scale. The instruments were validated by experts, while their internal consistency was established using Cronbach's Alpha. Pearson Product Moment Correlation Coefficient was used to answer the research questions and test the hypotheses at the 0.05 level of significance. The findings revealed a significant moderate positive relationship between green innovativeness and venture creation intentions ($r = .362$, $p < .001$). Green proactiveness also demonstrated a significant strong positive relationship with venture creation intentions ($r = .608$, $p < .001$). However, green competitive aggressiveness had a weak and statistically non-significant relationship with venture creation intentions ($r = .092$, $p = .182$). The study concludes that green innovativeness and proactiveness are important correlates of students' intentions to create sustainable ventures. It recommends stronger integration of practical green entrepreneurship education into university curricula to foster environmentally responsible innovation, opportunity recognition and sustainable venture creation.

Introduction

The increasing problems of climate change, environmental degradation, pollution, poor waste disposal and the loss of natural resources have changed the way entrepreneurship is viewed. Entrepreneurship is no longer focused only on making profit and creating economic value. More attention is now being given to businesses that can make profit while also protecting the environment and contributing to the well-being of society. This has led to the growth of green entrepreneurship, where environmental problems are seen as opportunities to develop sustainable products, services, technologies and business ideas (Tuncer & Korchagina, 2024). This is particularly important in Nigeria, where environmental problems exist alongside unemployment, poverty and the need for sustainable means of livelihood. Therefore, universities have an important role to play in preparing students to develop businesses that can address environmental challenges while also creating income and economic value. Nigeria faces serious environmental challenges arising from industrial activities, poor waste management, deforestation, pollution and climate change. These problems affect people's livelihoods, economic activities, public health and sustainable development (UNEP, 2024). The situation is particularly serious in the Niger Delta, where petroleum exploration and exploitation have contributed to oil spills, gas flaring, pollution of waterways, damage to ecosystems and loss of biodiversity (UNDP, 2022; UNEP, 2024). Rivers State, which is a major centre of petroleum-related activities, continues to experience environmental problems that affect agriculture, fishing, water resources and the livelihoods of local communities. The Federal Ministry of Environment (2021) has also emphasised the need for

stronger environmental management and sustainable development practices. These challenges make Rivers State an important setting for developing graduates who can identify environmental problems and turn them into opportunities for sustainable businesses and enterprise creation.

Green entrepreneurship provides an avenue for addressing these challenges while promoting employment, innovation and responsible resource utilisation. Activities such as recycling, renewable energy, sustainable agriculture, waste management, environmental services and environmentally friendly production can generate economic value while reducing environmental harm (United Nations, 2023; UNEP, 2024). Universities therefore have a responsibility to equip students with entrepreneurial knowledge, skills and attitudes that enable them to recognise opportunities and establish sustainable ventures. Evidence from Rivers State indicates that entrepreneurship education contributes to entrepreneurial identity, intention, self-employment and entrepreneurial development among students (Ahiamadu & Allen, 2020; Ikpesu & Ekweme, 2023; Nwineh et al., 2023). Ogwunte (2023) also found that innovativeness and business alertness influence entrepreneurial intentions among Business Education students, while Bamson et al. (2026) reported the relevance of entrepreneurship education, entrepreneurial attitude and self-efficacy to students' entrepreneurial intentions.

However, the environmental side of entrepreneurship still needs greater attention, particularly among young people preparing to become entrepreneurs. This concern has contributed to the development of the concept of green entrepreneurial orientation (GEO), which brings environmental responsibility into the way entrepreneurs identify opportunities, develop new ideas, make strategic decisions and compete in the marketplace. Rather than focusing only on profit and business growth, GEO encourages entrepreneurs to consider how their business activities can protect the environment and make better use of available resources. Qin et al. (2024) explained that GEO combines environmental sustainability with the pursuit of entrepreneurial opportunities and strategic business decisions. This means that entrepreneurs with a green orientation are expected to consider environmental concerns when deciding what products or services to offer and how their businesses should operate.

Existing entrepreneurship studies in Rivers State have largely focused on entrepreneurship education, entrepreneurial intention, entrepreneurial mindset, skills acquisition, opportunity recognition and self-employment (Ahiamadu & Allen, 2020; Biranee & Dambo, 2021; Ikpesu & Ekweme, 2023; Nwineh et al., 2023; Ogwunte, 2023; Aleru & Isi, 2024). While these studies provide valuable evidence on conventional entrepreneurial development, comparatively limited attention has been given to the environmental dimension of entrepreneurial orientation. In particular, there is insufficient empirical evidence on whether green innovativeness, green proactiveness and green competitive aggressiveness are related to venture creation intentions among entrepreneurship students in Rivers State universities. International studies have increasingly examined GEO and sustainable entrepreneurial outcomes (Qin et al., 2024; Tuncer & Korchagina, 2024), but findings from other contexts cannot automatically be generalised to university students in Rivers State, who are still developing entrepreneurial knowledge, practical experience, market awareness and resource mobilisation capabilities.

The problem, therefore, is not merely the existence of environmental degradation or limited employment opportunities. The more specific problem is the insufficient empirical understanding of whether the green entrepreneurial orientation of entrepreneurship students is associated with their intentions to create ventures. In particular, it remains unclear whether green innovativeness, green proactiveness and green competitive aggressiveness are significantly related to venture creation intentions among entrepreneurship students in Rivers State universities. Without such evidence, entrepreneurship educators and curriculum developers may find it difficult to determine which green entrepreneurial competencies require greater emphasis in preparing students for sustainable venture creation.

It is based on this premise that the main purpose of this study is to examine the relationship between green entrepreneurial orientation and venture creation intentions among entrepreneurship students in universities located in Rivers State, Nigeria. The objectives are to determine the relationship between green innovativeness and venture creation intentions among entrepreneurship students; ascertain the relationship between green proactiveness and venture creation intentions among entrepreneurship students; and to examine the relationship between green competitive aggressiveness and venture creation intentions among entrepreneurship students in universities in Rivers State. The main research hypothesis was that there was no significant relationship between green innovativeness and venture creation intentions among entrepreneurship students in universities in Rivers State.

Purpose of the Study

The main purpose of this study is to examine the relationship between green entrepreneurial orientation and venture creation intentions among entrepreneurship students in universities in Rivers State.

Specifically, the study seeks to:

1. Determine the relationship between green innovativeness and venture creation intentions among entrepreneurship students in universities in Rivers State;
2. Ascertain the relationship between green proactiveness and venture creation intentions among entrepreneurship students in universities in Rivers State;
3. Examine the relationship between green competitive aggressiveness and venture creation intentions among entrepreneurship students in universities in Rivers State.

Research Questions

1. What is the relationship between green innovativeness and venture creation intentions among entrepreneurship students in universities in Rivers State?
2. What is the relationship between green proactivenessand venture creation intentions among entrepreneurship students in universities in Rivers State?
3. What relationship exists between green competitive aggressiveness and venture creation intentions among entrepreneurship students in universities in Rivers State?

Hypotheses

H01: There is no significant relationship between green innovativeness and venture creation intentions among entrepreneurship students in universities in Rivers State.

H02: There is no significant relationship between green proactiveness and venture creation intentions among entrepreneurship students in universities in Rivers State.

H03: There is no significant relationship between green competitive aggressiveness and venture creation intentions among entrepreneurship students in universities in Rivers State.

Methodology

The study adopted a correlational research design. This design is appropriate because it seeks to determine the extent and direction of the relationship between green entrepreneurial orientation and venture creation intentions among entrepreneurship students in universities in Rivers State. The design enables the researcher to establish whether variations in green innovativeness, green proactiveness, and green competitive aggressiveness are associated with corresponding variations in students' intentions to establish business ventures without manipulating any of the study variables. It is particularly suitable because the study is interested in examining naturally existing relationships. This design also aligns with the research questions and hypotheses, which focus on the relationships among the variables. The population of this study comprised 64 final year Entrepreneurship Education students in Business Education programme in Rivers State University and 142 Entrepreneurship Education students in Ignatius Ajuru University of Education making it a total of 210 students in Business Education programme in Rivers Universities. The census sampling technique was used because the population was a manageable a size. be The instrument for data collection were self-structured questionnaires titled Green Entrepreneurial Orientation (GEOQ) and Venture Creation Intentions (VCI). The sets of questionnaires were structured on a 5 - point rating scale with options: Very High Extent (VHE) = 5, High Extent (HE) = 4, Moderate Extent (ME) = 3, Low Extent (LE) = 2, Very Low Extent (VHE) = 1. The sets of instruments were designed for students. To ensure the validity of the instruments, copies of the sets of questionnaire were subjected to face and content validation by three experts, two among the experts were from Business Education department and one from Measurement and Evaluation department all from the Faculty of Education. Their comments, observations, and suggestions were incorporated into the final version of the sets of questionnaires before it was administered to the respondents. The reliability of the instrument was established using Cronbach's Alpha, and a reliability coefficient of 0.70 or above was considered acceptable for internal consistency. The 210 questionnaire were administered and retrieved. The research questions were answered using Pearson Product Moment Correlation Coefficient (PPMC) to determine the extent of the relationship between the independent and dependent variables. The hypotheses were tested using the Pearson Product Moment Correlation Coefficient (PPMC) at the 0.05 level of significance. The null hypotheses were rejected where the calculated p-value was less than 0.05 and retained where the p-value was greater than 0.05. All data analyses were carried out using the Statistical Package for the Social Sciences (SPSS), Version 27.

Results

Table 1: There is no significant relationship between green innovativeness and venture creation intentions among entrepreneurship students in universities in Rivers State.

Correlations

		Green innovation	Venture creation
Green innovativeness	Pearson Correlation	1	.362
	Sig. (2-tailed)		.000
	N	210	210
Venture creation	Pearson Correlation	.362	1
	Sig. (2-tailed)	.000	
	N	210	210

. Correlation is significant at the 0.01 level (2-tailed).

There is no significant relationship between green proactiveness and venture creation intentions among entrepreneurship students in universities in Rivers State.

Correlations

		Green Proactiveness	Venture Creation
Greenproactiveness	Pearson Correlation	1	.608
	Sig. (2-tailed)	210	.000
	N		210
Venturecreation	Pearson Correlation	608	1
	Sig. (2-tailed)	.000	210
	N	210	

Correlation is significant at the 0.01 level (2-tailed).

There is no significant relationship between green competitive aggressiveness and venture creation intentions among entrepreneurship students in universities in Rivers State.

Correlations

		Green competitive aggressiveness	Venture creation
Greencompetitiveness	Pearson Correlation	1	.092
	Sig. (2-tailed)		.182
	N	210	210
Venturecreation	Pearson Correlation	.092	1
	Sig. (2-tailed)	.182	210
	N	210	

Correlation is significant at the 0.01 level (2-tailed).

Discussion of findings

The finding of the study revealed a significant positive relationship between green innovativeness and venture creation intentions among entrepreneurship students in universities in Rivers State. The correlation coefficient of r = .362 with a significance value of p < .001 indicates a moderate positive relationship, suggesting that students who demonstrate greater willingness to generate environmentally friendly ideas, develop green products and services, and apply innovative approaches to environmental problems are more likely to express stronger intentions to establish their own ventures. This finding is understandable because green innovativeness enables students to view environmental challenges not only as ecological problems but also as potential areas for entrepreneurial opportunity. In the context of Rivers State, where environmental challenges such as pollution, poor waste management and ecological degradation are prevalent, innovative students may identify opportunities in areas such as recycling, renewable energy, environmental services and sustainable production. The finding is consistent with Ameer and Khan (2025), who established that green entrepreneurial orientation contributes to entrepreneurial success through green innovation capability. It also agrees with Okiridu and Golden (2024), who found that practical teaching approaches enhance entrepreneurial skills acquisition among Business Education students in Rivers State universities. Similarly, Ikpesu and Ekweme (2023) emphasized the importance of entrepreneurship learning experiences in developing students' entrepreneurial identity and capacity for innovative thinking. Therefore, the present finding suggests that developing students' capacity to think creatively about environmental problems can strengthen their willingness to translate green business ideas into actual venture creation

The finding further revealed a strong positive and statistically significant relationship between green proactiveness and venture creation intentions, with a correlation coefficient of r = .608 and a significance value of p < .001. This result indicates that students who are more proactive in identifying environmental needs, seeking emerging green business opportunities, anticipating future environmental demands and taking initiative are considerably more likely to develop intentions to establish business ventures. The relatively stronger correlation obtained for green proactiveness, compared with green innovativeness, suggests that the ability to anticipate and act upon emerging opportunities may be particularly important in stimulating venture creation intentions among entrepreneurship students. A proactive student is more likely to identify environmental problems before they become more severe and consider how such problems can be converted into viable business opportunities. This is particularly relevant to Rivers State, where continuing environmental challenges create emerging demands for waste management, recycling, sustainable agriculture, environmental remediation and other green services. The finding is in agreement with Aleru and Isi (2024), who reported that entrepreneurship education contributes to students' ability to identify entrepreneurial opportunities and develop self-employment capacities. It is also consistent with Umesi (2021), who argued that effective entrepreneurship education should equip graduates with competencies that support job creation and sustainable development. The result therefore reinforces the view that students' willingness to take initiative and anticipate future environmental and market needs can play an important role in shaping their intentions to create sustainable ventures.

The third finding showed that green competitive aggressiveness has no statistically significant relationship with venture creation intentions among entrepreneurship students in universities in Rivers State. The result produced a correlation coefficient of r = .092 with a significance value of p = .182, which is greater than the 0.05 level of significance. This indicates a very weak positive association that is not statistically significant, implying that students' willingness to compete through environmentally friendly products, differentiate their prospective businesses through sustainability practices, or gain competitive advantage through green strategies does not, by itself, appear to be sufficiently associated with their intentions to create ventures. One possible explanation is that entrepreneurship students may recognize the importance of environmental responsibility and competition but may not yet possess the practical resources, market experience, financial capacity or confidence required to translate competitive green strategies into actual venture-creation intentions. This finding differs from Qin et al. (2024), who reported that green entrepreneurial orientation contributes to business success and sustainable competitive advantage through environmental innovation and strategic flexibility. The difference may be explained by the context of the present study, which focused on university students who are still developing entrepreneurial capabilities, rather than established entrepreneurs operating in competitive markets. The finding also suggests that competitive aggressiveness alone may not be sufficient to motivate students to establish green ventures. Rather, as indicated by the significant relationships observed for green innovativeness and green proactiveness, students may require the capacity to generate innovative environmental solutions and proactively identify opportunities before competitive strategies can meaningfully influence their intentions to create ventures. This result is

important for entrepreneurship education in Rivers State because it indicates that simply encouraging students to compete may have limited influence unless such competitiveness is supported by practical green innovation, opportunity recognition and proactive entrepreneurial capabilities.

Conclusion

The study concludes that green entrepreneurial orientation is important in strengthening venture creation intentions among entrepreneurship students in Rivers State universities. The three dimensions—green innovativeness, green proactiveness, and green competitive aggressiveness—provide complementary capacities for transforming environmental challenges into viable business opportunities. Green innovativeness enables students to develop environmentally friendly products, services and processes; green proactiveness enables them to anticipate emerging environmental needs and identify future green markets; while green competitive aggressiveness encourages them to pursue and differentiate sustainable business opportunities in a competitive environment.Overall, the study concludes that entrepreneurship education in Rivers State universities should move beyond conventional business creation and deliberately integrate environmental sustainability into entrepreneurial learning. Developing these three dimensions can prepare students not only to seek employment but also to create sustainable ventures that contribute to self-employment, environmental protection, wealth creation and sustainable economic development in Rivers State.

Recommendations

1. Universities in Rivers State should strengthen green entrepreneurship education by integrating environmental sustainability, green business models, recycling, waste-to-wealth, renewable energy and sustainable production into entrepreneurship courses. This will help students connect entrepreneurial knowledge with the environmental challenges and business opportunities within their communities.
2. Entrepreneurship educators should emphasise practical and experiential learning to develop green innovativeness and proactiveness. Students should be encouraged to identify environmental problems and develop innovative business solutions through business idea competitions, practical projects, field activities and interaction with successful green entrepreneurs.
3. Universities and relevant government agencies should establish stronger support systems for student-led green ventures, including mentorship, business incubation, start-up support and access to appropriate funding. Such support would help students move beyond merely having intentions to create green ventures towards actually establishing sustainable businesses.

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GREEN ENTREPRENEURIAL PRACTICES OF MICRO-SCALE BUSINESS OPERATORS FOR ENVIRONMENTAL SUSTAINABILITY AND BUSINESS TRASFORMATION IN CALABAR MUNICIPALITY AND CALABAR SOUTH LGAs OF CROSS RIVER STATE, NIGERIA

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Abstract

This study ascertained extent of adoption of green entrepreneurial practices by micro-scale business operators for environmental sustainability and business transformation in Calabar Municipality and Calabar South Local Government Areas of Cross River State, Nigeria. Micro-scale enterprises are pivotal to the local economy but often overlook the potential impact of their practices on environment. Yet, the most important issues of today are protecting the environment. Without green values and practices, local economies struggle to thrive sustainably, as sure create poor business transformation and thus, resulting in increased resource depletion and waste generation. Three purposes and three research questions were stated to guide the study. Three null hypotheses were also postulated and tested at 0.05 significance level. Related literatures were reviewed. Descriptive survey research design was adopted. Population of the study consisted of 721 micro-scale business operators of which a sample of 257 was studied. Taro Yamane was used to determine sample size. 15-item questionnaire was adopted for data collection. Cronbach Alpha was used to determine reliability coefficient of the instrument which was 0.89. 257 copies of questionnaires were administered with 243 copies returned making a return rate of 95%. Mean and standard deviation were used to answer research questions while z-test was used to test hypotheses. Findings showed insignificant differences in the adoption of sustainable sourcing and supply chain management, renewable energy and energy efficiency, and waste reduction and recycling practices for environmental sustainability and business transformation. It was recommended that micro-scale business operators should adopt sustainable sourcing and supply chain management, renewable energy and energy efficiency, and waste reduction and recycling practices for environmental sustainability and business transformation.

Keywords: Green entrepreneurial practices, sustainable supply chain management, renewable energy efficiency, waste reduction and recycling, environmental sustainability

Introduction

In recent years, the global discourse on environmental sustainability has increasingly highlighted the role of micro-scale businesses in promoting sustainable practices. This discourse has gained prominence overtime because of the negative impact of poor and irresponsible business practices on the global environment. In Calabar Municipality and Calabar South Local Government Areas (LGAs) of Cross River State (CRS), Nigeria for instance, micro-scale enterprises are pivotal to the local economy yet often overlook the potential impact of their practices on environmental sustainability. This is irrespective of the assertion of European Development Institute (2025) that the most important issues of today are protecting the environment and leaving a clean eco-system to future generations. This study explores the extent which these business operators adopt green entrepreneurial practices to mitigate environmental degradation, negatively impactful on the society. By this understanding, the research aims to provide insights into fostering responsible green entrepreneurial behaviours that contribute to both economic growth and ecological preservation in CRS in particular and Nigeria in general.

Green entrepreneurs (entrepreneurs with green values) are presently very essential to the development of our local and global economies because they facilitate the creation of new jobs by introducing sustainable green innovations on the markets and responding to the demands for change in society (Farinelli et al., 2011; Silajdžić et al., 2015).Micro-scale business operators in Calabar Municipality and Calabar South LGAs of CRS largely overlook green entrepreneurial practices. Key areas of green entrepreneurial model such as sustainable sourcing and supply chain management,

renewable energy and energy efficiency, as well as waste reduction and recycling remain underutilized, hindering environmental sustainability efforts.

Green entrepreneurship is the creation and implementation of entrepreneurial ideas that contribute to environmental conservation, waste reduction, products recycling and promotion of the use of renewable resources. Green entrepreneurial practice is a venture operation path way that creates sustainable economic value, delivered to secure and protect the environment while adopting echo-friendly approaches in the process. Teece (2010) explained that green entrepreneurial practice is the conscious development and implementation of echo-friendly entrepreneurial strategies that largely prioritize economic success of a business, and positive environmental and social impacts. Fulvia et al. (2011) further averred that green entrepreneurial practices are those business practices that have to do with goods or procedures that involve resource reduction, reuse, and recycling for social, environmental, and economic sustainability. Operationally, green entrepreneurial practice is an eco-friendly or environmental-friendly venture practice that offers sustainable products or services, adopting green operational models in entrepreneurship, and contributing to a healthier planet and society. Sustainable sourcing and supply chain management is one of the novel green entrepreneurial practices.

Sustainable sourcing (SS) and supply chain management (SCM) is the integration of environmental and socio-economic considerations into the process of selecting suppliers and managing the flow of goods and services. SS is the procurement of goods and services taking cognizance of environmental, social, and economic factors throughout the entire supply chain (Pagell et al., 2010). WWF-SCP (2025) contended that SS refers to the assurances that products and services being sold are an outcome of a production process that considers sustainability aspects, with the lowest environmental impact and most positive economy and social results. Operationally, sustainable sourcing is the integration of environment, social, and governance (ESG) criteria and performance factors into an entrepreneurial venture's sourcing process and decisions around purchased goods, services, and materials. Supply chain management (SCM) on the other perspective, is the oversight and coordination of all activities related to the production and distribution of a product or service, from raw materials to the final destination. Fernando (2024) asserted that SCM is the supervision and optimization of the production and distribution services of a company's products and services. Operationally, supply chain management is the coordination of a business' holistic production and distribution process, covering sourcing raw materials to delivering a finished item while sustainable sourcing and supply chain management (SSSCM) practice is the act of procuring materials and products that consider environmental, social, and economic impacts while also ensuring the facilitating the echo-friendly coordinating of a business venture's production and distribution process. One way of achieving such a practice is to deploy renewable energy and energy efficiency practices.

Renewable energy is energy derived from natural resources that replenish at a rate faster than consumption, like solar, wind, and hydropower while energy efficiency is the use of less energy to perform the same tasks, minimizing waste and reduce overall energy consumption and maintaining or enhancing productivity same time. Ehrlich et al. (2018) noted that renewable energy is energy made from renewable natural resources that are replenished on a human timescale. Operationally, renewable energy is an energy harnessed from naturally endowed resources. It is energy derived from natural processes that are replenished at a faster rate than they are usually consumed. On the other hand, energy efficiency is the adoption of innovative technologies and practices to reduce energy consumption, lower costs, and minimize environmental impact (WTS Energy, 2025). Energy efficiency is the usage of less energy to perform the same task – that is, eliminating energy waste (Environmental and Energy Study Institute, 2025). Operationally, renewable energy and energy efficiency practices are those innovative technologies and measures adopted to reduce energy consumption while performing the same task or achieving the same result. Renewable energy and energy efficiency practices are sustainable green values like waste reduction and recycling practices.

Waste reduction and recycling are practices aimed at reducing the amount of waste that ends up in landfills and optimizing the reuse of materials. Waste reduction is an act of preventing waste generation in the first place, such as reducing consumption, reusing items, and choosing products with less packaging. Waste reduction (source reduction) is the practice of decreasing the quantity of waste generated in order not to pollute the environment. Commonwealth of Pennsylvania (2025) posited that waste reduction is minimizing or reducing municipal waste even before recycling. Waste reduction is the prevention of solid waste generation through changes in behaviour and changes in products, packaging and purchasing by focusing on sustainable practices [New York State Department of Environmental Conservation (NYSDEC, 2025)].Operationally, waste reduction is a set of processes and practices aimed at minimizing the quantity of waste produced, by this act of reducing or eliminating the generation of harmful and persistent wastes, the practice supports efforts to promote a more green and

sustainable society. Waste recycling on the other hand, is the process of collecting and processing or transforming material waste that would otherwise be discarded, converting them into new products for reuse. Waste recycling is the act of collecting and processing materials that would otherwise be dumped away, and transforming them into new, usable products (Sharma & Arora, 2023). Waste recycling is the process of collecting and transforming materials that would otherwise be thrown away as trash and converting them into new products [United States Environmental Protection Agency (USEPA, 2025)]. Operationally, waste recycling is the process by which disposed materials by one user are collected and reprocessed or reused for other productive ends, that is, the extraction of additional value from products that have been disposed of. Waste management is the responsibility of all including micro-scale business operators.

By scale of operation, a micro business venture is the smallest in size using the parameters number of employees and annual turnover as comparative basis, when compared to small and medium enterprises. Udechukwu (2003) stated that the National Council on Industry explained that a micro enterprise is an enterprise with a labour size of not more than 10 workers, or total cost of not more than N1.50 million, including working capital but excluding cost of land. Nigerian Economic Submit Group (2025) reported that in National Policy on Micro, Small and Medium Enterprises (MSMEs), micro enterprise is categorized as one that has fewer than 10 employees and an annual turnover of less than ₦5 million. Micro enterprise, like Small and Medium Enterprises often operate in informal sectors, such as street vending, small retail shops, and local artisans. Operationally, micro enterprises are entrepreneurial units whose total assets (excluding land and buildings) are less than Five Million Naira with a workforce not more than ten employees. The economic activities of micro enterprises impact on environmental sustainability.

Sustainability is the achievement recorded by an organization in meeting its current needs without compromising its future needs while environmental sustainability is the practice of using natural resources responsibly to achieve their availability for future generations, while reducing negative impacts on the environment (Diri, 2021).Patterson (2024) contended that environmental sustainability is the responsible management of natural resources to meet current needs without compromising the ability of future generations to meet theirs. It is the ability of maintaining an ecological balance in our planet's natural environment and conserve natural resources to support the wellbeing of current and future generations sustainably (Microsoft, 2025). Operationally, environmental sustainability is the making of life choices to improve the quality of human existence without putting unnecessary strain on the earth's supporting ecosystems. Environmental sustainability in Calabar Municipality and Calabar South LGSs of Cross River State is one of the major policy thrusts of the incumbent administration.

Calabar Municipality is bounded by Odukpani Local Government Area in the North-East by the great Kwa River. Its headquarters is in Calabar, the seat of government. Its Southern shores are bounded by the Calabar river and Calabar South LGA. Calabar South LGA on the other hand is in the Southern Senatorial District and was created from the former Calabar Municipal Government. The headquarter is located at Anantigha. Calabar municipality and Calabar south are host to many micro-scale businesses whose operational activities impact on green environment and sustainability.

In recent times, scholars have beamed their research lights on green entrepreneurial practices and sustainability. These empirical research efforts include Menikpura et al. (2012) who studied "evaluation of the effect of recycling on sustainability of municipal solid waste management in Thailand" and found that recycling contributes substantially to improving overall social, economic and environmental sustainability of the waste management system; Govindan et al. (2014) who studied "impact of supply chain management practices on sustainability" and found that waste elimination, supply chain risk management and cleaner production have significant impact on supply chain sustainability; Jabbour et al. (2015) who studied "green supply chain management and firms' performance: understanding potential relationships and the role of green sourcing and some other green practices" and found that the green supply chain management practice of "internal environmental management" has the greatest positive effect on environmental performance indicators; Riti and Shu (2016) who studied "renewable energy, energy efficiency, and eco-friendly environment (R-E5) in Nigeria" and found negative impact of renewable energy consumption on environmental degradation; and Ponce and Khan (2021) who studied "a causal link between renewable energy, energy efficiency, property rights, and CO_2 emissions in developed countries: a road map for environmental sustainability" and found that renewable energy and energy efficiency are negatively correlated with CO_2 emissions.

Other studies include Wang, et al. (2022) who studied "Dynamic role of renewable energy efficiency, natural resources, and climate technologies in realizing environmental sustainability: implications for China" and confirmed a bidirectional causality between energy efficiency and ecological footprints (EFP) and climate technologies and EFP; Enyi et al. (2023) who studied "green

entrepreneurial practices and the sustainability of manufacturing SMES in North-Central Nigeria" and found that green entrepreneurial practices (green entrepreneurial initiatives, green entrepreneurial innovation, green entrepreneurial recruitment and selection, green entrepreneurial inclination and green entrepreneurial marketing) can be considered a veritable vehicle that has potentials for enhancing and sustaining innovativeness, competitiveness, growth and customer response in manufacturing SMEs; and Yasir et al. (2023) who studied "the environmental values play a role in the development of green entrepreneurship to achieve sustainable entrepreneurial intention" and found that environmental value has a direct and indirect impact on attitudes towards sustainable entrepreneurship, and perceived behavioral control and environmental value support sustainable entrepreneurial intentions.

Finally, other studies are Hussain (2023) who studied the "green entrepreneurial practices among small and medium enterprises in Karachi, Pakistan" and revealed that SMEs were using green business practices in their business areas; Adebanjo et al. (2024) who investigated "green entrepreneurship practices and sustainability of manufacturing small and medium enterprises in Nigeria" and established that green entrepreneurial inclination, green entrepreneurial business model, green entrepreneurial marketing and green entrepreneurial innovation have significant and positive effect on sustainability of manufacturing small and medium enterprises in Nigeria; and Tekala et al. (2024) who studied "green entrepreneurship for business sustainability: do environmental dynamism and green structural capital matter?" and found that green entrepreneurship (GEN) significantly enhances business sustainability (BS) and green structural capital (GSC), with GSC serving as a vital mediator in the GEN-BS relationship; however, environmental dynamism (ED) does negatively moderate the GEN-BS relationship, indicating that GEN's positive impact on BS is accentuated under lower environmental uncertainties.

However, these studies have failed to consider green entrepreneurial practices of micro-scale business operators and environmental sustainability. Specifically, they failed to address sustainable sourcing and supply chain management, renewable energy and energy efficiency; and waste reduction and recycling practices adopted by micro-scale business operators for environmental sustainability in Calabar municipality and Calabar south Local Government Areas (LGAs) of Cross River State, Nigeria. Additionally, there is insufficient empirical works on green entrepreneurial practices of micro-scale business operators and environmental sustainability. Of more concern is the continuous existence of the practical problem of environmental threat caused by entrepreneurial activities of micro-scale business operators in Calabar Municipality and Calabar South LGAs of Cross River State due to their inability to adopt green practices. The inability to integrate these sustainable practices not only jeopardizes local ecosystems but also poses challenges to public health and overall community well-being. It is against this background that this study was designed to ascertain the extent of adoption of green entrepreneurial practices by micro business operators for environmental sustainability in Calabar Municipality and Calabar South Local Government Areas (LGAs) of Cross River State (CRS), Nigeria.

Statement of the Problem

Adopting green entrepreneurial practices by micro-scale business operators is vital for environmental sustainability as it reduces resource consumption and waste (Hockerts & Wüstenhagen, 2010). These practices promote eco-friendly innovations that can lead to a circular local economy, encouraging sustainable environmental and entrepreneurial development (Lüdeke-Freund, 2010). Furthermore, micro-scale enterprises contribute to local economies while fostering a culture of sustainability, which can inspire larger businesses to follow suit (García-Álvarez et al., 2014).

Unfortunately, green entrepreneurial practices are not commendably adopted by micro-scale business operators in Calabar Municipality and Calabar South LGAs of Cross River State. Many of these micro-scale businesses still prioritize short-term profits over sustainable practices are fixed to traditional business practices that are not eco-friendly. This oversight limits innovation in eco-friendly solutions and hinders the transition to a circular local economy. Without these practices, local economies struggle to thrive sustainably, resulting in increased resource depletion, waste generation, and missed opportunities for larger businesses to engage in environmentally-conscious strategies. Consequences of this include heightened environmental degradation and stunted economic growth in local communities. The inability to integrate these sustainable practices not only jeopardizes local ecosystems but also poses challenges to public health and overall community well-being. The desire to fill this research gap prompted the designing of this study to ascertain the extent of adoption of green entrepreneurial practices by micro business operators for environmental sustainability in Calabar Municipality and Calabar South Local Government Areas (LGAs) of Cross River State (CRS), Nigeria.

Purpose of the Study

The general purpose of the study is to ascertain the extent of adoption of green entrepreneurial practices by micro-scale business operators for environmental sustainability in Calabar Municipality and

Calabar South Local Government Areas (LGAs) of Cross River State (CRS), Nigeria. Specifically, the study sought to ascertain the extent of adoption of:

1. sustainable sourcing and supply chain management practices by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria.
2. renewable energy and energy efficiency practices by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria.
3. waste reduction and recycling practices by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria.

Research Questions

The following research questions were stated to guide the study:

1. to what extent are sustainable sourcing and supply chain management practices adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria?
2. to what extent are renewable energy and energy efficiency practices adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria?
3. to what extent are waste reduction and recycling practices adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria?

Research Hypotheses

The following hull hypotheses were postulated for the study and tested at 0.05 level of significance:

1. significance does not exist on the extent to which sustainable sourcing and supply chain management practices are adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria.
2. significance does not exist on the extent which renewable energy and energy efficiency practices are adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria.
3. significance does not exist on the extent which waste reduction and recycling practices are adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria.

Methodology

This study adopted descriptive survey design and was conducted in Calabar Municipal and Calabar South LGAs of Cross River State, Nigeria. The population for the study was 721 micro-scale business operators. This was made up of 281 micro-scale business operators in Food and Beverage sub-sector, 135 in Fashion and Apparel sub-sector, 127 in Beauty and Personal Care sub-sector, 104 in Home and Lifestyle sub-sector, and 74 in Technology and Services sub-sector in Calabar Municipal and Calabar South LGAs (CRS Ministry of Commerce, 2025). These set of business operators were used as the units of data collection because they fit into the definition of micro business as recognized in Nigeria and have been in micro business operation for onwards of five years. Therefore, they are in a position to provide the necessary opinions on the problem of this study. The sample of this study was 257micro-scale business operators. The sample was determined using Taro Yamane formula given as: n = $\frac{N}{1+N(e)^2}$ where: n = the sample size, N = the finite population, e = level of significance (i.e., limit of tolerable or allowable error); and 1 = unity (a constant). The sample size was further proportionately distributed into Food and Beverage, Fashion and Apparel, Beauty and Personal Care, Home and Lifestyle; and Technology and Services micro-entrepreneurs using ratio: $\frac{281}{721}$ x 257 = 100Food and Beverage micro-entrepreneurs, $\frac{135}{721}$ x 257 = 48Fashion and Apparel micro-entrepreneurs, $\frac{127}{721}$ x 257 = 45Beauty and Personal Care micro-entrepreneurs, $\frac{104}{721}$ x 257 = 37Home and Lifestyle micro-entrepreneurs; and, $\frac{74}{721}$ x 257 = 26Technology and Services micro-scale business operators, approximately. Stratified random sampling technique was adopted in selecting the sample. Researchers-constructed questionnaire with response options of 4-points consisting of 15questionnaire items was used for data collection.

The questionnaire was divided into two parts - I and II. Part I was designed to seek information on the Biographical characteristics (Bio-data/Background) of the respondents. The part contained three items numbered a – c. Part II was further sub-divided into three sections (A-C) according to the specific purposes of the study and structured on four response options of Very High Extent (VHE), High Extent (HE), Low Extent (LE), and Very Low Extent (VLE). Section A contained five item statements (1-5)

designed to elicit data on extent of adoption of sustainable sourcing and supply chain management practice by micro business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria. Section B contained five item statements (6-10) designed to elicit data on extent of adoption of renewable energy and energy efficiency practice by micro business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria. Finally, section C contained five item statements (11-15) designed to gather data on extent of adoption of waste reduction and recycling practice by micro business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria.

The instrument was face-validated by three experts from Department of Business Education, Faculty of Vocational and Entrepreneurial Education, University of Calabar, Nigeria teaching business and entrepreneurship courses. The internal consistency of the instrument for data collection was determined using Cronbach Alpha reliability coefficient and the test yielded a coefficient value of 0.89. Two hundred and fifty-six copies of the questionnaire were administered to the respondents by the researchers. Out of the 256 copies administered 243 were retrieved making a return rate of 95%.Data collected for this study were analyzed using mean and standard deviation to answer research questions and z-test was used to analyze the null hypotheses and tested at 0.05 level of significance.

Results

Research Question One: To what extent are sustainable sourcing and supply chain management practices adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria?

Table 1: Mean Responses on Extent which Sustainable Sourcing and Supply Chain Management Practices are Adopted by Micro-Scale Business Operators for Environmental Sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria

N = 243 Micro-scale Business Operators: [Cal.Municipal – 139; Cal. South - 104]

S/N	Item Statements	Cal. Municipal		Cal. South		Grand Mean	Remarks
		$\overline{X_1}$	SD_1	$\overline{X_2}$	SD_2		
1.	Our business prioritizes sourcing materials from suppliers who have environmentally friendly policies and practices	2.45	0.61	2.130	.13	2.29	D
2.	Our business supply chain management practices are designed to reduce waste and environmental harm	2.22	0.11	2.160	.44	2.19	D
3.	We patronize suppliers who share our commitment to environmental sustainability and responsible business practices	2.10	0.15	2.61	0.64	2.36	D
4.	We strive to source products that are recyclable, reusable, or sustainably produced	2.33	1.01	2.14	0.21	2.24	D
5.	Our business regularly assesses and mitigates the environmental risks connected with our supply chain operations	1.89		0.13	1.77	0.16	
		1.88	D				
	Total	**11.08**	**2.01**	**10.8**	**.11**	**.58**	

Cluster Mean ($\overline{X}$) = 2.19 (Disagreed)

Data presented in table 1 reveals that the means ($\overline{X}$) in respect of item statements 1 – 5 are less than 2.5 being the decision point. Hence, it is concluded that the item statements are not adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria. Finally, since the cluster mean ($\overline{X}$) of 2.19 is less than 2.5, it is concluded that sustainable sourcing and supply chain management practices are not adopted for environmental sustainability.

Hypothesis One: Significance does not exist on the extent which sustainable sourcing and supply chain management practices are adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria.

Table 2: z-Test of Statistical Difference on Extent which Sustainable Sourcing and Supply Chain Management Practices are Adopted by Micro-Scale Business Operators for Environmental Sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria

Respondents	$\bar{X}$	SD	N	df	Standard Error	z-Cal	z-Critical	Decision
Operators in Cal.Municipal	11.08	2.01	139	241	0.32	0.84	1.65	Accept Ho_1
Operators in Cal. South	10.81	1.58	104					

In table 2, the z – ratio (z distribution or z-test) indicates that the critical value of z with 241degree of freedom at 0.05 level of statistical probability is 0.84. Since the calculated value of z is 0.84, being less than the critical value, we accept the null hypothesis (Ho_1) because there is insignificant difference in mean responses. This implies that sustainable sourcing and supply chain management practices are not adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria.

Research Question Two: To what extent are renewable energy and energy efficiency practices adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria?

Table 3: Mean responses on extent which renewable energy and energy efficiency practices are adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria

N = 243 Micro-scale Business Operators: [Cal.Municipal – 139; Cal. South - 104]

S/N	Item Statements	Cal. Municipal $\overline{X_1}$	SD_1	Cal. South $\overline{X_2}$	SD_2	Grand Mean	Remarks
6.	Our business uses renewable energy source such as solar power, to reduce dependence on fossil fuel	2.51	0.71	2.54	1.14	2.53	A
7.	We have implemented energy-efficient practices and technologies to minimize energy consumption in our operations	2.01	0.13	2.17	0.44	2.09	D
8.	We invest in energy-efficient equipment and appliances to reduce our energy consumption and environmental impact	2.61	1.11	2.52	0.64	2.57	A
9.	Our business has set targets to reduce energy consumption and increase the use of renewable energy sources	2.32	0.12	2.13	1.22	2.23	D
10.	Our business explores opportunities to use energy storage solutions or grid-connected renewable energy systems to improve our energy efficiency	2.00	0.14	1.86	0.16	1.95	D
	Total	**11.45**	**2.21**	**11.25**	**3.60**		

Cluster Mean ($\bar{X}$) = 2.27 (Disagreed)

Data presented in table 3 indicates that the means ($\bar{X}$) in respect of item statements 6 and8 are more than 2.5 being the decision point. Hence, it is concluded that the item statements are adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria. However, the means ($\bar{X}$) in respect of item statements 7, and 9 -10 are

less than 2.5 being the decision point. Hence, it is also concluded that the item statements are not adopted for environmental sustainability. Finally, since the cluster mean ($\bar{X}$) of 2.27 is less than 2.5, it is concluded that renewable energy and energy efficiency practices are not adopted for environmental sustainability.

Hypothesis Two: Significance does not exist on the extent which renewable energy and energy efficiency practices are adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria.

Table 4: z-Test of Statistical Difference on Extent to which Renewable Energy and Energy Efficiency Practices are Adopted by Micro-Scale Business Operators for Environmental Sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria

Respondents	$\bar{X}$	SD	N	df	Standard Error	z-Cal	z-Critical	Decision
Operators in Cal. Municipal	11.45	2.21	139					
				241	0.43	0.47	1.65	Accept Ho_1
Operators in Cal. South	11.25	3.60	104					

In table 4, the z – ratio (z distribution or z-test) indicates that the critical value of z with 241degree of freedom at 0.05 level of statistical probability is 1.65. Since the calculated value of z is 0.47, being less than the critical value, we accept the null hypothesis (Ho_2) because there is insignificant difference in mean responses. This implies that renewable energy and energy efficiency practices are not adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria.

Research Question Three: To what extent are waste reduction and recycling practices adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria?

Table 5: Mean Responses on Extent to which Waste Reduction and Recycling Practices are Adopted by Micro-Scale Business Operators for Environmental Sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria

N = 243 Micro-scale Business Operators: [Cal.Municipal – 139; Cal. South - 104]

S/N	Item Statements	Cal. Municipal		Cal. South		Grand Mean	Remarks
		$\overline{X_1}$	SD_1	$\overline{X_2}$	SD_2		
11.	Our business strives to reduce waste generation by packaging with bio-degradable materials	2.55	0.62	2.52	0.25	2.54	A
12.	We strive to regularly recycle paper, plastic, or other materials in our operations	2.56	0.13	2.61	1.45	2.59	A
13.	We have a system in place for segregating and decomposing of waste in an environmentally responsible manner	2.41	0.15	2.19	0.64	2.30	D
14.	We have implemented a composting programme for waste goods or other organic materials	2.32	0.33	2.08	1.22	2.20	D
15.	We partner with suppliers who use minimal or biodegradable packaging materials	2.13	0.17	2.21	0.18	2.17	D
	Total	**11.97**	**1.40**	**11.61**	**3.74**		

Cluster Mean ($\bar{X}$) = 2.36 (A)

Data presented in table 5 indicates that the means ($\bar{X}$) in respect of item statements 11 and 12 are more than 2.5 being the decision point. Hence, it is concluded that the item statements are adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria. However, the means ($\bar{X}$) in respect of item statements 13 – 15 are less than 2.5 being the decision point. Hence, it is also concluded that the item statements are not adopted by micro-scale business operators for environmental sustainability. Finally, since the cluster mean ($\bar{X}$) of 2.36 is less than 2.5, it is concluded that waste reduction and recycling practices are not adopted by micro-scale business operators for environmental sustainability.

Research Hypothesis Three: Significance does not exist on the extent which waste reduction and recycling practices are adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria.

Table 6: z-Test of statistical difference on extent which waste reduction and recycling practices are adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria

Respondents	$\bar{X}$	SD	N	df	Standard Error	z-Cal	z-Critical	Decision
Operators in Cal. Municipal	11.97	1.40	139	241	0.42	0.87	1.65	Accept Ho_1
Operators in Cal. South	11.61	3.74	104					

In table 6, the z – ratio (z distribution or z-test) indicates that the critical value of z with 241degree of freedom at 0.05 level of statistical probability is 1.65. Since the calculated value of z is 0.87, being less than the critical value, we accept the null hypothesis (Ho_3) because there is insignificant difference in mean responses. This implies that waste reduction and recycling practices are not adopted by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South LGAs of CRS, Nigeria.

Discussion of Findings

The purpose of this study was to gain a better understanding of the extent of adoption of green entrepreneurial practices by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South Local Government Areas (LGAs) of Cross River State (CRS), Nigeria. Firstly, it was discovered that sustainable sourcing and supply chain management practices are not adopted by micro-scale business operators for environmental sustainability. Secondly, it was found that renewable energy and energy efficiency practices are not adopted by micro-scale business operators for environmental sustainability. Finally, it was revealed that waste reduction and recycling practices are not adopted by micro-scale business operators for environmental sustainability.

These results ignore the claims that recycling contributes substantially to improving overall social, economic and environmental sustainability of the waste management system (Menikpura et al., 2012), that waste elimination, supply chain risk management and cleaner production have significant impact on supply chain sustainability (Govindan et al., 2014); that the green supply chain management practice of “internal environmental management” has the greatest positive effect on environmental performance indicators (Jabbour et al., 2015); that renewable energy consumption negatively impact on environmental degradation (Riti & Shu, 2016); and that renewable energy and energy efficiency are negatively correlated with CO_2 emissions (Ponce & Khan, 2021).

These results also ignore the claims that there is bidirectional causality between energy efficiency and ecological footprints (EFP) and climate technologies and EFP (Wang, et al., 2022), that green entrepreneurial practices (green entrepreneurial initiatives, green entrepreneurial innovation, green entrepreneurial recruitment and selection, green entrepreneurial inclination and green entrepreneurial marketing) can be considered a veritable vehicle that has potentials for enhancing and sustaining innovativeness, competitiveness, growth and customer response in manufacturing SMEs (Enyi et al., 2023); and that environmental value has a direct and indirect impact on attitudes towards sustainable entrepreneurship, and perceived behavioral control and environmental value support sustainable entrepreneurial intentions (Yasir et al., 2023).

Finally, these results also ignore the claims that green entrepreneurial inclination, green entrepreneurial business model, green entrepreneurial marketing and green entrepreneurial innovation have significant and positive effect on sustainability of manufacturing small and medium enterprises in

Nigeria (Adebanjo et al., 2024); and that green entrepreneurship (GEN) significantly enhances business sustainability (BS) and green structural capital (GSC), with GSC serving as a vital mediator in the GEN-BS relationship; however, environmental dynamism (ED) does negatively moderate the GEN-BS relationship, indicating that GEN's positive impact on BS is accentuated under lower environmental uncertainties (Tekala et al., 2024). However, these results are consistent with the claims that SMEs were using green business practices in their business areas (Hussain, 2023).

In our view, the most compelling explanation for the present set of findings is that a significant gap exists in the adoption of green entrepreneurial practices among micro-scale business operators in the Calabar Municipality and Calabar South LGAs. One compelling explanation for this lack of adoption may be the limited resources and knowledge available to these operators. Many micro-scale businesses often face financial constraints, making it challenging to invest in sustainable practices like renewable energy or efficient supply chain management. Additionally, there may be a lack of awareness or education surrounding the benefits of green practices, leading to their neglect. Furthermore, local regulations and incentives for sustainable practices may be insufficient, failing to motivate businesses to prioritize environmentally friendly approaches. The combination of economic pressures, insufficient education on sustainable practices, and inadequate policy support likely contributes to the low levels of green entrepreneurship observed in this context.

While the study provides valuable insights into the adoption of green entrepreneurial practices among micro-scale business operators in Calabar Municipality and Calabar South LGAs, several potential limitations may affect the results and their generalizability. The research focuses exclusively on two local government areas in Cross River State, Nigeria. This limitation may restrict the applicability of the findings to other regions within Nigeria or to broader contexts in different countries. Variations in cultural, economic, and environmental factors could influence how micro-scale business operators engage with sustainable practices. Therefore, more extensive studies that encompass a wider geographical area would be beneficial for a more comprehensive understanding of green entrepreneurial practices.

Although a sample size of 257 micro-scale business operators was utilized, the distribution among the different sub-sectors may not accurately represent the overall population of micro-enterprises. If certain sectors were overrepresented or underrepresented in the sample, the results could skew perceptions of green practices in the business community. Additionally, since the sampling technique was stratified random sampling based on existing sub-sector classifications, the insights may miss some nuances within each sub-sector, particularly regarding unique challenges or opportunities tied to their specific business contexts.

The data collection relied on self-reported questionnaires, which can introduce response bias. Respondents may have over-reported or under-reported their adoption of green practices due to social desirability, fear of judgment, or lack of understanding of the concepts being surveyed. This bias can lead to inaccuracies in assessing the extent of environmental practices being utilized. Combining qualitative methods, like interviews or focus groups, could enhance the reliability of the findings by capturing more in-depth perspectives from the entrepreneurs regarding their environmental strategies. Addressing these limitations in future research could provide a broader and more balanced understanding of green entrepreneurial practices among micro-scale businesses.

Despite the limitations discussed, the results of this study suggest several significant theoretical and practical implications for green entrepreneurship and environmental sustainability among micro-scale business operators. Theoretically, the findings highlight a gap in the adoption of green practices among micro-scale businesses, suggesting that existing theoretical frameworks on green entrepreneurship may need to be expanded or revised to better address the barriers faced by these operators. This can lead to the development of new models that focus on the unique characteristics and challenges of micro-scale enterprises, particularly in developing regions. The study also contributes to the theoretical understanding of why sustainable practices are not widely adopted. It suggests that micro-scale businesses may face systemic issues—such as limited access to resources, knowledge, or technology—that inhibit their ability to implement green practices. This could prompt further research into specific barriers and the contextual factors that influence sustainability in micro-enterprises.

Practically, the results indicate a need for targeted support from governmental and non-governmental organizations to foster the adoption of green practices among micro-scale businesses. Policymakers may consider creating programs that provide resources, training, and incentives specifically tailored to the needs of this sector, thereby encouraging more sustainable business practices and enhancing overall environmental sustainability in the region. Again, the lack of adoption of sustainable sourcing, renewable energy, and waste reduction practices suggests a need for increased educational initiatives. By developing training programs focused on the benefits and

implementation of green practices, stakeholders could help micro-scale business operators understand how these practices can enhance both their competitive advantage and environmental responsibility. Finally, the findings emphasize the importance of collaboration among micro-scale businesses, government agencies, and non-profits to create a supportive ecosystem for green entrepreneurship. Initiatives that encourage networking, sharing of best practices, and cooperative purchasing of sustainable goods could facilitate the collective adoption of environmentally friendly practices among micro-scale operators.

In conclusion, while the study's limitations should be acknowledged, its results provide meaningful insights that can inform both theoretical advancements and practical strategies to promote environmental sustainability in micro-scale businesses. Addressing these implications can lead to more effective approaches in encouraging sustainable entrepreneurship at the grassroots level.

To enhance understanding of green entrepreneurial practices among micro-scale businesses, future research should consider several avenues. Expanding studies to multiple regions can facilitate comparative analysis and identify specific barriers and enablers. Longitudinal research would track the adoption of green practices over time, revealing trends and impacts of sustainability initiatives. Utilizing mixed methods, including qualitative interviews and quantitative surveys, can provide deeper insights into operators' motivations and challenges. Focusing on specific sub-sectors allows for targeted strategies, while examining the tangible benefits of green practices can strengthen their appeal. Collaboration and networking research can further inform effective approaches to promoting sustainability.

Despite the identified limitations, the present study has enhanced our understanding that micro-scale business operators do not adopt green entrepreneurial practices for environmental sustainability. We hope that the current research will stimulate further investigation of this important area especially why micro-scale business operators are not adopting these green values.

Conclusion

This study sought to ascertain the extent of adoption of green entrepreneurial practices by micro-scale business operators for environmental sustainability in Calabar Municipality and Calabar South Local Government Areas (LGAs) of Cross River State (CRS), Nigeria. Results indicated that sustainable sourcing and supply chain management practices, renewable energy and energy efficiency practices, and waste reduction and recycling practices are not adopted by micro-scale business operators for environmental sustainability. This implies that operators of micro-scale businesses lack green values and that they exhibit care-free attitude towards environmental management. It also implies that they should be given orientation or sensitization on the importance of green entrepreneurship to environmental sustainability. Based on the findings of this study, it is recommended that:

1. sustainable sourcing and supply chain management practices should be adopted by micro-scale business operators for environmental sustainability
2. renewable energy and energy efficiency practices should be adopted by micro-scale business operators for environmental sustainability, and
3. waste reduction and recycling practices should be adopted by micro-scale business operators for environmental sustainability.

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GREEN BUSINESS PRACTICES AND SUSTAINABLE ENTREPRENEURSHIP DEVELOPMENT AMONG TERTIARY INSTITUTION STUDENTS IN RIVERS STATE: AN EMPIRICAL ANALYSIS

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Abstract

This study empirically examined green business practices and sustainable entrepreneurship development among tertiary institution students in Rivers State: An empirical analysis. Three specific objectives, research question and corresponding hypotheses were posed, formulated analysed and tested in the study. The study adopted a explanatory cross-sectional survey design. Data were gathered via a structured, validated questionnaire administered to a stratified sample of 382 undergraduate students across major universities in Rivers State. Multiple linear regression analysis was deployed to test three null hypotheses. The empirical findings revealed that green knowledge acquisition (beta = 0.342, $p < 0.01$), eco-innovation mindset (beta = 0.415, $p < 0.01$), and waste minimization orientation (beta = 0.218, $p < 0.01$) exert positive and statistically significant effects on sustainable entrepreneurship development.The study concludes that embedding strategic environmental consciousness into youth entrepreneurship constructs serves as a potent engine for clean economic transitions. It recommends a paradigm shift in institutional curriculum design, advocating for experiential eco-accelerators, active green venture funding, and structural policy linkages to transition student intentions into operational, ecologically resilient micro-enterprises.

Keywords: Green Business Practices, Sustainable Entrepreneurship, Eco-Innovation, Waste Minimization, Rivers State.

Introduction

The intersection of economic growth, natural resource conservation, and societal equity has emerged as a central paradigm of modern economic science. Historically, conventional models of entrepreneurship prioritized capital accumulation, market penetration, and profit maximization, treating environmental externalities as secondary concerns. However, accelerating climate volatility, resource depletion, and ecological degradation have exposed the fragility of these traditional frameworks. This has accelerated a structural shift toward sustainable entrepreneurship a process wherein entrepreneurs exploit commercial opportunities by bringing economic value, ecological restoration, and social equity into systemic alignment.

In developing sub-Saharan economies like Nigeria, the imperative for sustainable entrepreneurship is exceptionally acute. The country simultaneously confronts a severe youth unemployment crisis and profound environmental vulnerabilities. Rivers State, situated within the hydrocarbon-rich Niger Delta region, sits at the epicenter of this dual challenge. For decades, the region has endured extensive environmental pollution, oil spills, gas flaring, and ecosystem degradation. These issues have systematically undermined traditional livelihoods like fishing and agriculture, while escalating local climate risks. Concurrently, the formal labor market is unable to absorb the thousands of graduates turning out from tertiary institutions across the state annually. This mismatch deepens regional poverty and risks fueling youth restiveness.

In response to these compounding structural crises, higher education institutions have been repositioned as critical engines for transformation. In 2006, the Federal Government of Nigeria made entrepreneurship education compulsory across all tertiary institutions to foster self-reliance and reduce reliance on white-collar employment (Igbokwe-Ibeto, 2020). However, conventional entrepreneurship courses often focus narrowly on basic retail, generic services, or traditional manufacturing, without integrating environmental sustainability.

To foster long-term socio-ecological resilience, youth entrepreneurship must transition from traditional, resource-intensive models to green business practices. These practices encompass eco-innovation, green knowledge acquisition, and waste minimization orientation. Instilling these foundational values in students provides a pathway to dual objectives: generating employment and cultivating a new class of "ecopreneurs" capable of engineering commercially viable solutions to the region's environmental challenges.

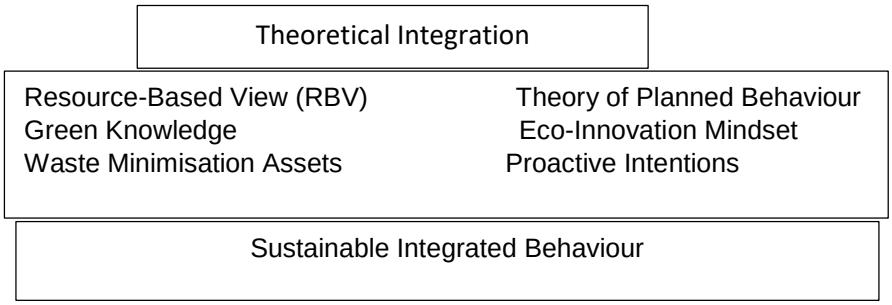
This study holds significant value for a diverse group of stakeholders:

Socio-Economic & Policy Value: For policymakers and educational administrators, it provides empirical insights to reform current entrepreneurship curricula, transitioning them from basic survivalist business training into green entrepreneurship frameworks. This supports Nigeria's commitments under United Nations Sustainable Development Goals (SDGs) 8 (Decent Work and Economic Growth) and 12 (Responsible Consumption and Production).

Institutional & Academic Value: For tertiary institutions in Rivers State, the study offers actionable data to design targeted environmental workshops, university-linked green incubators, and campus eco-ventures. Empirically, it fills an important geographic and conceptual gap in the literature regarding youth ecopreneurship within sub-Saharan Africa and hydrocarbon-dependent regions.

Student & Community Value: For aspiring student entrepreneurs, it highlights green business practices as a pathway to competitive differentiation and long-term business resilience. Finally, for the broader Rivers State community, fostering green entrepreneurship supports localized environmental mitigation, waste reduction, and sustainable job creation.

This study is theoretically grounded in two complementary frameworks: the **Resource-Based View (RBV)** and the **Theory of Planned Behavior (TPB)**.



Originally conceptualized by Penrose (1959) and formalized by Wernerfelt (1984) and Barney (1991), the RBV asserts that a firm's competitive advantage and long-term survival depend primarily on its accumulation of valuable, rare, inimitable, and non-substitutable (VRIN) resources. In small business and entrepreneurship literature, this framework has evolved into the *Natural Resource-Based View*, which argues that integrating environmental strategies represents an essential intangible capability (Ajor, 2020).

Applied to student entrepreneurs, green knowledge acquisition and a waste minimization orientation function as internal intangible resources. When students acquire advanced ecological literacy and structural waste mitigation skills, they develop unique human capital. This capital enables them to design highly efficient, cost-effective, and climate-resilient enterprise models that competitors cannot easily replicate.

Developed by Ajzen (1991), the TPB states that an individual's behavior is driven by their behavioral intention, which is shaped by three core factors: attitude toward the behavior, subjective norms, and perceived behavioral control.

In the context of sustainable entrepreneurship development, student intentions are not formed in a vacuum. An eco-innovation mindset reflects a deeply internalized positive attitude toward environmental stewardship. Perceived behavioral control is strengthened through formal green training and actionable waste minimisation skills. Together, these elements give students the confidence and perceived capability to launch sustainable green enterprises rather than defaulting to traditional business formats (Agu et al., 2021).

The core architecture of this study examines the relationship between Green Business Practices (the independent variable, conceptualized across three dimensions) and Sustainable Entrepreneurship Development (the dependent variable).

Green business practices refer to the strategic integration of environmental sustainability objectives into core enterprise operations. This approach seeks to minimize ecological footprints, reduce hazardous emissions, and optimize resource efficiency throughout the value chain. For student entrepreneurs, these practices are defined by three primary dimensions:

Green Knowledge Acquisition: The formal and informal accumulation of ecological literacy, encompassing environmental regulations, renewable energy principles, carbon accounting, and eco-efficient operational frameworks.

Eco-Innovation Mindset: A cognitive orientation that prioritizes developing new or altered products, services, or processes that deliver commercial value while significantly lowering environmental risks and resource consumption compared to conventional alternatives (Ajor, 2020).

Waste Minimization Orientation: A systematic commitment to lean production, circular economy principles, recycling, upcycling, and optimizing resource inputs to eliminate waste at its source.

Sustainable entrepreneurship development is the process of identifying, evaluating, and exploiting entrepreneurial opportunities that generate financial returns while simultaneously advancing ecological restoration and societal well-being. Unlike traditional entrepreneurship, which treats environmental costs as externalities, sustainable entrepreneurship embeds the "Triple Bottom Line" People, Planet, and Profit into the core business design. For students, this development manifests as a progression from basic environmental awareness to launching viable, climate-conscious micro-enterprises.

Scholarly interest in sustainable entrepreneurship within emerging economies has expanded significantly over the past decade, driven by growing environmental challenges.

Agu et al. (2021) investigated the drivers of sustainable entrepreneurial intentions among university students in Nigeria using an integrated structural model. Analyzing data from 435 students, they discovered that explicit education for sustainable entrepreneurship significantly shaped students' attitudes and self-efficacy. This, in turn, acted as a primary driver of their intent to establish green ventures, though the direct path from education to intention required activation through personal attitude and perceived control.

At a localized level within the Niger Delta, corporate environmental management studies have shown mixed results. For example, a recent study by the Dr. Amadi Foundation investigated the relationship between green entrepreneurship dimensions such as eco-product, eco-service, and green agriculture entrepreneurship and the economic sustainability of 20 long-standing MSMEs in Rivers State. Their findings revealed strong positive correlations: eco-product innovations scored $\rho = 0.922$ and green agriculture recorded $\rho = 0.685$. This suggests that integrating ecological considerations directly enhances profitability and operational resilience within the state's challenging business climate.

Similarly, Ajor (2020) evaluated the impact of an innovative mindset on organizational sustainability among 50 selected SMEs in Rivers State. Using Spearman Rank Order Correlations, the study demonstrated that eco-innovation practices like cleaner production and life-cycle assessments were vital for sustaining small firms facing strict environmental challenges and shifting consumer preferences.

However, a major gap persists in the literature. While these studies focus on established MSMEs or broad, non-localized student intentions, there is a lack of rigorous, regression-based empirical evidence assessing how specific green business practices directly influence sustainable entrepreneurship development among students in Rivers State. This study bridges that gap.

Statement of the Problem

Despite decades of compulsory entrepreneurship education in Nigerian universities, graduate unemployment remains persistently high, while the environmental conditions of regions like Rivers State continue to decline (Agboola, 2010; Igbokwe-Ibeto, 2020). Traditional entrepreneurship models taught in higher education institutions often lack the ecological components required to address contemporary climate and environmental challenges. This pedagogical gap frequently results in student-led business ideas that replicate unsustainable, resource-heavy, and high-waste production processes.

While regional scholarship has increasingly examined the economic sustainability of established micro, small, and medium enterprises (MSMEs) in Rivers State (Ajor, 2020), empirical focus on the developmental stage of student entrepreneurship remains sparse. Existing literature heavily documents student entrepreneurial *intentions* in general, but fails to analyze how specific green business inputs—such as systemic green knowledge, an eco-innovative mindset, and structural waste minimization orientations—influence sustainable entrepreneurship development (Agu et al., 2021).

Furthermore, much of the foundational research on green entrepreneurship originates from developed market contexts with mature eco-industrial frameworks, institutional venture funding, and strict environmental enforcement. These findings cannot be applied directly to the unique socio-economic and institutional realities of Rivers State, where student entrepreneurs face infrastructural deficits, erratic power supply, limited green financing, and uneven policy enforcement. This study addresses this empirical gap by conducting a localized analysis of how adopting green business practices influences sustainable entrepreneurship development among students within the unique socio-ecological context of Rivers State.

Objectives of the Study

The primary objective of this study is to empirically analyze the relationship between green business practices and sustainable entrepreneurship development among tertiary institution students in Rivers State. The specific objectives are to:

1. Determine the effect of green knowledge acquisition on sustainable entrepreneurship development among students in Rivers State.
2. Evaluate the influence of an eco-innovation mindset on sustainable entrepreneurship development among students in Rivers State.
3. Investigate the impact of a waste minimization orientation on sustainable entrepreneurship development among students in Rivers State.

Research Questions

To achieve the objectives outlined above, the study addresses the following research questions:

1. To what extent does green knowledge acquisition affect sustainable entrepreneurship development among students in Rivers State?
2. How does an eco-innovation mindset influence sustainable entrepreneurship development among students in Rivers State?
3. What is the impact of a waste minimization orientation on sustainable entrepreneurship development among students in Rivers State?

Research Hypotheses

The following null hypotheses were formulated to guide the empirical analysis and were tested at a 0.05 level of significance:

1. Green knowledge acquisition has no significant effect on sustainable entrepreneurship development among tertiary institution students in Rivers State.
2. An eco-innovation mindset has no significant influence on sustainable entrepreneurship development among tertiary institution students in Rivers State.
3. Waste minimization orientation has no significant impact on sustainable entrepreneurship development among tertiary institution students in Rivers State.

Methodology

This study adopted an **explanatory cross-sectional survey research design**. This approach allows for the collection of quantitative data from a representative sample at a single point in time, facilitating the measurement of specific dimensions and the statistical testing of hypothesized causal relationships.

The target population comprised full-time final-year undergraduate students enrolled in business- and entrepreneurship-related programs across three major universities in Rivers State:

1. University of Port Harcourt (UNIPORT)
2. Rivers State University (RSU)
3. Ignatius Ajuru University of Education (IAUE)

These final-year students were selected because they had completed all mandatory institutional entrepreneurship courses. The aggregate accessible population across these three institutions was determined to be approximately 8,500 students.

To determine an appropriate sample size, **Taro Yamane's formula** for finite populations was applied:

n = frac{N}{1 + N(e)^2}

To ensure equitable representation across the institutions, a stratified random sampling technique was employed, allocating the 382 questionnaires proportionally based on each university's final-year student enrollment.

Primary data were gathered using a self-administered, structured questionnaire titled the *"Green Business Practices and Sustainable Entrepreneurship Questionnaire" (GBPSEQ)*. The instrument was structured on a 5-point Likert scale, ranging from 5 (Strongly Agree) to 1 (Strongly Disagree).

To ensure measurement integrity, the questionnaire was adapted from validated scales in existing literature. Content and construct validity were verified by two senior experts in entrepreneurship measurement from the Faculty of Management Sciences at Rivers State University.

Internal consistency and reliability were assessed via a pilot study involving 40 student respondents from a non-sampled institution (Ken Saro-Wiwa Polytechnic). The calculated **Cronbach's Alpha (α)** coefficients for all constructs exceeded the acceptable academic threshold of 0.70, as detailed in Table 1.

Table 1: Reliability Analysis of Research Constructs

Variable Index	Research Construct Dimension	Number of Items	Cronbach's Alpha (α)	Status
GKA	Green Knowledge Acquisition	5	0.842	Reliable
EIM	Eco-Innovation Mindset	5	0.811	Reliable
WMO	Waste Minimization Orientation	4	0.789	Reliable
SED	Sustainable Entrepreneurship Dev.	6	0.865	Reliable

To test the hypotheses and evaluate the relative impact of the independent variables on the dependent variable, a **multiple linear regression model** was specified:SED = beta_0 + beta_1 GKA + \beta_2 EIM + \beta_3 WMO + \epsilon

Where:

i. SED = Sustainable Entrepreneurship Development (Dependent Variable)
ii. beta_0 = Constant intercept
iii. GKA = Green Knowledge Acquisition (Independent Variable 1)
iv. EIM = Eco-Innovation Mindset (Independent Variable 2)
v. WMO = Waste Minimization Orientation (Independent Variable 3)
vi. beta_1, \beta_2, \beta_3$ = Partial regression coefficients for the respective independent variables
vii. epsilon = Stochastic error term designed to capture unobserved variations

Analytical Techniques

The gathered data were audited, coded, and analyzed using the Statistical Package for Social Sciences (SPSS) Version 27. Descriptive statistics (means and standard deviations) were calculated to analyze the distribution characteristics of the data. Inferential statistics, specifically ordinary least squares (OLS) multiple linear regression, were utilized to evaluate the hypothesized relationships. Prior to running the regression model, diagnostic assessments were conducted to ensure compliance with classical linear regression assumptions, confirming the absence of severe multicollinearity and heteroscedasticity.

Results and Discussion

Data Retrieval and Descriptive Analysis

Out of the 382 structured questionnaires distributed, 356 were retrieved fully completed and free of errors, representing an effective response rate of 93.2%.

Table 2 presents the descriptive analysis, displaying the mean and standard deviation for each item cluster across the research variables.

Table 2: Descriptive Statistics of Variables

Construct Variables	Mean Score	Standard Deviation	Interpretation
Green Knowledge Acquisition (GKA)	3.84	0.72	High Agreement
Eco-Innovation Mindset (EIM)	4.12	0.65	Very High Agreement

Construct Variables	Mean Score	Standard Deviation	Interpretation
Waste Minimization Orientation (WMO)	3.65	0.81	Moderate-High Agreement
Sustainable Entrepreneurship Dev. (SED)	3.91	0.69	High Agreement

The descriptive statistics indicate that students strongly perceive an Eco-Innovation Mindset (Mean = 4.12) as a critical driver of sustainable venture development. This is followed by Green Knowledge Acquisition (Mean = 3.84) and Waste Minimization Orientation (Mean = 3.65), reflecting general agreement across all three dimensions of green business practices.

Diagnostic Testing

To verify the validity of the regression model, collinearity diagnostics were performed to evaluate multicollinearity among the independent variables.

Table 3: Collinearity Diagnostics

Independent Construct Variables	Tolerance	Variance Inflation Factor (VIF)	Diagnostic Status
Green Knowledge Acquisition (GKA)	0.642	1.558	No Multicollinearity
Eco-Innovation Mindset (EIM)	0.589	1.698	No Multicollinearity
Waste Minimization Orientation (WMO)	0.711	1.406	No Multicollinearity

Because all computed Variance Inflation Factors (VIF) fell well below the conservative academic threshold of 5.0, and tolerance scores exceeded 0.20, multicollinearity was determined not to pose an issue for the model's estimations.

Regression Analysis and Hypotheses Testing

The ordinary least squares (OLS) multiple regression analysis evaluated the simultaneous effects of Green Knowledge Acquisition, Eco-Innovation Mindset, and Waste Minimization Orientation on Sustainable Entrepreneurship Development. Tables 4, 5, and 6 present the model summary, ANOVA results, and partial coefficients.

Table 4: Model Summary

Model Index	R	R-Squared (R2)	Adjusted R-Squared	Std. Error of the Estimate
1	0.748	0.560	0.556	0.4593

The model summary indicates a strong positive correlation ($R = 0.748$) between the combined green business practices and sustainable entrepreneurship development. The coefficient of determination ($R^2 = 0.560$) reveals that **56.0% of the total variance in sustainable student entrepreneurship development** within Rivers State is explained by the three independent variables in this model. The remaining 44.0% is attributable to external factors not captured in this study.

Table 5: Analysis of Variance (ANOVA)

Model	Sum of Squares	df	Mean Square	F-Statistic	Significance (p-value)
Regression	94.612	3	31.537	149.464	0.000

Model	Sum of Squares	df	Mean Square	F-Statistic	Significance (p-value)
Residual	74.272	352	0.211		
Total	168.884	355			

The ANOVA results confirm the overall statistical significance of the specified model. The calculated F-statistic ($F = 149.464, p < 0.01$) indicates that the probability of these regression results occurring by chance is virtually zero, validating the choice of variables for this model.

Table 6: Regression Coefficients

Independent Variables	Unstandardised B	Std. Error	Standardized Beta (β)	t-value	Sig. (p)
(Constant Intercept)	0.814	0.162	—	5.025	0.000
Green Knowledge (GKA)	0.328	0.041	0.342	8.000	0.000
Eco-Innovation (EIM)	0.441	0.046	0.415	9.587	0.000
Waste Minimization (WMO)	0.186	0.038	0.218	4.895	0.000

Hypotheses Testing and Interpretations

Testing Hypothesis 1 ($\mathbf{H_01}$): Table 6 reveals that Green Knowledge Acquisition exerts a positive and statistically significant partial effect on Sustainable Entrepreneurship Development ($\beta = 0.342, t = 8.000, p < 0.01$). Consequently, the null hypothesis $\mathbf{H_01}$ is rejected.

This indicates that a one-unit increase in green knowledge acquisition leads to a 0.342-unit increase in sustainable entrepreneurship development among students, holding all other variables constant.

Testing Hypothesis 2 ($\mathbf{H_02}$): The regression results show that an Eco-Innovation Mindset has the strongest relative effect on the dependent variable ($\beta = 0.415, t = 9.587, p < 0.01$). Thus, the null hypothesis $\mathbf{H_02}$ is rejected. This demonstrates that fostering an innovative mindset focused on ecological solutions significantly drives sustainable student entrepreneurship development in Rivers State.

Testing Hypothesis 3 ($\mathbf{H_03}$): Table 6 indicates that Waste Minimization Orientation also has a positive and significant impact on the dependent variable ($\beta = 0.218, t = 4.895, p < 0.01$). Therefore, the null hypothesis $\mathbf{H_03}$ is rejected. This confirms that a structural focus on lean operations, reduction of material waste, and circular economy principles significantly improves the capacity for sustainable entrepreneurship development.

Discussion of Empirical Findings

The quantitative results of this study demonstrate that green business practices are significant drivers of sustainable entrepreneurship development among tertiary institution students in Rivers State. The finding that **Green Knowledge Acquisition** significantly drives sustainable entrepreneurship development (beta = 0.342, $p < 0.01$) underscores the role of structural education. When students acquire explicit environmental literacy, it changes how they identify market opportunities, shifting their focus toward greener options. This aligns with the findings of Agu et al. (2021), who noted that explicit education for sustainable entrepreneurship enhances students' self-efficacy and intentions to launch green businesses.

Crucially, Eco-Innovation Mindset emerged as the most powerful predictor within the model (beta = 0.415, $p < 0.01$). This strong relationship highlights that simply possessing technical green knowledge is insufficient; students must develop a cognitive orientation that views ecological problems as

commercial opportunities. This finding corresponds with Ajor (2020), who observed that small businesses in Rivers State that adopted eco-innovations achieved stronger competitive advantages and superior long-term survival rates. Fostering this mindset during a student's formative years helps bridge the gap between academic theory and practical business application.

Finally, the significant effect of a Waste Minimization Orientation (beta = 0.218, $p < 0.01$) has practical implications within the context of Rivers State. Given the region's infrastructure challenges and limited startup capital, a focus on waste minimization encourages students to adopt lean structures and reuse local materials. This structural orientation aligns with findings from the Dr. Amadi Foundation, which demonstrated that circular business models and eco-product innovations significantly enhance the economic viability and resilience of small firms operating in challenging economic environments.

Conclusion

This study provides empirical evidence on the relationship between green business practices and sustainable entrepreneurship development among tertiary institution students in Rivers State. The analysis demonstrates that green knowledge acquisition, an eco-innovation mindset, and a waste minimization orientation explain a substantial proportion of the variance in sustainable student entrepreneurship development.

Among these factors, an eco-innovation mindset serves as the primary cognitive driver, while green knowledge provides the necessary foundation, and a waste minimization orientation offers a practical framework for resource-constrained environments.

The study concludes that expanding youth entrepreneurship to incorporate explicit environmental values is essential for building regional socio-ecological resilience. Cultivating a generation of student ecopreneurs offers a dual pathway to address graduate unemployment while generating localized solutions to the long-standing ecological challenges of the Niger Delta.

Recommendations

Based on these findings, the following recommendations were proposed:

1. Institutional Curriculum Reform: The National Universities Commission (NUC) and university administrators should update the mandatory entrepreneurship curriculum. Training should transition from generic retail business models to specialized modules on green business practices, eco-innovation metrics, and circular economy frameworks.
2. Establishment of Campus Green Incubators: Tertiary institutions in Rivers State should establish dedicated green business accelerators and ecopreneurship labs. These spaces can provide students with mentorship, access to clean-tech equipment, and the structural support needed to develop eco-friendly prototypes.
3. Targeted Green Venture Funding: The Rivers State Government, in partnership with private financial institutions and international environmental NGOs, should establish a dedicated *Youth Green Seed Capital Fund*. This initiative would offer micro-grants and low-interest loans specifically targeted at viable student-led green startups, helping transition academic business plans into operational enterprises.
4. Campus Recycling Partnerships**:** Universities should deploy campus-wide waste sorting and recycling programs. These initiatives can serve as practical training grounds for students, allowing them to test waste-to-wealth and upcycling business models in a real-world setting.

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GREEN BUSINESS AND SOCIAL ENTREPRENEURSHIP AS PREDICTORS OF ENTREPRENEURIAL SKILLS ACQUISITION AMONG BUSINESS EDUCATION STUDENTS IN THE UNIVERSITY OF CALABAR.

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Abstract:

This study investigated Green Business and Social Entrepreneurship as Predictors of Entrepreneurial Skills Acquisition among Business Education Students in the University of Calabar. Three objectives with their corresponding research questions and hypotheses, guided the study. The study adopted a descriptive survey research design. The population of the study comprises all fifty four (54) final year Business Education students in the University of Calabar in the 2025/2026 academic session. Since the population is relatively small and manageable, the researchers adopted a census sampling, whereby the entire population was used for the study. The instrument for data collection was a researchers developed questionnaire titled "Green Business and Social Entrepreneurship as Predators for Entrepreneurial Skills Acquisition Questionnaire (GBSEPESAQ)." The questionnaire was validated by three experts in the University of Calabar. To determine the reliability of the instrument, the instrument was subjected to pilot test and the data collected was analyzed using Cronbach's Alpha reliability index. The test result showed a reliability coefficient of 0.83. The instrument was administered to the respondents and 50 copies were successfully retrieved as against 54 copies printed. The research questions were answered using mean and standard deviation while the hypotheses were tested using independent t-test statistical analysis at 0.05 level of significance. The findings revealed low extent of green business skills and social entrepreneurship skills acquisition among students, which indicates that students' ability to apply environmental sustainability principles to entrepreneurial activities remains relatively limited and students are not sufficiently equipped to identify social problems and transform them into viable entrepreneurial opportunities. In conclusion, while the findings demonstrate the relevance and low level of green business and social entrepreneurship skills, a claim that green business and social entrepreneurship statistically predict entrepreneurial skills should be based on additional inferential evidence, such as correlation or multiple regression analysis. It was recommended among others that green business education and social entrepreneurship should be integrated more strongly into the curriculum.

Keywords: Green Business, Social Entrepreneurship, Entrepreneurial Skills, Predictor, skill acquisition, and Business Education.

Introduction

The increasing challenges of environmental degradation, climate change, unemployment, and social inequality have transformed the global business environment, making sustainability and social responsibility central to entrepreneurial development. Consequently, universities are expected to equip students with entrepreneurial competencies that not only promote economic growth but also address pressing environmental and social challenges. This shift has brought greater attention to the concepts of green business and social entrepreneurship as emerging approaches to entrepreneurship development that foster innovation, sustainability, and community development. (Alao & Alao, 2021).

Green business refers to business practices that minimize negative environmental impacts while promoting efficient resource utilization, environmental conservation, and sustainable economic development. It encourages entrepreneurs to develop environmentally friendly products, adopt cleaner production methods, and integrate sustainability into business operations. In Nigeria, green entrepreneurship has been identified as a viable strategy for addressing youth unemployment while

contributing to the achievement of the Sustainable Development Goals (SDGs). (Anabaraonye, Onnoghen, Nwafor & Obinna 2024). The Green entrepreneur sees the problems caused by climate change, environmental pollution, and global warming and perceives the business opportunities in waste management and recycling engaging in the process of waste recycling to ensure a sustainable environment and the sustainable economic growth of his/her community and nation (Anabaraonye, Okafor & Eriobu, 2019). Green Business is an ecofriendly business practice and operations which encourages the reuse of renewable energy and natural resources and reduction of resources wastage while providing high quality goods and services maintaining clean and healthy environment as well as business sustainability. To achieve this, entrepreneurial green skills are required. Entrepreneurial green skills are non-technical soft skills needed to perform ecofriendly business operations to promote healthy business environmental conversation and prosperity through prevention of environmental pollution, minimizing material wastage and recycling of resources. Examples of Green Skills are ability to recycle resources, ability to reuse materials, ability to reduce material waste (3R), creativity to design solution to environment issues and create ecofriendly practice. Green Business in the society is important in the following ways: job creation for graduates, creates opportunity for graduates' upgrade from job seekers to job creators (green job creators), helps to solve environmental problems through the creation of eco-friendly business practices. Green business is an ecofriendly business practice which encourages the reuse of renewable energy, recycling of resources especially energy by saving energy ability to maintain environmental cleanliness and save energy and healthy business environment.eg e-marking skills. These skills help to maintain green practices to ensure business safety and heathy living. Green skills are skills needed to prevent environmental pollution to maintain good and healthy business and occupational environment aim of environmental prosperity.

Social entrepreneurship strives to impact positively in the society with low profit intentions by proffering to social issues through innovative strategies. Social entrepreneurship offers a framework for addressing social challenges, empowering communities, and fostering innovation. Social entrepreneurship has been defined as an innovative, social value creating business activity that can occur within or across the non-profit, business, or government sectors, and the leaders of those enterprises, the "social entrepreneurs", have been characterized as being primarily interested in improving society rather than maximizing profits while nonetheless demanding high performance standards and accountability for results (Gutterman, 2025). Similarly, social entrepreneurship emphasizes the creation of innovative solutions to social problems through entrepreneurial initiatives that generate both social and economic value. Unlike conventional entrepreneurship, which primarily focuses on profit maximization, social entrepreneurship seeks to improve the welfare of communities by addressing issues such as poverty, unemployment, health, education, and environmental sustainability. Exposing business education students to social entrepreneurship will enhance multiple entrepreneurial skills among students such as: creativity, problem-solving ability, collaboration, and opportunity-recognition skills necessary for successful entrepreneurial practice.

Entrepreneurial skills acquisition has become a major objective of Business Education programmes in Nigerian universities because these skills enable graduates to become self-reliant, innovative, and capable of identifying and exploiting business opportunities. However, despite the inclusion of entrepreneurship education in university curricula, concerns remain regarding whether students acquire sufficient practical entrepreneurial competencies to succeed after graduation (Haruna Mamman & Oyelekan, 2025). Akamobi (2020) stated that entrepreneurial skills are those competencies required by individuals to assume, manage and sustain a business venture. Possession of entrepreneurial skills by university graduates will transform them from employees to employers and provide opportunities for establishment new business enterprises. Acquisition of entrepreneurial skills is a great weapon for destruction of poverty and economic frustration. Rowell (2020) stated that entrepreneurial skill acquisition is a step-by-step training approach given to individuals to empower them with lifelong skills for life transformation and positive contributions to the society. Examples of entrepreneurial skills include critical thinking, communication, financial management, digital competence, opportunity recognition, risk-taking, decision-making, innovation Problem solving skill, Communication skill, Leadership skill, Networking skill, accounting skill, Business management skill, Marketing skill, Risk management skill, Critical thinking, Emotional intelligence, entrepreneurial mindset, financial management skill, entrepreneurial mindset and creativity. In the words of Akeke and Eyo (2018), entrepreneurial skill acquisition reduces the high level of rural-urban migration and enhances graduates employability and self-reliance, as well as provides the youth with adequate training creativity and innovative in identifying noble business opportunities.

Business education is that aspect of vocational education which involves the preparation of learner with relevant skills, knowledge, competencies, abilities, values and experience needed to perform effectively

in a specific business occupation either as employee or entrepreneur (Otum and Oduma 2022). Business education students at the University of Calabar are expected to acquire entrepreneurial competencies that prepare them for self-employment and sustainable enterprise development. Integrating green business and social entrepreneurship into their learning experiences may strengthen these competencies by exposing students to environmentally sustainable business practices and socially innovative ventures. These approaches have the potential to improve students' entrepreneurial mindset, practical skills, and readiness to establish enterprises capable of generating economic, environmental, and social value (Shahid & Alarifi 2021).

Relatively, Alao and Alao (2021) investigated the influence of social entrepreneurship education on Business Education students in Nigeria. Using a descriptive survey design, the study sampled undergraduate Business Education students from selected universities. Data were collected using structured questionnaires and analyzed using descriptive statistics and regression analysis. The findings revealed that exposure to social entrepreneurship significantly improved students' opportunity recognition, leadership ability, creativity, problem-solving skills, and entrepreneurial intention. The study concluded that social entrepreneurship should be integrated into Business Education curricula to enhance students' entrepreneurial competencies and promote sustainable economic development.

Social entrepreneurship is identifying social problems and addressing the problem while attaining social change through the application of entrepreneurship theories, principles and practices. It deals with a search for social challenges and creation of social ventures to create social transformation. Social entrepreneurial organization are non-profit and non-governmental organization who raise funds through community events and activities. In addition, Shahid and Alarifi (2021) conducted a conceptual and empirical review on social entrepreneurship education and entrepreneurial competence among university students. The study synthesized evidence from higher education institutions across different countries and found that students who participated in social entrepreneurship programmes demonstrated higher levels of innovation, critical thinking, teamwork, and social responsibility than those who did not. The authors concluded that social entrepreneurship education serves as an effective mechanism for developing entrepreneurial skills required for solving societal challenges while creating sustainable businesses.

Furthermore, Anabaraonye et al. (2024) examined the role of green entrepreneurial skills in promoting sustainable production and economic development in Nigeria. Using a qualitative research approach involving document analysis and stakeholder interviews, the study found that green business practices encourage innovation, efficient resource utilization, environmental responsibility, and sustainable enterprise creation. The researchers concluded that equipping young entrepreneurs with green business competencies improves their capacity to establish environmentally sustainable ventures while contributing to national economic growth. Also, Alao, et al (2024) investigated the development of entrepreneurial skills among Business Education students for sustainability in Nigerian universities. The study adopted a survey research design involving Business Education students from selected tertiary institutions. Data were analyzed using mean scores and inferential statistics. The findings indicated that entrepreneurship education integrated with sustainability concepts significantly enhanced students' innovation, business planning, communication, financial management, and problem-solving skills. The researchers recommended incorporating green business and sustainability education into entrepreneurship programmes to improve graduates' employability and self-reliance. Moreover, Haruna, Mamman, and Oyelekan (2025) examined the impact of entrepreneurship education on entrepreneurial intention and skills acquisition among Business Education students in tertiary institutions in North-Eastern Nigeria. Using a descriptive survey design, data were collected from undergraduate students through structured questionnaires and analyzed using multiple regression analysis. The study found that entrepreneurship education positively influenced entrepreneurial skills acquisition, especially when practical learning experiences and sustainability-oriented business practices were emphasized. The researchers concluded that entrepreneurship education should be strengthened through experiential learning and exposure to innovative business models.

Although previous studies have established significant relationships between green business, social entrepreneurship, and entrepreneurial skills acquisition, most focused on general entrepreneurship education or students from multiple institutions. There is limited empirical evidence specifically examining green business and social entrepreneurship as predictors of entrepreneurial skills acquisition among Business Education students in the University of Calabar and none of the research was carried out in the university of Calabar. This study therefore seeks to bridge this gap by investigating the predictive influence of these two variables on entrepreneurial skills acquisition among Business Education students in the University of Calabar.

Statement of the problem

Entrepreneurship education was introduced into Nigerian universities to equip students with the knowledge, skills, and competencies required for self-employment, innovation, and job creation. Business Education programmes, in particular, are expected to produce graduates who possess entrepreneurial skills that enable them to identify business opportunities, establish sustainable enterprises, and contribute meaningfully to economic development. Despite these expectations, there is growing concern that many Business Education graduates still lack the practical entrepreneurial skills needed to compete effectively in today's dynamic and sustainability-driven business environment. This situation is reflected in the increasing rate of graduate unemployment, dependence on paid employment, and limited capacity among graduates to establish viable businesses.

The emergence of environmental challenges such as climate change, resource depletion, pollution, and increasing social problems has shifted global attention toward sustainable business practices and socially responsible entrepreneurship. Consequently, green business and social entrepreneurship have become important approaches for developing entrepreneurial competencies that promote environmental sustainability, innovation, and social value creation.

Although studies have reported positive relationships between entrepreneurship education, green business, social entrepreneurship, and entrepreneurial skills acquisition, much of the existing research has focused on entrepreneurship education in general or has been conducted in institutions outside the University of Calabar. There is limited empirical evidence on the extent to which green business and social entrepreneurship predict entrepreneurial skills acquisition among Business Education students in the University of Calabar. This gap in knowledge makes it difficult to determine whether integrating these sustainability-oriented entrepreneurial approaches significantly contributes to developing the entrepreneurial competencies expected of Business Education graduates. It is against this background that this study sought to examine green business and social entrepreneurship as predictors of entrepreneurial skills acquisition among Business Education students in the University of Calabar.

Research objectives

The major objectives of this study examined green business and social entrepreneurship as predictors of entrepreneurial skills acquisition among Business Education students in the University of Calabar.

The study was designed specifically to examine the extent to which:

1. Business Education students acquire entrepreneurial skills through green business and social entrepreneurship.
2. Green business predicts entrepreneurial skills acquisition among Business Education students in the University of Calabar.
3. Social entrepreneurship predicts entrepreneurial skills acquisition among Business Education students in the University of Calabar.

Research Questions

The following research questions guided the study:

1. To what extent do business education students acquire entrepreneurial skills through green business and social entrepreneurship?
2. How does green business predict entrepreneurial skills acquisition among business education students in the University of Calabar?
3. To what extent does social entrepreneurship predicts business education students' entrepreneurial skills acquisition in the University of Calabar?

Research Hypotheses

The following null hypotheses will be tested at the 0.05 level of significance:

1. There is no significant difference between the mean responses of male and female respondents on the extent of entrepreneurial skills acquisition among Business Education students in the University of Calabar.

2. There is no significant differences between the responses of male and female respondents on how green business predicts entrepreneurial skills acquisition among business education students in the University of Calabar

3. There is no significant difference between the mean responses of male and female respondents on extent social entrepreneurship predicts business education students' entrepreneurial skills acquisition in the University of Calabar?

Method

This study adopted the descriptive survey research design. The design is considered appropriate because it enables the researcher to collect data from respondents to determine the extent to which green business and social entrepreneurship predict entrepreneurial skills acquisition among Business Education students. The design also facilitates the collection of quantitative data for analyzing the relationships among the variables under investigation without manipulating them. The study was

conducted at the University of Calabar, Cross River State, Nigeria. The University of Calabar is one of Nigeria's federal universities and offers Business Education programmes through its department of business education in Faculty of Vocational and Entrepreneurial Education. The institution provides entrepreneurship education aimed at equipping students with the knowledge, skills, and competencies required for self-employment, innovation, and sustainable enterprise development. The population of the study comprises all fifty-four (54) final-year Business Education students in the University of Calabar during the 2025/2026 academic session. The choice of final-year students is based on the assumption that they have completed most of the entrepreneurship and business education courses and are therefore in a better position to provide reliable information regarding green business, social entrepreneurship, and entrepreneurial skills acquisition. Since the population is relatively small and manageable, the researcher adopted a census sampling technique, whereby the entire population of 54 final-year Business Education students was utilized. This approach eliminates sampling error and ensures that every member of the population participates in the study. The instrument for data collection was a researchers-developed questionnaire titled "Green Business and Social Entrepreneurship as Predators for Entrepreneurial Skills Acquisition Questionnaire (GBSEPESAQ)." The questionnaire consisted of two sections. Section A elicited respondents' demographic information on gender while Section B contained items measuring the study variables: Green Business, Social Entrepreneurship, and Entrepreneurial Skills Acquisition. The questionnaire items will be structured on a four-point rating four scale as follows: Very High Extent (VHE) = 4, High Extent (HE) = 3, Low Extent (LE) = 2, Very Low Extent (VLE) = 1. The questionnaire was subjected to face and content validation by three experts, two from Business Education and one from Measurement and Evaluation in the University of Calabar. Their observations and suggestions helped to restructure the instrument before its final administration. The reliability of the instrument was determined through a pilot study involving Business Education students from University of Cross River State, Calabar who are not part of the study population. Data obtained from the pilot test was analyzed using Cronbach's Alpha reliability coefficient to determine the internal consistency of the instrument. The test result showed a reliability coefficient of 0.83 which is acceptable. The researchers administered the questionnaire independently to the respondents using on- the- spot method. The completed questionnaires were retrieved immediately with a retrieval rate of 93% showing that 50 copies completed were retrieved as against 54 copies printed. Data collected was coded and analyzed using the Statistical Package for the Social Sciences (SPSS). Research questions were answered using mean and standard deviation. A criterion mean of 2.50 was used as the benchmark for decision-making. Any item with a mean score of 2.50 and above was regarded as an indication for acceptance of the item statement, while items with mean scores below 2.50 were regarded as an indication for rejection of the item statement. The hypotheses formulated for the study were tested using independent t-test statistical analysis at 0.05 level of significance to determine the predictive influence of green business and social entrepreneurship on entrepreneurial skills acquisition among business education students in the University of Calabar. The independent t-test was considered appropriate because the study involved comparison of responses between two independent groups. The decision rule for the hypotheses was that any probability value (p-value) less than 0.05 led to the rejection of the null hypothesis, while any probability value greater than 0.05 resulted in the acceptance of the null hypothesis.

Results

Research Question 1: To what extent does green business influence entrepreneurial skills acquisition among Business Education students in the University of Calabar?

Table 1: Mean and Standard Deviation of Respondents' Responses on Entrepreneurial Skills Acquisition among Business Education Students in the University of Calabar (N = 50)

S/N	Entrepreneurial skills acquisition statements	MEAN	SD	DECISION
1	To what extent does your Business Education programme expose you to the concept of green business?	1.07	0.75	Low Extent
2	To what extent have you acquired knowledge of environmentally friendly business practices?	2.74	1.07	High Extent
3	To what extent have you learned how businesses can reduce waste and environmental pollution	1.70	0.04	Low Extent
4	what extent has green business education helped you identify environmentally sustainable business opportunities?	1.64	0.66	Low Extent
5	To what extent have you learned to develop products or services that minimize environmental damage?	1.62	0.60	Low Extent
6	To what extent has green business education improved your ability to identify business opportunities	1.72	0.76	Low Extent
7	what extent has green business education enhanced your creativity in developing business ideas?	1.90	0.95	Low Extent
8	To what extent can you identify business opportunities arising from environmental challenges?	1.72	0.81	Low Extent
9	what extent has green business education developed your ability to innovate?	1.68	0.74	Low Extent
10	To what extent has green business education improved your problem-solving skills?	1.68	0.74	Low Extent
	Grand Mean	**1.81**		**Low Extent**

Table 1 shows the mean and standard deviation of respondents' ratings on entrepreneurial skills acquisition through Business Education. The results indicate that the respondents generally reported a low extent of entrepreneurial skills acquisition, as reflected by the grand mean of 1.81. The highest mean score was recorded for the statement concerning the acquisition of knowledge of environmentally friendly business practices, with a mean of 2.74 and standard deviation of 1.07, indicating a high extent. This was followed by the statement on enhanced creativity in developing business ideas, which recorded a mean of 1.90 and standard deviation of 0.95. The lowest mean was recorded for the statement concerning the development of products or services that minimize environmental damage, with a mean of 1.62 and standard deviation of 0.60. Overall, the findings suggest that although students have acquired some knowledge of environmentally friendly business practices, the broader acquisition of entrepreneurial skills related to green business remains relatively low.

Research Question 2: How does green business predict entrepreneurial skills acquisition among business education students in the University of Calabar?

Table 2: Mean and Standard Deviation of Respondents' Responses on how green business predicts entrepreneurial skills acquisition among business education students in the University of Calabar (N = 50)

S/N	Green business item statements	MEAN	SD	DECISION
11	Extent to which Business Education exposes students to the concept of green business	1.68	0.77	Low Extent

12	I have acquired the ability to identify business opportunities that promote environmental sustainability.	1.56	0.64	Low Extent
13	I have acquired the ability to develop environmentally friendly products and services.	1.52	0.54	Low Extent
14	I have acquired the ability to identify ways of reducing waste in business activities.	1.70	0.76	Low Extent
15	I have acquired the ability to develop innovative business ideas that address environmental problems.	1.84	0.91	Low Extent
16	I have acquired problem-solving skills for addressing environmental challenges through business activities.	1.50	0.51	Low Extent
17	I have acquired the ability to make business decisions that consider environmental sustainability	1.60	0.67	Low Extent
18	I have acquired the ability to identify and utilize environmentally sustainable business resources.	2.86	1.01	High Extent
19	I have acquired creativity and innovation skills through green business activities.	1.58	0.67	Low Extent
20	I have acquired the ability to identify market opportunities for environmentally friendly products and services.	1.66	0.75	Low Extent
	Grand Mean	**1.75**		**Low Extent**

Table 2 indicates that the respondents generally rated their acquisition of green business skills at a low extent, with a grand mean of 1.75. The highest mean score of 2.86 was recorded for the ability to identify and utilize environmentally sustainable business resources, with a standard deviation of 1.01. This was the only item in this category that fell within the high-extent range. The result suggests that students may have comparatively better awareness of sustainable resources than of other practical green business competencies. This falls within the high extent category. The next highest mean was 1.84 for the ability to develop innovative business ideas that address environmental problems. The lowest mean score was 1.50, recorded for problem-solving skills for addressing environmental challenges through business activities. The result therefore suggests that the respondents' acquisition of practical green business skills is generally low, although they appear to have comparatively better ability to identify and utilize environmentally sustainable business resources.

Research Question 3: To what extent does social entrepreneurship predicts business education students' entrepreneurial skills acquisition in the University of Calabar?

Table 3: Mean and Standard Deviation of Respondents' Responses on how social entrepreneurship predicts entrepreneurial skills acquisition among business education students in the University of Calabar (N = 50)

S/N	Social Entrepreneurship Statements	Mean	SD	DECISION
21	To what extent does your Business Education programme expose you to the concept of social entrepreneurship?	1.60	0.67	Low Extent
22	To what extent have you acquired knowledge of how businesses can address social problems?	1.52	0.54	Low Extent
23	To what extent have you learned to identify social problems that can be addressed through entrepreneurial activities?	1.52	0.54	Low Extent
24	To what extent has social entrepreneurship education helped you develop solutions to community problems?	1.60	0.49	Low Extent
25	To what extent have you learned to create businesses that generate both social and economic value?	1.84	0.91	Low Extent
26	To what extent has social entrepreneurship enhanced your creativity and innovation skills?	1.52	0.54	Low Extent
27	To what extent has social entrepreneurship education improved your ability to recognize opportunities in your community?	1.72	0.73	Low Extent
28	To what extent can you develop business ideas that address social needs?	1.66	0.75	Low Extent
29	To what extent has social entrepreneurship education increased your confidence to start a business?	1.52	0.65	Low Extent
30	To what extent has social entrepreneurship education improved your decision-making skills?	1.66	0.75	Low Extent
	Grand Mean	**1.62**		**Low Extent**

Table 3 shows that the respondents generally indicated a low extent of social entrepreneurship skills acquisition, with a grand mean of 1.62. The highest mean score was 1.84, obtained for the statement relating to the ability to create businesses that generate both social and economic value. However, this still falls within the low extent category. This was followed by the ability to recognize business opportunities in the community, which recorded a mean of 1.72. The lowest mean scores of 1.52 were recorded for the acquisition of knowledge of how businesses can address social problems, identification of social problems that can be addressed through entrepreneurial activities, enhancement of creativity and innovation skills, and confidence to start a business. These findings indicate that the respondents generally perceive their exposure to and acquisition of social entrepreneurship skills as limited.

Test of Hypothesis

H01: There is no significant difference between the mean responses of male and female respondents on the extent of entrepreneurial skills acquisition among Business Education students in the University of Calabar.

Table 4: Independent t-test Analysis on the mean responses of male and female respondents on the extent of entrepreneurial skills acquisition among Business Education students in the University of Calabar.

Variables	N	Mean	SD	Df	t-cal	t-crit	Sig.	Decision
Male Respondents	12	3.46	0.69					

				78	1.27	1.99	0.208	Accepted
Female Respondents	38	3.41	0.73					

The result presented in Table 4 revealed that the calculated t-value of 1.27 was less than the critical t-value of 1.99 at 78 degrees of freedom and 0.05 level of significance. In addition, the significance value of 0.208 was greater than 0.05. Therefore, the null hypothesis was accepted. This implies that there is no significant differences between the responses of respondents on green business as a predictor of entrepreneurial skills acquisition among Business Education students in the University of Calabar based on gender. The finding suggests that both male and female students similarly support that green business influences entrepreneurial skills acquisition among Business Education students.

H02: There is no significant differences between the responses of male and female respondents on how green business predicts entrepreneurial skills acquisition among business education students in the University of Calabar

Table 5: Independent t-test Analysis on the mean responses of male and female respondents on how green business predicts entrepreneurial skills acquisition among business education students in the University of Calabar.

Variables	N	Mean	SD	Df	t-cal	t-crit	Sig.	Decision
Male Respondents	12	3.45	0.71					
				78	1.11	1.99	0.27	Accepted
Female Respondents	38	3.42	0.68					

The results in Table 5 indicated that the calculated t-value of 1.11 was less than the critical t-value of 1.99 at 78 degrees of freedom and 0.05 level of significance. The significance value of 0.270 was also greater than 0.05. Therefore, the null hypothesis was accepted. This means that there is no significant difference between the responses of male and female respondents on Social entrepreneurship influence on entrepreneurial skills acquisition among Business Education students in the University of Calabar. Both groups similarly agreed that social entrepreneurship predicts entrepreneurial skills acquisition.

H03: There is no significant difference between the mean responses of male and female respondents on extent social entrepreneurship predicts business education students' entrepreneurial skills acquisition in the University of Calabar?

Table 6: Independent t-test Analysis on the mean responses of male and female respondents on extent social entrepreneurship predicts business education students' entrepreneurial skills acquisition in the University of Calabar?

Variables	N	Mean	SD	Df	t-cal	t-crit	Sig.	Decision
Male	12	3.5	0.67					
				78	1.18	1.99	0.241	Accepted
Female	38	3.45	0.71					

The independent t-test analysis revealed that male respondents had a mean score of 3.50 (SD = 0.67), while female respondents had a mean score of 3.45 (SD = 0.71) regarding the extent to which social entrepreneurship predicts entrepreneurial skills acquisition among business education students in the University of Calabar. The result showed a calculated t-value of 1.18, which was lower than the critical t-value of 1.99 at 78 degrees of freedom. Furthermore, the significance value of 0.241 was greater than the 0.05 level of significance. Consequently, the null hypothesis was retained, indicating that there is no significant difference in the mean responses of male and female respondents. This implies that both male and female respondents generally have similar perceptions of the role of social entrepreneurship in predicting entrepreneurial skills acquisition among business education students.

Discussion of Findings

The study examined green business and social entrepreneurship as predictors of entrepreneurial skills acquisition among business education students in University of Calabar. The first research question revealed that respondents generally reported a low extent of entrepreneurial skills acquisition through the business education programme. This finding suggests that although students may have been exposed to entrepreneurial concepts, the programme may not be providing sufficient opportunities for

students to develop and apply entrepreneurial competencies in practical situations. This is important because entrepreneurship education is expected not only to provide theoretical knowledge but also to develop students' ability to recognize opportunities, innovate, solve problems and translate ideas into viable business activities. Maheshwari et al. (2023) noted that entrepreneurship education is an important educational factor in shaping students' entrepreneurial intentions and developing entrepreneurial knowledge and cognitive and non-cognitive skills. There is an indication of a high extent of acquisition of knowledge of environmentally friendly business practices which suggests that students have acquired some theoretical understanding of environmentally responsible business practices. This finding is consistent with the broader objectives of education for sustainable development, which emphasizes equipping learners with knowledge, skills, values and attitudes that enable them to respond responsibly to environmental, economic and social challenges (UNESCO, 2026). The finding revealed a possible gap between knowledge acquisition and practical entrepreneurial competence. Students may understand the principles of green business but may not have sufficient opportunities to apply them through practical projects, product development or business simulations. A study by Hou et al. (2023) found that university-based entrepreneurship education contributes to the development of entrepreneurial competencies, including the recognition of business opportunities.

The second research question revealed a low extent of acquisition of green business skills, which indicates that students' ability to apply environmental sustainability principles to entrepreneurial activities remains relatively limited. The relatively high score in this area is encouraging because sustainable entrepreneurship requires entrepreneurs to recognize environmental issues as potential opportunities for innovation and business development. This is in consonance with Yahya et al. (2021) who examined sustainable entrepreneurial intentions among university students and specifically incorporated education for sustainable entrepreneurship into its model, demonstrating the relevance of sustainability-oriented entrepreneurship education within the Nigerian higher-education context. This result is also supported by Akeke et al (2022) who stated that more than half business education students graduating from the universities each year are left without job and most of them lacks employability skills needed to perform in the employment market thereby exposed them untold poverty and hardship.

However, there is very low extent of acquisition of green business skills which suggests that students may not have sufficient practical competence to convert environmental challenges into innovative business solutions. This finding is consistent with the argument of Hermann and Bossle (2020) that sustainability education needs to incorporate entrepreneurial competencies such as foresight, complex problem-solving and interdisciplinary thinking rather than treating sustainability only as a body of theoretical knowledge. More recent evidence also suggests that entrepreneurship education can strengthen green entrepreneurial intentions through mechanisms such as green entrepreneurial self-efficacy and environmental awareness (Mambali et al., 2024). The finding also suggests that business education programme may need to move beyond the teaching of environmental concepts and place greater emphasis on experiential green entrepreneurship education. Students could be exposed to practical activities such as recycling enterprises, waste-to-value projects, development of eco-friendly products, sustainable resource management and environmental business challenges.

The findings on the third question revealed poor perception of social entrepreneurship skills acquisition and high perception of ability to create businesses that generate both social and economic value among students. This suggests that respondents may have some awareness of the dual purpose of social entrepreneurship but may lack sufficient practical experience in developing businesses capable of creating both economic and social value. The findings also indicate that students may not be sufficiently equipped to identify social problems and transform them into viable entrepreneurial opportunities. This finding is supported by the literature on social entrepreneurship education by Bazan et al. (2020) who found that university environments and support systems can play an important role in shaping students' social entrepreneurial intentions. The low mean scores recorded for knowledge of how businesses can address social problems, identification of social problems that can be addressed through entrepreneurial activities, creativity and innovation, and confidence to start a business are particularly noteworthy.

Conclusion

The study concludes that students possess relatively better knowledge of environmentally friendly business practices than practical abilities to develop environmentally friendly products, recognize environmental business opportunities and solve environmental problems through entrepreneurial activities. This indicates a gap between what students know and what students can practicalize. that students have not acquired adequate competencies in general entrepreneurial skills, green business and social entrepreneurship. Students possess limited competence in identifying social and

environmental problems, developing innovative solutions and converting such problems into sustainable business opportunities. Green business and social entrepreneurship are important educational pathways through which Business Education can develop entrepreneurial skills relevant to contemporary environmental and social challenges. However, based on the descriptive results presented in this study, the current level of acquisition of these competencies remains low.

Recommendations

Based on the findings and conclusion of the study, the following recommendations are made:

1. Green business education and social entrepreneurship should be integrated more strongly into the curriculum.
2. Lecturers should adopt experiential and student-centered teaching approaches.
3. University of Calabar should strengthen partnerships with entrepreneurs, industries and non-governmental organizations for students practical skill acquisition.

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SOCIAL ENTREPRENEURSHIP AND DEVELOPMENT OF PROBLEM-SOLVING SKILLS AMONG BUSINESS EDUCATION STUDENTS IN TERTIARY INSTITUTIONS IN OGUN STATE, NIGERIA

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Abstract

The rising cases of socially detrimental entrepreneurial activities prompted the researcher to examine the influence of social entrepreneurship on the development of problem-solving skills among Business Education students in tertiary institutions in Ogun State, Nigeria. The study was guided by two purposes, twr research questions, and one null hypothesis. The researcher adopted correlational survey research design while the population of the study consisted of 888 final year Business Education students registered for the 2025/2026 academic sessions in four public tertiary institutions offering Business Education programme in Ogun State. The study sample comprised 275 final year students. A structured questionnaire was used as instrument for data collection. The data collected were analysed using simple percentage, frequency count, mean and standard deviation for the research questions, while Linear Regression Analysis was used to test the null hypothesis at 0.05 level of significance. Findings of the study revealed among others that social entrepreneurship has significant influence (F (1.273=1.514; p= 0.617) on the development of problem-solving skills among Business Education students in tertiary institutions in Ogun State, Nigeria. Finally, the study recommended among others, that Business Education lecturers should adopt case study method of instruction by putting the students in different groups to explore the immediate surroundings of their institutions, identify societal problems, analyse available information, generate appropriate solutions, and assess the outcomes to solve the problems.

Keywords: Business Education, Problem-solving Skills, Social Entrepreneurship, Societal Orientation, and Innovation

Introduction

Two major elements of the 21st century workplace and business environment are dynamism and unpredictability. These two elements often give rise to unforeseen circumstances and challenges. It is therefore imperative that anyone operating in the 21st century workplace and business environment must possess transversal skills. Some of the most prominent transversal skills are problem-solving skills. According to Adebanjo et. al., (2025), problem solving skills refer to the ability of students to identify problems, analyse available information, generate appropriate solutions, and evaluate outcome to resolve challenges effectively. Similarly, Calma (2025) described problem solving skills as the ability to explore and understand problems, formulate possible solutions, plan and execute strategies, and monitor and reflect on the effectiveness of the solutions in real-life situations. The Organization for Economic Cooperation and Development (OECD) (2021) defined problem-solving skills as an individual's ability to engage in cognitive processing to understand and resolve situations where the method of solution is not immediately obvious, including exploring the problem. It involves planning, executing strategies, and reflecting on the results. From the foregoing, it is obvious that problem-solving skills are hinged on proactive and analytical reasoning.

Closely related to the concept of problem-solving is social entrepreneurship. According to Lancastre et al (2023), social entrepreneurship is a multidimensional concept that combines entrepreneurial behavior with the primary objective of creating social value through innovative, sustainable and market oriented solutions to societal problems. In like manner, Glasbeck et al (2024) described social entrepreneurship as entrepreneurial market-based approaches, and available resources to address persistent social or environmental challenges while creating sustainable social value. In a nutshell, social entrepreneurship refers to the process of identifying and exploiting opportunities to develop innovative, financially sustainable solutions that prioritise social impact over profit maximization while creating long-term value for communities.

The Business Education programme is designed to inculcate technical skills (Hard skills) and transversal skills (Soft skills) in individuals. Udo et al (2025) described Business Education as a programme of study that prepares students for job competence, occupational intelligence, and work

adjustment. It also promotes creativity, self-actualisation, and critical thinking, which assists the learners in problem-solving and skill acquisition. Business Education is one of the most prominent and viable programme in tertiary institutions of learning in Nigeria, it is therefore very expedient that Business Education students be adequately grounded in social entrepreneurship and problem-solving so as to remain relevant in the 21st century world of work and the global economy.

The relationship between social entrepreneurship and problem-solving skills is positive and complementary. Social entrepreneurship requires individuals to identify social problems and develop innovative, sustainable solutions. Consequently, strong problem-solving skills are essential for successful social entrepreneurship, while engaging in social entrepreneurship also strengthens problem-solving abilities.

This study was anchored on two theories namely: The Social Learning Theory propounded by Albert Bandura in 1977 and the Experiential Learning Theory propounded by Kolb (1984). Bandura's social learning theory posits that people acquire knowledge, skills and behaviours through observation, imitation, modelling and direct experience. The theory is relevant to this study because it explains how social entrepreneurship serve as a practical learning environment that promotes the development of problem-solving skills. Kolb (1984) proposed that learning is achieved through experience and follows a cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation. The theory is applicable to this study because the theory supports the notion that practical engagement is essential for developing higher-order thinking skills. Social entrepreneurship exposes Business Education students to real-life social and economic challenges. As students engage in projects, reflect on their experiences, develop new ideas, and test solutions they strengthen their problem solving abilities.

Recent empirical studies indicate that social entrepreneurship education enhances students' ability to identify societal problems, think creatively and develop practical solutions. Ibrahim and Park (2023), evaluated social entrepreneurship education programme designed for Nigerian students using a pre-test and post-test research design. The study found that participation in the programme significantly improved learners' social entrepreneurship competencies, including empathetic problem identification, creative problem-solving, innovation, and social impact orientation.

Haruna (2026) investigated the influence of entrepreneurship education on entrepreneurial skills and intentions among Business Education students in tertiary institutions in North Eastern Nigeria, using a mixed-methods research design. The findings showed that entrepreneurship education significantly enhanced communication, ICT and problem-solving skills. Students who engaged in practical and experiential entrepreneurial activities demonstrated stronger problem-solving skills than those exposed mainly to theoretical instruction.

Mamman et al (2025) investigated the influence of human relations, innovation, and problem-solving skills on the entrepreneurial success of Business Education graduates in South-West, Nigeria. The study reported that problem-solving skills significantly contributed to entrepreneurial skills, while innovation and interpersonal skills further strengthened graduates entrepreneurial performance.

The reviewed studies consistently demonstrate that social entrepreneurship and entrepreneurship education positively influence the development of problem-solving skills through experiential learning, innovation, collaborative activities and community-based projects. However, there remains limited empirical research specifically examining the direct relationship between social entrepreneurship and problem-solving skills among Business Education students in tertiary institutions in Ogun State, Nigeria. This gap justifies the need for the present study, which sought to provide empirical evidence within the Ogun State context.

Statement of the Problem

The increasing rate of unemployment, poverty and social challenges in Nigeria has heightened the need for graduates who possess not only academic knowledge but also practical skills for identifying and solving societal problems. Business Education programmes in tertiary institutions are expected to equip students with entrepreneurial competencies that will enable them to become innovative, self-reliant, and capable of creating sustainable solutions to social and economic problems. Social entrepreneurship has emerged as an important approach to achieving these objectives because it combines entrepreneurial principles with a commitment to addressing societal needs through innovative and sustainable ventures.

Despite the growing emphasis on entrepreneurship education in Nigerian tertiary institutions, the researcher observed that many Business Education graduates still exhibit inadequate problem solving skills. They often experience difficulties in identifying community needs, generating innovative solutions, making sound decisions, adapting to changing business environment and transforming social challenges into entrepreneurial opportunities.

Several studies (Haruna 2026; Mamman et al, 2025, and Ibrahim & Park, 2023) have shown that entrepreneurship education promotes creativity, innovation, collaboration and opportunity recognition, all of which are essential elements of effective problem solving skills. However, majority of the existing literature focused on entrepreneurial intention, venture creation, and employability while limited empirical attention has been given to the relationship between social entrepreneurship and the development of problem-solving skills among Business Education students, particularly in tertiary institutions in Ogun State, Nigeria.

Consequently, there is insufficient empirical evidence to determine the extent to which social entrepreneurship influences students' ability to identify, analyse and solve real-life social and business problems, thus creating a knowledge gap which this study sought to fill. It is against this background that the researcher investigated the relationship between social entrepreneurship and development of problem-solving skills among Business Education students in Ogun State, Nigeria, in order to provide empirical evidence that inform curriculum development, formulation of appropriate entrepreneurship education policies, and design of effective interventions that boost students' problem-solving skills through social entrepreneurship education.

Purpose of the Study

The main purpose of this study was to examine the relationship between social entrepreneurship and the development of problem-solving skills among Business Education student in tertiary institutions in Ogun State, Nigeria. Specifically, the study:

1. Identified essential elements of social entrepreneurship
2. Examined the essential components of problem-solving skills

Research Questions

The following research questions guided the study

1. What are the essential elements of social entrepreneurship?
2. What are the essential components of problem-solving skills?

Research Hypothesis

The following null hypothesis was tested at 0.05 level of significance

Ho1: Social entrepreneurship has no significant influence on the development of problem-solving skills among Business Education students in tertiary institutions in Ogun State, Nigeria.

Methodology

The study adopted the correlational survey research because the design enabled the researcher to determine the relationship between the social entrepreneurship (independent variable) and development of problem-solving skills (dependent variable). The population of the study consisted of four public tertiary institutions offering Business Education programme in Ogun State, and final year students registered for the 2025/2026 academic session. The sample for the study comprised 276 final year Business Education students. The sample was selected using the Taro Yamene sample selection formula as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Where

n = sample size

N = Total population size

1 = constant

e = sampling error (0.05)

$$\text{therefore, } n = \frac{888}{1 + 890\ (0.05)^2}$$

$$n = \frac{888}{1 + 890\ (0.0025)}$$

$$n = \frac{888}{1 + 2.225}$$

$$n = \frac{888}{3.225}$$

$$n = 275$$

The multistage sampling technique was adopted for the study. At the first stage, purposive random sampling technique was used to select only final year Business Education Students in the four selected tertiary institutions. At the second stage, proportionate random sampling technique was used to select the respondents. The breakdown of the population and sample is presented in the table below:

Table 1: Population and Sample for the Study

S/N	Institutions	Population of the final year students	Sample
1	Federal College of Education, Abeokuta	144	45
2	Olabisi Onabanjo University, Ago-Iwoye	236	73
3.	Tai Solarin Federal University of Education, Ijagun	416	129
4.	Sikiru Adetona College of Education, Science and Technology, Omu Ijebu	92	28
	TOTAL	**888**	**275**

Source: Offices of the Heads of Department

A percentage rate of 31% was used to determine the proportional sample selection. A structured questionnaire tagged, Social Entrepreneurship and Problem-Solving Skills Questionnaire (SEPSSQ) was used to obtain data from the respondents. The instrument consisted of two parts. The research instrument was validated by two experts in Business Education and one expert in Test and Measurement from the Lagos State University, Ojo for content and construct validity. A pilot study was conducted at the University of Lagos, using 30 final year Business Education students. The final draft of the instrument was administered twice on the pilot study sample within an interval of two week. The test-retest method of reliability was adopted while the results of the first and second administrations were analysed using Pearson Product Moment Correlations which yielded a coefficient of 0.78, meaning that the research instrument was adequate and reliable. Copies of the research instrument were administered on the respondents in their various institutions with the help of research assistants. The data gathered were analysed using frequency count, mean and standard deviation to answer the research questions, while the null hypothesis was tested at 0.05 level of significance, using Linear Regression Analysis (LRA). The following boundary units were adopted for the research question items

Response Categories	Points	Boundary Limits
Strongly Agree (SA)	4	3.25-4.00
Agree (A)	3	2.50- 3.24
Disagree (D)	2	1.75-2.49
Strongly Disagree	1	1.00-1.74

Decision rule of 2.50 was applied for the questionnaire items, while the hull hypothesis was rejected if the regression p-value (sig) is less than or equal to 0.05, otherwise the Ho was retained.

Results

Research Question 1: What are the essential elements of social entrepreneurship?

Table 2: Mean and Standard deviation of responses on the essential elements of social entrepreneurship

S/N	Essential Elements	Mean	SD	Remarks
1	Social mission orientation	3.25	0.74	Strongly Agree
2	Social innovation	3.22	0.80	Agree
3.	Opportunity recognition	3.28	0.82	Strongly Agree
4.	Social value creation	3.38	0.71	Strongly Agree
5.	Community engagement	3.26	0.72	Strongly Agree
6.	Resource mobilization	3.23	0.75	Agree
7.	Sustainability orientation	3.20	0.77	Agree
8.	Ethical leadership and accountability	3.18	0.85	Agree
9.	Environmental adaptability	3.30	0.68	Strongly Agree
10	Linguistic proficiency	3.37	0.78	Strongly Agree

N= 275, Decision rule = 2.50, Weighted Mean/(SD) = 3.27/ 0.76

Source: Field survey, 2026

With a weighted mean of 3.27, the results in Table 2 showed that respondents strongly agreed that all the items are essential elements of social entrepreneurship. The weighted standard deviation of 0.76 implied that the responses were very similar.

Research Question 2: What are the essential components of problem-solving skills?

Table 3: Mean and standard deviation of responses on the essential components of problem-solving skills.

S/N	Components	Mean	SD	Remarks
1	Problem identification	3.26	0.55	Strongly Agree
2	Problem analysis	3.10	0.73	Agree
3.	Critical thinking	3.36	0.78	Strongly Agree
4.	Creative thinking	3.34	0.77	Strongly Agree
5.	Effective decision making	3.35	0.74	Strongly Agree
6.	Solution implementation	3.07	0.84	Agree
7.	Evaluation and reflection	3.04	0.76	Agree
8.	Monitoring and assessment	3.31	0.80	Strongly Agree
9.	Effective communication	2.80	0.86	Agree
10	Analytical thinking	3.02	0.84	Agree

N= 275, Decision rule = 2.50, Weighted Mean/(SD) = 3.17/ 0.77

Source: Field survey, 2026

The result in Table 3 indicated that respondents agreed that all the items are essential components of problem-solving skills. Their position is hinged on the weighted mean (3.17) which is higher than the criterion mean (2.50). The weighted standard deviation (0.77) implies that the responses are closely knitted.

Ho1: Social entrepreneurship has no significant influence on the development of problem-solving skills among Business Education Students in tertiary institutions in Ogun State, Nigeria.

Table 4: Summary of Regression Analysis of the Influence of Social entrepreneurship on the development of problem-solving skills among Business Education students in tertiary institutions in Ogun State, Nigeria.

Model	Unstandardized Coefficients		Standardized Coefficients	T	P
	B	Std. Error	Beta		
(Constant)	.601	.175		2.662	.004
Social entrepreneurship	.621	.066	.606	4.176	.0617
$R = 0.645^a$; $R^2 = 0.461$; Adjusted $R^2 = 0.458$; F 1.273 = 1.5148 = 0.617					

Dependent variable: Problem-solving skills development

Source: Field survey, 2026

The results in table 4, showed positive correlation between social entrepreneurship and development of problem-solving skills ($R = 0.645^a$). Furthermore, the results equally revealed that a significant relationship exists between social entrepreneurship and development of problem-solving skills among Business Education students in tertiary institutions in Ogun State, Nigeria (; F 1.273 = 1.5148 = 0.617). The null hypothesis was rejected. This implies that social entrepreneurship has significant influence on the development of problem-solving skills among Business Education students in tertiary institutions in Ogun State, Nigeria.

Discussion of Findings

The study was conducted to examine the influence of social entrepreneurship in the development of problem-solving skills among Business Education students in tertiary institutions in Ogun State, Nigeria. The findings from the first research question and table 2 revealed that social value creation (mean = 3.37; SD = 0.71), linguistic proficiency (mean = 3.37; SD = 0.78) and environmental adaptability (mean = 3.30; SD = 0.78) are the most essential elements of social entrepreneurship. These findings supported the findings of Ibrahim and Park (2023) that innovation, social impact orientation and empathetic problem identification are some of the elements of entrepreneurship.

The responses to the second research question as contained in Table 3 indicated that critical thinking (mean = 3.36; SD = 0.78), effective decision making (mean = 3.36; SD = 0.74), and creative thinking (mean = 3.34; SD = 0.77) are the most essential components of problem-solving skills. These findings buttressed the findings of Haruna (2026) and Calma (2025) that identification of societal problems, creative thinking, and development of practical solutions are some of the components of problem-solving skills.

It was hypothesized that social entrepreneurship has no significant influence on the development of problem-solving skills among Business Education in tertiary institutions in Ogun State, Nigeria. Consequently, the results in Table 4 showed that social entrepreneurship has a statistically significant influence on the development of problem-solving skills among Business Education students in tertiary institutions in Ogun State, Nigeria. The findings corroborated the opinions of Lancastre et al (2023), and Glasbeek et al (2024) that social entrepreneurship education enhances students' ability to identify societal problems, think creatively and develop practical solutions. The findings also aligned with the findings of Mamman et al (2025) that human relations and problem-solving skills significantly contributed to the entrepreneurial success of Business Education graduates in Southwest, Nigeria.

Conclusion

Based on the findings of this study, it was confirmed that social entrepreneurship enhances the development of problem-solving skills among Business Education students. The study therefore concluded that social entrepreneurship has significant influence on the development of problem-solving skills among Business Education students in Ogun State, Nigeria. The implication of this study is that consideration for social safety and environmental protection should be emphasized in entrepreneurship classes for Business Education students in tertiary institutions in Ogun State, Nigeria.

Recommendations

Based on the findings of this study, the following recommendations were made.

1. Lecturers of entrepreneurship courses in tertiary institutions adopt pragmatic methods to inculcate in Business Education students adopt innovative and market-based approaches to tackle persistent social challenges and create sustainable social values.
2. Business Education lecturers should adopt case-study methods of teaching in which students are put in different groups to explore the immediate surroundings of their institutions, identify societal problems, analyse available information, generate appropriate solutions and assess the outcomes to solve the problem permanently.
3. Business Education lecturers should inculcate social entrepreneurial competencies in their students in order to facilitate the students' abilities to solve societal and personal problems.

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PERCEIVED INFLUENCE OF GREEN BUSINESS PRACTICES ON ENTREPRENEURIAL COMPETENCIES OF BUSINESS EDUCATION STUDENTS IN OGUN STATE, NIGERIA

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Abstract

The rampant cases of environmental pollution due to industrial and commercial activities prompted the researcher to examine the perceived influence of green business practices on entrepreneurial competencies of Business Education students in public tertiary institutions in Ogun State, Nigeria. The study was guided by five purposes and five research questions. The researcher adopted correlational survey research design, while the population of the study consisted of 50 Business Education lecturers from the four public tertiary institutions, offering Business Education programme in Ogun State, Nigeria. The entire population was taken as the sample. A structured questionnaire was used as instrument for data collection. The data collected were analysed using simple percentage, frequency count, mean, and standard deviations. Findings from the study revealed among others, that green product innovation enhances opportunity recognition competency to a great extent (mean=3.03; SD = 0.75), and that sustainable resource utilization influences strategic (business planning) competency to a high extent (mean = 3.19; SD = 0.83). Finally, the study recommended among others, that lecturers of entrepreneurship courses should teach students how to identify opportunities arising from environmental challenges, and encourage innovation in environmentally friendly products and services.

Keywords: Business Education, Entrepreneurial Competencies, Green Business Practices, Tertiary Institutions, and Self Employment.

Introduction

Unemployment and underemployment have become serious concerns among parents and discerning minds in Nigeria. On yearly basis, thousands of youths and graduates are churned out of educational institutions, seeking gainful employment. In order to stem the tide of unemployment among youths, the government introduced entrepreneurship education into the national curriculum. The introduction of entrepreneurship education in tertiary institutions is a major step towards solving problems of unemployment and poverty. In contemporary human society, entrepreneurship is a catalyst for economic growth, job creation, wealth creation and provision of societal needs.

In entrepreneurship education, students are expected to inculcate entrepreneurship competencies that are essential for starting and growing a business enterprise. The major purpose of entrepreneurship education is to promote the culture of self-reliance and self-employment among the citizens. According to Bernado and Bratzke (2024), entrepreneurial competencies refer to the combination of knowledge, skills, attitudes, and psychological capabilities that enable individuals identify opportunities, create value, and successfully perform entrepreneurial activities. Li and Antoncic (2023) described entrepreneurial competencies as a multidimensional set of cognitive, conative (motivational), social and experimental capabilities that enable entrepreneurs to recognize opportunities, mobilize resources, and achieve entrepreneurial success, while Mai and Thai (2025) defined entrepreneurial competencies as the integrated knowledge, skills, attitudes, and abilities that enable individuals to initiate, manage and sustain entrepreneurial ventures while adapting to changing business environments. From the foregoing, it is obvious that entrepreneurial competencies can be acquired through education and experience.

Green business practices refer to the integration of environmentally sustainable strategies into business operations to reduce negative environmental impact, improve resource efficiency, promote responsible production and consumption, as well as support long-term economic, social and ecological sustainability (Omowole et al, 2024). Similarly, Ahmed Calloghan, and Arsian (2024) described green business practices as organizational actions and behaviours that translate environmental policies into practical leadership and employee activities aimed at minimizing environmental harm and improving sustainability performance, while Odeyemi et al (2024) defined green business practices as business activities that integrate environmentally responsible production, resources conservation, waste reduction, and sustainable innovation while maintaining economic competitiveness and long-term value creation.

It is noteworthy that green business practices have a significant positive relationship with entrepreneurial competencies because the adoption of environmentally sustainable practices enhances entrepreneurs' innovation, opportunity recognition, strategic thinking, leadership and problem-solving abilities, thereby improving business performance and sustainability. At any rate, the relationship between green business practices and entrepreneurial competencies is generally positive and complementary. Green business practices stimulate entrepreneurs to develop the knowledge, skills, attitudes, and abilities needed to create and sustain environmentally responsible businesses. At the same time, robust entrepreneurial competencies make it easier to adopt and successfully implement green business practices. Basically, green business practices significantly enhance entrepreneurial competencies, while entrepreneurial competencies facilitate the successful adoption of green business practices.

A veritable platform for a functional alignment of green business practices and entrepreneurial competencies is Business Education. According to Udo et al (2025), Business Education is a programme of study that prepares students for job competence, occupational intelligence, and work adjustment. It also promotes creativity, self-actualization, and critical thinking, which assists learners in problem-solving and skill acquisition. Business Education is one of the most prominent and viable programmes in tertiary institutions of learning in Nigeria, it is therefore very expedient that Business Education students be exposed to relevant training in green business practices and entrepreneurial competencies. Such exposure will position the students for proper functioning and relevance in the 21st century world of work. Inculcation of green business practices and entrepreneurial competencies will also help to promote the culture of self-reliance and self-employment, which are the core values of Business Education.

This study was anchored on two theories namely: The Natural-Resource-Based View (NRBV) Theory and the Resource-Based View (RBV) Theory. The Natural Resourced-Based View (NRBV) Theory was propounded by Stuart L. Hart (1995). The NRBV Theory extends the Resource-Based View by arguing that firms gain sustainable competitive advantage through environmentally responsible practices such as pollution prevention, product stewardship, and sustainable development. The theory is relevant to this study because green business practices require entrepreneurs to develop competencies such as innovation, opportunity recognition, strategic thinking, environmental problem-solving, and resource management. Thus, entrepreneurial competencies enable businesses to adopt and sustain green business effectively.

The Resource-Based View (RBV) Theory was developed by Jay B. Barney (1991), the theory proposes that organizations achieve superior performance by developing valuable, rare, inimitable, and non-substitutable (VRIN) resources. Entrepreneurial competencies are considered strategic internal resources that help firms implement green business practices successfully. The theory is relevant to this study because entrepreneurial competencies (e.g. innovation, opportunity recognition, leadership, and risk-taking) are valuable capabilities that support the adoption and successful implementation of green business practices. From the foregoing, the NRBV theory is the primary theory because it directly links environmental sustainability with the capabilities and competencies needed to create competitive advantage, while RBV theory is the complementary theory because it explains entrepreneurial competencies as strategic resources that facilitate green business practices.

The dimensions of green business practices are quite numerous; However, this study was limited to the five major dimensions of green business practices highlighted below:

(a) Green Products Innovation: This deals with developing environmentally friendly products and services.
(b) Waste Management Practices: These entail, reducing, reusing, recycling, and properly disposing off waste materials.
(c) Energy Conservation Practices: Efficient use of energy resources through energy-saving technologies and renewable energy sources.

(d) Sustainable Resource Utilization: Efficient and responsible use of natural resources, including water, raw materials, and other inputs, to minimize depletion.
(e) Green Marketing Practices: Promoting products and services based on their environmental benefits and encouraging sustainable consumption. (Pablo & Sarsale, 2026; Odeyemi et al, 2024; and Ahmed et al, 2024).

In contemporary times, Business Education Students in tertiary institutions are expected to acquire a wide range of entrepreneurial competencies. According to Bernado & Bratzke (2024), Li & Antoncic (2023), and Oyeku, et al (2024), Some of the most appropriate entrepreneurial competencies for Business Education students include: Opportunity recognition competency, strategic (business planning) competency, as well as communication and interpersonal (relationship) competency.

Zhang et al (2026) investigated how students' entrepreneurial behaviour contributes to green entrepreneurship environmental sustainability and the creation of business opportunities. Using quantitative analysis, the study found that entrepreneurial behaviour significantly and positively predicts students' engagement in green entrepreneurship. In turn, green entrepreneurship enhances environmental sustainability and facilitates the identification of sustainable business opportunities. The study also established that knowledge of the Sustainable Development Goals (SDGs) strengthens the relationship between entrepreneurial behaviour and green entrepreneurship.

Chatterjee et al (2024) examined the relationship between students' green engagement and entrepreneurial behaviour. The study developed and validated the concept of student green engagement and found that it positively influences green entrepreneurial intentions. Findings of the study also revealed that university entrepreneurial support and entrepreneurial motivation serially mediate the relationship between student green engagement and green entrepreneurial behaviour, emphasizing the role of higher education institutions in fostering sustainable relationship among students. Mambali et al (2024) examined the relationship between entrepreneurship education and green entrepreneurial intentions of business and science students. The study found that entrepreneurship education has a significant positive effect on students' green entrepreneurial intentions, both directly and indirectly through green entrepreneurial self-efficacy. It also established that environmental awareness strengthens the relationship between self-efficacy and green entrepreneurial intentions among university students.

In a bid to promote innovation, self-reliance and self-employment without compromising environmental preservation and health of the inhabitants, it is imperative that Business Education students are exposed to green business practices so that they will undertake entrepreneurial activities that are not only economically viable but equally environmentally beneficial. It is against this background that the researcher examined the relationship between green business practices and entrepreneurial competencies of Business Education students in tertiary institutions in Ogun State, Nigeria.

Statement of the Problem

The global move towards sustainable development has made green business practices a critical component of Business Education universally. Therefore, tertiary institutions are increasingly expected to equip students with the knowledge, skills, values, and competencies required to establish and manage environmentally responsible enterprises. Green business practices such as efficient resource production, and environmental responsibility are considered essential for preparing graduates to contribute to economic development without compromising environmental sustainability. Similarly, entrepreneurial competencies, including opportunity recognition, creativity, innovation, problem-solving, risk-taking, business management, and decision-making skills, are fundamental attributes expected of Business Education students to aspire to become successful entrepreneurs. Despite the increasing emphasis on sustainability and entrepreneurship in Nigeria's educational system, there are concerns that many Business Education graduates still lack the entrepreneurial competencies required to establish and sustain environmentally responsible businesses. Reports of graduate unemployment, underemployment, low entrepreneurial success, and limited adoption of sustainable business practices suggest that students may not be adequately prepared to tackle contemporary environmental and economic challenges. This situation raises questions about whether the green business practices promoted within tertiary institutions are contributing meaningfully to the development of entrepreneurial competencies among Business Education students.

Although previous empirical studies have examined green business practices and entrepreneurial competencies separately, and a few have explored their relationship in different countries and educational contexts, there is limited empirical evidence focusing specifically on Business Education students in tertiary institutions in Ogun State, Nigeria. In recent times, many business enterprises in Ogun State have been shut down by government agencies, due to flagrant disregard for the ecosystem, environmental pollution, and practices inimical to human health. Since entrepreneurship

is the livewire of any economy, therefore, any problem that erodes the tremendous benefits of entrepreneurship, must be empirically addressed, if this is not done, entrepreneurial practices might become detrimental to the well-being of the citizens, hence the need for this study.

Purpose of the Study.

The main purpose of this study was to examine the relationship between green business practices and entrepreneurial competencies of Business Education students in tertiary institutions in Ogun State, specifically the study:

1. Examined the extent to which green product innovation practice enhances opportunity recognition competency.
2. Investigated the extent to which sustainable resource utilization practice stimulates strategic (business planning) competency.
3. Assessed the extent to which energy conservation practice boosts leadership practice.
4. Determined the extent to which waste management practice fosters decision making competency.
5. Ascertained the extent to which green marketing practice enhances communication and interpersonal competency.

Research Questions

The following research questions guided the study.

1. To what extent does the green product innovation practice enhance opportunity recognition competency?
2. To what extent does sustainable resource utilization stimulate strategic (business planning) competency?
3. To what extent does energy conservation practice boost leadership?
4. To what extent does time management practice foster decision-making competency?
5. To what extent does green marketing practice enhance communication and interpersonal competency?

Methodology

The study adopted correlational survey research design because the study determined the nature and strength of the relationship between two variables namely: green business practices (independent variable) and entrepreneurial competencies (dependent variable), without manipulating either variable. The population of the study consisted of 50 business educators lecturing in 4 tertiary institutions offering Business Teacher Education Programme in Ogun State. The institutions are: Federal College of Education, Abeokuta; Olabisi Onabanjo University, Ago-Iwoye; Sikiru Adetona College of Education, Science and Technology, Omu-Ijebu, and Tai Solarin Federal University of Education, Ijagun. The entire population was taken as the sample, thus the census sampling technique was adopted. A structured questionnaire tagged, Green Business Practices and Entrepreneurial Competencies Questionnaire (GBPECQ) was used to gather data for the study. The questionnaire was divided into two sections. Section A deals biographic information, while Section B contains 25 items in line with the five research questions. The instrument was validated by two experts in Business Education, and one expert in test and measurement from the Lagos State University of Education, Ojo-Ijanikin. A pilot study was conducted on ten business educators from the Federal College of Education (special), Oyo, and the results from the pilot study Cronbach Alpha formula. The split-half reliability method was adopted, and the reliability test yielded a coefficient of 0.81. The questionnaire items were uploaded to a Google form and a link was generated and distributed electronically to the respondents, 48 respondents, representing 96% filled the form and sent back to the researcher, Data gathered were analysed using simple percentage, frequency count, for the biographic data, while mean and standard deviation were used to answer the five research questions. The acceptance or rejection of each questionnaire item was guided by the mean ratings, interpreted based on the following real limits: 3.25 – 4.00 (Very High Extent), 2.50 – 3.24 (High Extent), 1.75-2.49 (Low Extent), and 1.00 – 1.74 (Very Low Extent).

Results

Research Question One: To what extent does green product innovation practice enhance opportunity recognition competency?

Table 1: Mean responses on the extent of the influence of green innovation practice on opportunity recognition competency

S/N	ITEMS	MEAN	SD	REMARKS
1.	Enhancement of environmental awareness	2.72	0.82	High Extent
2.	Stimulation of creative thinking	2.93	0.68	High Extent
3.	Improvement of problem-solving skills	3.01	0.67	High Extent
4.	Increased market sensitivity	3.34	0.74	Very High Extent
5.	Improvement of resource efficiency	2.93	0.87	High Extent
6.	Promotion of entrepreneurial mindset	3.22	0.70	High Extent
N = 48, Decision rule, = 2.50 Weighted mean/SD =		**3.03**	**0.75**	**High Extent**

Source: Field Survey, 2026

Analysis of data in Table 1 shows the mean and standard deviation of responses on the extent of the influence of green innovation practice on opportunity recognition competency. The weighted mean of 3.03 implied that business educators perceived that green innovation practice enhances opportunity recognition competency to a high extent. The weighted standard deviation of 0.75 indicated that the responses are consistent.

Research Question Two: To what extent does sustainable resource utilization stimulate strategic (business planning) competency?

Table 2: Mean responses on the extent of the influence of sustainable resource utilization on strategic (business planning) competency

S/N	ITEMS	MEAN	SD	REMARKS
1.	Enhancement of long-term thinking that ensures business continuity and resilience	3.16	0.74	High Extent
2.	Efficiency in resource allocation	3.20	0.83	High Extent
3.	Improved adaptation in planning, in anticipation of risks	2.90	0.91	High Extent
4.	Facilitation of regulatory compliance	3.12	0.91	High Extent
5.	Boost in competitive advantage by attracting environmentally conscious customer and investors.	3.30	0.86	Very High Extent
6.	Creation of innovative products and services.	3.45	0.73	Very High Extent
N = 48, Decision rule, = 2.50 Weighted mean/SD =		**3.19**	**0.83**	**High Extent**

Source: Field Survey, 2026.

Analysis of data in Table 2 reveals the mean and standard deviation of responses on the extent of the influence of sustainable resource utilization on strategic (business planning) competency. The weighted mean of 3.19 indicated that business educators perceived that sustainable resource utilization stimulates strategic (business planning) competency to a high extent. The weighted standard deviation of 0.83 showed that responses are largely homogeneous.

Research Question Three: To what extent does energy conservation practice boost leadership competency?

Table 3: Mean responses on the extent of the influence of energy conservation practice on leadership competency

S/N	ITEMS	MEAN	SD	REMARKS
1.	Encouragement of strategic decision making that balance economic, environmental, and social consideration	3.42	0.81	Very High Extent
2.	Promotion of ethical leadership that is committed to environmental stewardship and social responsibility	3.08	0.82	High Extent

3.	Enhancement of change-management skills	3.06	0.72	High Extent
4.	Promotion of long-term vision	3.23	0.90	High Extent
5.	Efficiency in the use of limited resources by allocating resources wisely	3.15	0.76	High Extent
6.	Enhancement of positive role modelling	3.40	0.84	Very High Extent
N = 48, Decision rule, = 2.50 Weighted mean/SD =		**3.22**	**0.81**	**High Extent**

Analysis of data in Table 3 shows the mean and standard deviation of responses on the extent of the influence of energy conservation practice on leadership competency. The weighted mean of 3.22 revealed that business educators perceived that energy conservation practice boosts leadership competency to a high extent. The weighted standard deviation of 0.81 shows the homogeneity of the responses.

Research Question Four: To what extent does waste management practice foster decision-making competency?

Table 4: Mean responses on the extent of the influence of waste management practice on decision-making competency

S/N	ITEMS	MEAN	SD	REMARKS
1.	Enhancement of problem identification and analytical thinking for evidence-based decision-making	3.32	0.70	Very High Extent
2.	Proper evaluation of costs, benefits and environmental impact of waste recycling and safe disposal of wastes.	3.46	0.88	Very High Extent
3.	Development of risk assessment skills for responsible and informal decisions	3.22	0.78	High Extent
4.	Enhancement of data-driven decision-making	3.23	0.81	High Extent
5.	Promotion of ethical and sustainability-oriented decisions	3.01	0.69	High Extent
6.	Preparation of students to make effective entrepreneurial decisions in both conventional and business environments	2.99	0.63	High Extent
N = 48, Decision rule, = 2.50 Weighted mean/SD =		**3.21**	**0.75**	**High Extent**

Analysis of data in Table 4 reveals the mean and standard deviation of responses on the extent of the influence of waste management practice on decision making competency. The weighted mean of 3.21 indicated the business educators perceived that waste management practice fosters decision making competency to a high extent. The weighted standard deviation of 0.75 implied that the responses are clustered around the mean.

Research Question Five: To what extent does green marketing practice enhance communication and interpersonal competency?

Table 5: Mean responses on the extent of the influence of green marketing practice on communication and interpersonal competency

S/N	ITEMS	MEAN	SD	REMARKS
1.	Improvement in communication skills	3.04	0.96	High Extent
2.	Enhancement of active listening	3.29	0.74	Very High Extent
3.	Development of interpersonal skills like respect, cooperation, and customer engagement.	2.96	0.88	High Extent
4.	Enhancement of teamwork and cooperation	3.17	0.83	High Extent
5.	Development of persuasion and advocacy skills	3.37	0.85	Very High Extent
6.	Promotion of ethical communication	3.03	0.88	High Extent
N = 48, Decision rule, = 2.50 Weighted mean/SD =		**3.14**	**0.86**	**High Extent**

Analysis of Data in Table 5 reveals the mean and standard deviation of responses on the extent of the influence of green marketing practice on communication and interpersonal competency of Business Education students. The weighted mean of 3.14 indicated that business educators perceived that green marketing practice enhances communication and interpersonal skills to a high extent, while the weighted standard deviation of 0.86 implied that the responses were consistent.

Discussion of Findings

This study was conducted to examine business educators' perceptions on the influence of green business practices on entrepreneurial competencies of Business Education students in tertiary institutions in Ogun State, Nigeria. The findings of the study are discussed in line with the research purposes and research questions. The findings from research question one and Table 1 revealed that green product innovation practices enhances opportunity recognition competency of Business Education students in tertiary institutions in Ogun State, Nigeria. These findings align with the findings of Zhang et al (2026) that green entrepreneurship facilitates the identification of sustainable business opportunities.

The findings from research question two and Table 2 showed that sustainable resource utilization stimulate strategic (business planning) competency to a high extent. These findings are in consonance with the observations of Odeyemi et al (2024) that green business practices enhances long-term value creation. Furthermore, findings based on research question three and Table 3 indicated that energy conservation practice boost leadership competency of Business Education students in tertiary institutions in Ogun State, Nigeria, to a high extent. These findings are in tandem with the findings of Mambali et al (2024) that environmental awareness had a significantly positive influence on entrepreneurial self-efficacy of university students.

Research question four investigated the influence of waste management practice on decision-making competency. Results in Table 4 implied that waste management practice fosters decision-making competency of Business Education students in tertiary institutions in Ogun State to a high extent. These findings buttress the findings of Pablo and Sarsale (2026) that waste management practices help entrepreneurs to take appropriate decisions when confronted with various options concerning, reusing, recycling or disposing waste materials.

Research question five sought to determine the influence of green marketing practice on communication and interpersonal competency. The results in Table 5 indicated that green marketing practices enhances communication and interpersonal competency to a high extent. These findings corroborate the assertion of Ahmed et al (2024) that green marketing practice helps entrepreneurs to enlighten customers on the environmental benefits of their products and services.

Conclusion

Based on the findings of this study, it was concluded that business educators in tertiary institutions in Ogun State, Nigeria perceived that green business practices influences entrepreneurial competencies of Business Education students to a high extent. The implication of this is that green business practices should be fully integrated in the entrepreneurship education curriculum of Business Education students in tertiary institutions.

Recommendations

Based on the findings of this study, it was recommended that:

1. Lecturers of entrepreneurship class should teach students how to identify opportunities arising from environmental challenges, and encourage innovation in environmentally friendly products and services.
2. Business educators should train students on the use of digital tools for market analysis, budgeting, financial planning, and business forecasting.
3. Business education students should be involved in sustainability initiatives such as waste management, energy conservation, recycling, and environmental awareness campaigns.
4. Students should be presented with real life business challenges that require them to analyze situations, generate alternatives and justify their decisions.
5. Lecturers of entrepreneurship courses should involve students in community-based entrepreneurship and outreach projects that require interaction with diverse groups and collaborative problem-solving.

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INTEGRATING GREEN ENTREPRENEURSHIP AND ETHICAL LEADERSHIP INTO BUSINESS EDUCATION CURRICULA FOR ACHIEVING THE SUSTAINABLE DEVELOPMENT GOALS (SDGS) IN NIGERIA

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Abstract

The increasing difficulties brought by climate change, environmental degradation, unethical business practices, and socio-economic inequalities make it imperative for higher education institutions to impart skills to their graduates for sustainable development. Although business education is of critical importance in shaping the entrepreneurial competencies and the business leaders of tomorrow, the content of business curricula in many developing countries, especially Nigeria, has been skewed towards mainstream business without enough emphasis on sustainability and ethical leadership of business. This paper explores the role of green entrepreneurship and ethical leadership in business education programmes as a key approach to supporting the United Nations Sustainable Development Goals (SDGs). A qualitative conceptual study design is used, with supporting evidence from academic literature, policy documents, curriculum frameworks and international reports analysed through thematic content analysis. Education for Sustainable Development (ESD) Framework and Transformational Leadership Theory are used to support the curriculum transformation for sustainability. The results indicate that teaching green entrepreneurship and ethical leadership in business education can improve the sustainable innovation ability, ethical decision-making ability, environmental responsibility of graduates, and creation ability of responsible enterprises. The paper suggests a conceptual framework for integrating the curriculum and concludes that there is a need for curriculum reform, experiential education, interdisciplinary approaches and industry collaboration to shift the paradigm of business education to become a driver of sustainable development and SDGs.
Keywords: Green Entrepreneurship, Ethical Leadership, Curriculum Integration, Sustainable Development Goals (SDGs).

Introduction

The world of business is changing in ways that are making sustainability an increasingly important consideration in business practice and education. Climate change, environmental degradation, depletion of natural resources, unemployment, social inequality and concerns about unethical business practices have raised questions about the way economic activities are conducted. Businesses are no longer judged solely by their ability to generate profit; increasing attention is being given to how they treat people, use resources, affect communities and respond to environmental challenges. The United Nations (2015), through the Sustainable Development Goals (SDGs), provides a global framework for addressing these interconnected economic, social and environmental concerns. This changing environment has implications for higher education, particularly programmes responsible for preparing future entrepreneurs, managers and business professionals. Education has an important role in preparing individuals to respond to these challenges. The Education for Sustainable Development (ESD) framework emphasizes the development of knowledge, skills, values and attitudes that enable learners to contribute to a more sustainable society (UNESCO, 2017). UNESCO (2020) further argues that achieving sustainable development requires education systems to move beyond knowledge transmission and provide learners with opportunities to think critically, collaborate, solve problems and take responsible action. Higher education therefore has a responsibility to ensure that graduates are prepared not only for the current world of work but also for the emerging economic, social and environmental realities in which they will live and work.

Business Education is particularly relevant to this discussion because of its close relationship with entrepreneurship, management, accounting, marketing and other areas through which individuals

participate in economic activities. Traditionally, the programme has focused strongly on equipping learners with vocational, entrepreneurial and business competencies for employment and self-reliance. These objectives remain important, especially in a country such as Nigeria where graduate unemployment and the need for enterprise development continue to receive considerable attention. However, the changing expectations of business suggest that competence in conventional business practices alone may no longer be sufficient. Graduates also need to understand how business decisions can contribute to or undermine environmental sustainability, social well-being and responsible economic development. One area through which Business Education can respond to this need is green entrepreneurship. Green entrepreneurship involves identifying and developing business opportunities that address environmental challenges while creating economic value. Higher education can help students look at environmental challenges from a different perspective by turning them into opportunities for innovation and enterprise. Leal Filho et al. (2025) emphasize that sustainable entrepreneurship education can equip students with the knowledge, skills and mindset needed to develop entrepreneurial responses to environmental, social and economic challenges. Similarly, Vargas-Merino et al. (2025) highlight the importance of integrating sustainable entrepreneurship into higher education curricula, particularly through experiential learning and the development of competencies for sustainable ventures. For Business Education students, this means that issues such as waste, pollution and inefficient use of resources can be treated not only as problems to be addressed but also as opportunities for developing useful products, services and business models that create economic value while responding to environmental needs.

However, the ability to establish a green enterprise does not by itself guarantee responsible business practice. The way such enterprises are managed and the decisions made by their leaders are equally important. Ethical leadership provides the complementary dimension by emphasising integrity, fairness, accountability and responsible conduct. Nwanzu and Babalola (2024)) explain ethical leadership in terms of appropriate personal conduct and the promotion of such conduct through communication, decision-making and relationships with others. This is particularly relevant to sustainable business because decisions about employees, customers, communities, environmental resources and business partners often involve ethical considerations. A business may describe itself as environmentally responsible while still engaging in unfair labour practices, misleading marketing or irresponsible resource use. Ethical leadership can therefore help ensure that sustainability-oriented business activities are pursued responsibly. The relationship between green entrepreneurship and ethical leadership also reflects the broader understanding of sustainable development. Belz and Binder (2017) explain that sustainable entrepreneurship involves identifying opportunities that address social and environmental problems while creating economic value. Integrating these ideas into Business Education can therefore help students develop a broader understanding of what it means to establish and manage a successful enterprise. The focus shifts from simply asking whether a business can make profit to considering whether it can create value in ways that are environmentally responsible and socially acceptable.

Business Education has the potential to contribute to the development of entrepreneurial and employability skills, but there is also a growing need for competencies that respond to the emerging green economy. Okereke, Onokpaunu and Ikonomwan (2019) identified green skills such as waste management, recycling, energy management and climate-related competencies as relevant to Business Education in Nigeria. Alao, Alao and Elijah (2023) similarly drew attention to the potential of green entrepreneurship in areas such as recycling, waste management, green products and agribusiness. These perspectives suggest that sustainability can be connected to the existing entrepreneurial orientation of Business Education rather than treated as an entirely separate field. The importance of this repositioning is further reinforced by the SDGs. Business Education can contribute directly or indirectly to several of the goals, particularly SDG 4 on quality education, SDG 8 on decent work and economic growth, SDG 9 on industry and innovation, SDG 12 on responsible consumption and production, and SDG 13 on climate action (United Nations, 2015). The contribution of the programme, however, depends largely on whether students acquire the knowledge, practical competencies and values required to translate these goals into responsible business activities. Simply mentioning sustainability or the SDGs in curriculum documents may have limited effect if students are not given opportunities to apply the ideas to real business and community problems.

It is against this background that this paper explores the integration of green entrepreneurship and ethical leadership into Business Education curricula as a pathway for strengthening the contribution of the programme to sustainable development in Nigeria. The paper reviews the concepts and their relationship with Business Education and the SDGs, examines the theoretical foundations supporting their integration, identifies areas in which they can be incorporated into existing Business Education

courses, and discusses the challenges and strategies associated with implementation. The paper ultimately argues that a Business Education curriculum that combines entrepreneurial capability with environmental responsibility and ethical leadership can better prepare graduates to create and lead enterprises that contribute meaningfully to sustainable development.

Business Education and Sustainable Development

Business Education is traditionally concerned with equipping learners with knowledge and skills for employment, entrepreneurship and effective participation in the world of business. In Nigeria, the programme has maintained a strong vocational and entrepreneurial orientation, with areas such as accounting, management, marketing, economics and office technology forming important components of its curriculum. However, the changing nature of business has created a need to broaden this orientation. Businesses are increasingly expected to consider not only profitability but also their effects on people, communities and the environment. The connection between Business Education and sustainable development can be understood within the broader purpose of Education for Sustainable Development (ESD). UNESCO (2017) maintains that education should help learners develop the knowledge, skills, values and attitudes needed to contribute to sustainable development. Similarly, UNESCO (2020) emphasises that sustainable development education should encourage learners to think critically, work collaboratively and take responsible action. This implies that business-related programmes should prepare students to understand the wider consequences of business decisions rather than focusing exclusively on economic returns.

Okereke, Onokpaunu and Ikonomwan (2019) identified green skills such as waste management, recycling, climate-related competencies and ecological consultancy as relevant to the Business Education curriculum. Alao, Alao and Elijah (2023) similarly argued that Nigerian Business Education needs greater attention to green entrepreneurship and identified areas such as recycling, waste management, green products and agribusiness as potential areas of sustainable enterprise. These studies suggest that sustainability does not require Business Education to abandon its established objectives; rather, existing business competencies can be applied to emerging environmental and social needs. From this perspective, the role of Business Education in sustainable development can be viewed through three broad dimensions: economic competence, social responsibility and environmental responsibility. The relationship is summarised in Table 1.

Table 1: Dimensions of Business Education for Sustainable Development

Dimension	Key emphasis	Expected student outcome
Economic competence	Entrepreneurship, innovation, productivity and viable enterprise	Ability to identify and develop sustainable business opportunities
Social responsibility	Ethics, fairness, inclusion, employee and community welfare	Ability to consider stakeholders when making business decisions
Environmental responsibility	Resource efficiency, waste reduction, recycling and climate awareness	Ability to minimise environmental harm through business activities
Integrated sustainability	Balancing economic, social and environmental considerations	Ability to create and manage enterprises that generate sustainable value

Source: Adapted from UNESCO (2017, 2020)

The table shows that sustainability can be incorporated into Business Education without weakening its business and vocational foundation. Instead, conventional competencies can be connected to broader questions of responsible enterprise and sustainable value creation. For example, entrepreneurship can incorporate green business opportunities, marketing can address responsible communication and sustainable consumption, while management can include ethical decision-making and stakeholder responsibility. This orientation is also consistent with the Sustainable Development Goals, particularly SDG 4 on quality education, SDG 8 on decent work and economic growth, SDG 9 on innovation, SDG 12 on responsible consumption and production, and SDG 13 on climate action (United Nations, 2015). Thus, strengthening the sustainability orientation of Business Education can

help the programme respond more directly to both the changing business environment and Nigeria's broader development needs.

Green Entrepreneurship

Green entrepreneurship has emerged as an important response to the growing concern about the environmental consequences of economic activities. Unlike conventional entrepreneurship, which may place greater emphasis on identifying profitable opportunities and creating economic value, green entrepreneurship gives deliberate attention to environmental sustainability while pursuing economic and social value. Nwanzu and Babalola (2024) describe sustainable entrepreneurship as entrepreneurial action directed at reducing environmental degradation, while AlHares (2025) associate sustainable entrepreneurship with innovative business activities that contribute to sustainable development. Green entrepreneurship can therefore be understood as the creation and development of businesses that respond to environmental challenges through products, services, processes or business models that generate value while reducing environmental harm. The concept is closely related to sustainable entrepreneurship, although the two terms are sometimes used interchangeably in the literature. Sustainable entrepreneurship has a broader focus that incorporates economic, social and environmental dimensions, whereas green entrepreneurship tends to place stronger emphasis on environmental concerns. Belz and Binder (2017) explain that sustainable entrepreneurs identify opportunities that address social and environmental problems while creating economic value. This suggests that green entrepreneurship is not simply about establishing businesses that are labelled "green"; it involves recognising environmental problems as opportunities for innovation and developing viable solutions around them.

The relevance of green entrepreneurship to education lies in the competencies required to identify and develop such opportunities. Students need to understand environmental problems, recognise market opportunities, think innovatively, assess risks, develop sustainable business models and consider the wider consequences of their entrepreneurial decisions. Rosario and Raimundo (2024), in their review of sustainable entrepreneurship education, found growing attention to sustainability competencies and experiential approaches that enable learners to connect entrepreneurial knowledge with real sustainability challenges. Vargas-Merino et al. (2025) similarly identified experiential learning and competency development as important elements of sustainable entrepreneurship education in higher education.

Okereke, Onokpaunu and Ikonomwan (2019) identified waste management, recycling, climate-related skills, energy management and other green competencies as relevant to Business Education. Alao, Alao and Elijah (2023) also noted that green entrepreneurship could provide Business Education students with opportunities in areas such as recycling, waste management, green products and agribusiness. These areas are particularly relevant in Nigeria, where environmental challenges can coexist with the need for employment and enterprise development. For Business Education, therefore, green entrepreneurship should not be presented simply as another form of entrepreneurship. It should be treated as an opportunity to reshape how students understand business opportunities. A student who sees waste only as an environmental problem may overlook its entrepreneurial potential, whereas one who understands green entrepreneurship can explore opportunities in recycling, waste recovery, reusable products and other forms of resource recovery. The same reasoning can be applied to renewable energy, sustainable agriculture, water management and environmentally responsible packaging. The major competencies associated with green entrepreneurship can be summarised as follows.

Table 2: Key Green Entrepreneurship Competencies for Business Education

Competency	What it involves	Possible Business Education application
Environmental awareness	Understanding environmental problems and their business implications	Identifying local environmental challenges as potential business opportunities
Opportunity recognition	Identifying market opportunities arising from environmental needs	Developing business ideas around recycling, renewable energy or sustainable products
Green innovation	Creating products, services or processes that reduce environmental harm	Designing environmentally friendly products and sustainable business models
Resource efficiency	Using materials, energy and other resources responsibly	Developing cost-effective and resource-efficient production processes
Sustainable business planning	Integrating environmental and social considerations into business decisions	Preparing business plans that include sustainability objectives

Risk and impact assessment	Considering the possible environmental and social consequences of business activities	Evaluating the sustainability of proposed business ventures
Collaboration and problem-solving	Working with others to develop solutions to sustainability challenges	Community projects, innovation challenges and industry-based assignments

Source: Adapted from Belz and Binder (2017), UNESCO (2017), Rosario and Raimundo (2024), and Vargas-Merino et al. (2025).

The table reinforces the view that green entrepreneurship requires more than general entrepreneurial ability. Students need to combine business knowledge with environmental awareness, innovation and responsible decision-making. This makes it particularly suitable for integration into Business Education because the programme already provides a foundation in entrepreneurship, management, marketing, accounting and other business-related competencies. Green entrepreneurship also has a direct relationship with the SDGs. Sustainable enterprises can contribute to SDG 8 by creating decent work and supporting sustainable economic activity; SDG 9 through innovation and sustainable enterprise; SDG 12 through responsible production and consumption; and SDG 13 through business responses to climate-related challenges (United Nations, 2015). Its contribution is therefore not restricted to environmental protection. When properly developed, green entrepreneurship can connect environmental responsibility with employment, innovation and economic opportunity.

However, the development of green entrepreneurship among Business Education students requires more than adding environmental topics to entrepreneurship courses. Students need opportunities to apply the concept to practical problems. This may include green business-plan competitions, recycling and waste-management projects, sustainable product development, visits to environmentally responsible enterprises, community-based projects and collaboration with industry. Such experiences can help students move from simply knowing about green entrepreneurship to seeing themselves as potential creators of sustainable solutions. In this regard, green entrepreneurship provides an important foundation for the curriculum integration proposed in this paper. It can help Business Education students develop the capacity to identify environmental challenges, convert them into viable opportunities and create enterprises that generate economic value while contributing to environmental and social well-being. Nevertheless, entrepreneurial competence alone may not be sufficient. The people who establish and manage such enterprises must also possess strong ethical values and the ability to make responsible decisions. This makes ethical leadership the next important concept in the discussion.

Ethical Leadership

Ethical leadership has become an important area of discussion in business and management because the behaviour of leaders can influence how organisations make decisions, treat stakeholders and respond to social responsibilities. Egbiki et al. (2024) describe ethical leadership in terms of appropriate personal conduct, the communication of ethical standards and the use of fair and principled decision-making. Their social learning perspective suggests that employees can learn from the behaviour of their leaders and are more likely to respond positively when leaders demonstrate ethical standards in their everyday actions. The relevance of ethical leadership to Business Education goes beyond teaching students the meaning of business ethics. Future entrepreneurs, managers and business educators will make decisions that affect employees, customers, investors, communities and the environment. They therefore need to develop the ability to recognise ethical issues, consider the interests of different stakeholders and make decisions that are consistent with principles of integrity, fairness and accountability. Ethical leadership is particularly relevant to the sustainability agenda because sustainable business practices require leaders to think beyond short-term organisational gains. Issues such as responsible use of resources, environmental compliance, employee welfare, consumer protection, truthful marketing and community responsibility all involve ethical choices. Recent literature has increasingly connected leadership ethics with organisational sustainability. For example, Tabaghdehi, Ayaz and Tatoglu (2026), in a systematic review of 95 studies, identified transparency, accountability and ethical decision-making as important elements through which ethical leadership can support corporate sustainability. For Business Education, this means that ethical leadership should be developed as a practical competence rather than treated only as a theoretical topic. Students should have opportunities to discuss realistic business dilemmas, examine the consequences of managerial decisions and practise making choices that balance organisational objectives with stakeholder interests. Case studies, role plays, simulations, debates and community-based projects can provide useful

avenues for developing such competence. The major dimensions of ethical leadership that are particularly relevant to Business Education can be summarised as follows.

Table 3: Ethical Leadership Dimensions Relevant to Business Education

Dimension	Meaning in practice	Implication for Business Education
Integrity	Acting consistently with honesty and sound moral principles	Students learn to value honesty in business transactions and reporting
Fairness	Treating people impartially and avoiding discrimination	Students develop sensitivity to fair treatment of employees, customers and partners
Accountability	Accepting responsibility for decisions and their consequences	Students learn to take responsibility for business and leadership decisions
Transparency	Communicating information openly and truthfully	Students understand the importance of honest reporting and responsible communication
Stakeholder responsibility	Considering the interests of employees, customers, communities and the environment	Students learn to evaluate business decisions from broader stakeholder perspectives
Ethical decision-making	Identifying ethical issues and choosing responsible courses of action	Students develop the capacity to handle ethical dilemmas in business situations

Source: Adapted from Tabaghdehi et al. (2026).

The dimensions in Table 3 also show why ethical leadership fits naturally into the proposed integration of green entrepreneurship and Business Education. A student may be able to identify an opportunity to establish a recycling business, for example, but ethical leadership determines how the business treats its workers, communicates with customers, handles waste, reports its activities and relates to the surrounding community. In this sense, ethical leadership provides an important value base for green entrepreneurship. This relationship is important to the present paper because green entrepreneurship without ethical leadership may focus narrowly on the environmental aspect of a business while overlooking issues such as labour practices, transparency, consumer protection and accountability. Conversely, ethical leadership without an understanding of sustainability may produce responsible leaders who are still insufficiently prepared to respond to environmental challenges. Bringing the two together therefore offers Business Education a more comprehensive approach to preparing graduates for responsible enterprise and leadership. Ethical leadership can consequently be positioned as one of the competencies needed to move Business Education towards the broader goals of sustainable development. When students learn to combine entrepreneurial initiative with integrity, accountability, fairness and concern for stakeholders, they are better positioned to create enterprises that generate economic value without losing sight of their social and environmental responsibilities.

Theoretical Foundations

This paper is anchored on the Education for Sustainable Development (ESD) framework and Transformational Leadership Theory**.** The ESD framework, advanced by UNESCO, emphasises education that equips learners with the knowledge, skills, values and attitudes needed to respond to sustainability challenges and take responsible action (UNESCO, 2017, 2020). Its underlying assumption is that education should not only provide knowledge but should also develop learners' capacity to think critically, solve complex problems, work with others and make responsible decisions. This makes the framework relevant to green entrepreneurship in Business Education, where students can be encouraged to identify environmental and social problems and develop innovative business solutions. Recent work continues to support the role of sustainability-oriented education in developing entrepreneurial competencies and preparing students for sustainable business practice (Rosario & Raimundo, 2024). The second theoretical foundation is Transformational Leadership Theory, propounded by Burns (1978) and further developed by Bass (1985). The theory assumes that leaders can influence followers by providing a compelling vision, encouraging new ways of thinking and motivating them to work towards shared goals. These assumptions are particularly relevant to preparing future business leaders who can encourage innovation and respond positively to changing sustainability demands.

The two perspectives complement each other in explaining the position of this paper. While the ESD framework focuses on developing the competencies and values needed to contribute to sustainable development**,** Transformational Leadership Theory focuses on the capacity to inspire

people and turn ideas into meaningful action. The paper also draws on the ethical dimension of leadership, particularly integrity, fairness, accountability and responsible decision-making. This is important because green entrepreneurship should not be concerned with environmental outcomes alone; the enterprises created and led by graduates should also operate responsibly towards employees, customers, communities and other stakeholders. Thus, the theoretical foundation suggests that Business Education should produce graduates who can recognise sustainability challenges, develop viable green business opportunities, inspire innovation and make responsible decisions. In this way, the combination of ESD and transformational leadership provides a sound basis for integrating green entrepreneurship and ethical leadership into Business Education as a means of preparing graduates to contribute to sustainable development and the SDGs.

Sustainable Development Goals and Business Education

The Sustainable Development Goals (SDGs) provide a useful framework for thinking about the contribution of education to economic, social and environmental development. Adopted by the United Nations in 2015, the 17 goals and their associated targets recognise that development cannot be sustained when economic progress is separated from social well-being and environmental protection (United Nations, 2015). For higher education institutions, this means that teaching and learning should contribute not only to graduates' employability but also to their ability to respond to the wider development challenges of their societies. The United Nations recognises higher education institutions as important contributors to the SDGs through teaching, research, community engagement, partnerships and institutional practices. Business Education has a particularly practical role in this regard. Its emphasis on entrepreneurship, management, accounting, marketing, office practice and other business competencies places the programme close to the activities through which economic and social value are created. For instance, SDG 4.4 calls for relevant skills for employment, decent work and entrepreneurship, while SDG 4.7 specifically calls for learners to acquire knowledge and skills for sustainable development. These targets are closely connected to the objectives of Business Education and provide a strong basis for incorporating sustainability into its curriculum.

Table 4: Linkages between Business Education and Selected SDGs

SDG	Relevant focus	Possible contribution of Business Education
SDG 4 – Quality Education	Relevant knowledge and skills for sustainable development, employment and entrepreneurship	Integrating green entrepreneurship, sustainability competencies and ethical leadership into teaching and learning
SDG 8 – Decent Work and Economic Growth	Productive employment, entrepreneurship and sustainable economic growth	Developing entrepreneurial, employability and business-management competencies for responsible enterprise creation
SDG 9 – Industry, Innovation and Infrastructure	Innovation, sustainable industries and resilient enterprises	Encouraging green innovation, sustainable business models and problem-solving
SDG 12 – Responsible Consumption and Production	Efficient use of resources and responsible production and consumption	Preparing students to develop and manage businesses that reduce waste and use resources responsibly
SDG 13 – Climate Action	Awareness, adaptation and action relating to climate change	Developing climate awareness and entrepreneurial responses to environmental challenges

Source: Adapted from United Nations (2015), UNESCO (2017, 2020), and relevant Nigerian Business Education literature.

The relationship shown in Table 4 suggests that the contribution of Business Education to the SDGs can occur at two levels. The first is through what students learn. Curriculum content can expose them to sustainable enterprise, responsible production, green innovation, climate-related business opportunities and ethical decision-making. The second is through what students are able to do with what they have learned. Practical experiences can help them transform these ideas into business plans, innovations, community projects and responsible enterprise practices. This distinction is important. Simply adding the names of the SDGs to a Business Education curriculum does not necessarily mean that the programme is contributing to sustainable development. The connection becomes meaningful when students acquire competencies that enable them to respond to real economic, social and

environmental problems. UNESCO's ESD framework similarly stresses the development of competencies and action rather than knowledge alone (UNESCO, 2017, 2020).

Nexus between Green Entrepreneurship and Ethical Leadership

Green entrepreneurship and ethical leadership address different but closely related aspects of responsible business practice. Green entrepreneurship focuses primarily on identifying and developing business opportunities that respond to environmental challenges, whereas ethical leadership focuses on the values and behaviours that guide people in making responsible decisions. The two concepts therefore complement each other. A business may be environmentally oriented, but the way it is managed can still involve unethical practices. Similarly, a leader may demonstrate strong ethical values but lack the knowledge or capacity to develop business responses to environmental challenges. Belz and Binder (2017) explain that sustainable entrepreneurs seek opportunities that address social and environmental problems while creating economic value. These perspectives suggest that entrepreneurial competence should be accompanied by an awareness of broader responsibilities. The connection between the two concepts is increasingly reflected in sustainability scholarship. Research on ethical leadership and corporate sustainability indicates that leadership qualities such as transparency, accountability and ethical decision-making can support sustainability-oriented organisational practices (Tabaghdehi et al., 2026). The implication of this to Business Education is that green entrepreneurship and ethical leadership should not be taught as unrelated ideas. Students who are expected to become entrepreneurs and business leaders need both the ability to recognise sustainability-related business opportunities and the values required to pursue those opportunities responsibly.

Integrating Green Entrepreneurship and Ethical Leadership into Business Education Curricula in Nigeria

Integrating sustainability into Business Education should go beyond adding isolated topics on climate change or environmental protection. The aim should be to connect sustainability with the business knowledge and skills students already acquire. This is consistent with UNESCO's (2020) position that Education for Sustainable Development requires changes in learning content, pedagogy and learning environments. It also reflects the growing emphasis on responsible management education, which encourages business-related programmes to prepare graduates who can create sustainable value for business and society. One practical approach is to integrate green entrepreneurship and ethical leadership across existing Business Education courses rather than treating them as entirely separate subjects. Entrepreneurship courses, for example, can expose students to green business opportunities and sustainable business models. Marketing can address responsible consumption and truthful environmental claims, while accounting can introduce students to the financial implications of sustainable business practices. Management courses can incorporate ethical leadership, stakeholder responsibility and responsible decision-making. Such integration would make sustainability part of students' broader business education rather than an isolated area of study.

Table 5: Proposed Areas for Integrating Green Entrepreneurship and Ethical Leadership

Business Education area	Suggested integration	Learning approach	Expected competency
Entrepreneurship	Green business opportunities, sustainable business models and eco-innovation	Business projects and green business-plan competitions	Green opportunity recognition and enterprise development
Management	Ethical leadership, accountability and stakeholder responsibility	Case studies, role play and leadership simulations	Ethical and responsible leadership
Marketing	Sustainable marketing, responsible consumption and green claims	Campaign development and case analysis	Responsible marketing decisions
Accounting	Sustainability-related costs, resource efficiency and responsible financial reporting	Practical exercises and business cases	Sustainability-conscious financial decision-making
Business Communication	Ethical communication, transparency and sustainability reporting	Presentations, reports and simulations	Transparent and responsible communication
Office Technology/Management	Paper reduction, digitalisation and environmentally responsible office practices	Practical projects and workplace observation	Resource-efficient workplace practices
Business Education practicum/field experience	Community and industry-based sustainability problems	Experiential and project-based learning	Application of sustainable business solutions

Source: Authors' conceptual synthesis informed by UNESCO (2017, 2020), and Rosario and Raimundo (2024).

Table 5 indicates that curriculum integration can take place at both the content and pedagogical levels. At the content level, sustainability and ethical leadership concepts can be embedded in existing courses. At the pedagogical level, students can be given opportunities to work on authentic problems through projects, case studies, simulations, business-plan competitions, community engagement and industry collaboration. This is important because sustainable entrepreneurship education literature increasingly emphasises experiential and collaborative learning as ways of developing sustainability competencies (Rosario & Raimundo, 2024; Vargas-Merino et al., 2025). Another important consideration is the preparation of Business Education lecturers. Curriculum integration is unlikely to produce meaningful results if lecturers themselves are not sufficiently familiar with green entrepreneurship, sustainability and ethical leadership. UNESCO (2020) identifies educator capacity as one of the key areas requiring attention in Education for Sustainable Development. Professional development, interdisciplinary collaboration and access to relevant teaching resources would therefore be necessary to support effective implementation. Industry collaboration should also form part of the process. Businesses that are adopting environmentally responsible practices can provide students with practical exposure to green technologies, sustainable production, ethical management and emerging business opportunities. Partnerships could include guest lectures, workplace visits, mentorship, internships, consultancy projects and joint innovation activities. Such collaboration would help reduce the gap between what students learn in the classroom and the sustainability challenges they encounter in the workplace.

Challenges to Integrating Green Entrepreneurship and Ethical Leadership into Business Education in Nigeria

Although the integration of green entrepreneurship and ethical leadership offers considerable opportunities for strengthening Business Education, its implementation may face a number of challenges. Curriculum reform is not achieved simply by introducing new topics; it requires appropriate resources, competent educators, institutional commitment and collaboration with relevant stakeholders. The following challenges are particularly important in the Nigerian context.

Table 6: Challenges and Possible Responses

Challenge	Likely implication	Possible response
Limited sustainability content in existing curricula	Students may have inadequate exposure to green enterprise and responsible leadership	Review curriculum content and embed sustainability across relevant courses
Limited lecturer capacity	Lecturers may lack current knowledge and practical experience in green entrepreneurship and sustainability	Provide continuous professional development and interdisciplinary training
Inadequate practical facilities and funding	Students may have limited opportunities for experiential sustainability projects	Provide institutional funding and establish partnerships with industry and development organisations
Predominantly theoretical teaching	Students may understand sustainability concepts without being able to apply them	Increase project-based, case-based and experiential learning
Weak university–industry collaboration	Limited exposure to actual sustainable business practices	Strengthen internships, workplace visits, mentorship and industry-based projects
Resistance to curriculum change	Established teaching practices may slow the adoption of new content and approaches	Involve lecturers and other stakeholders in curriculum review and implementation
Limited institutional sustainability culture	Classroom teaching may not be supported by institutional practices	Encourage tertiary institutions to model sustainable and ethical practices in their own operations

Source: Authors' synthesis based on UNESCO (2020), Okereke et al. (2019), Alao et al. (2023), and Vargas-Merino et al. (2025).

The challenges presented in Table 5 show that integrating green entrepreneurship and ethical leadership into Business Education requires more than simply revising course content. The most immediate concerns are the limited sustainability content in existing curricula and the preparedness of lecturers to handle these emerging areas (Okereke et al., 2019; Alao et al., 2023; UNESCO, 2020). The table also highlights the need for more practical learning, since students are unlikely to develop meaningful green entrepreneurial and ethical leadership competencies through lectures alone. Experiential learning, industry collaboration and interdisciplinary activities can provide opportunities for students to connect classroom knowledge with real-world challenges (Rosário & Raimundo, 2024;

Vargas-Merino et al., 2025). In addition, institutional practices and possible resistance to curriculum change may affect implementation. These challenges suggest that successful integration will require curriculum review, lecturer development, practical learning opportunities and strong institutional and industry support.

Strategies for Effective Integration

The integration of green entrepreneurship and ethical leadership into Business Education requires more than curriculum adjustment. It calls for changes in teaching practices, lecturer preparation, institutional support and relationships with the business community. Based on the issues discussed in the preceding sections, the following strategies are considered important.

Table 6: Strategies for Integrating Green Entrepreneurship and Ethical Leadership

Strategy	What it should involve	Expected outcome
Curriculum review	Embed green entrepreneurship, sustainability and ethical leadership across relevant Business Education courses	A curriculum that reflects contemporary business and sustainability needs
Lecturer capacity development	Workshops, seminars and professional development on sustainability, green enterprise and responsible leadership	Lecturers better prepared to teach emerging sustainability issues
Experiential learning	Green business projects, case studies, simulations, competitions and community-based assignments	Students develop practical sustainability and entrepreneurial competencies
Industry collaboration	Partnerships with sustainable businesses, NGOs and relevant professional organisations	Greater exposure to real-world sustainable business practices
Interdisciplinary learning	Collaboration between Business Education and environmental, agricultural, technology and management-related disciplines	More holistic understanding of sustainability challenges
Institutional modelling	Adoption of responsible waste management, energy efficiency, ethical procurement and transparent practices	Students experience sustainability as institutional practice, not only classroom theory
Policy and quality assurance	Inclusion of sustainability competencies in curriculum standards, programme review and assessment	Sustained institutional commitment to curriculum transformation

Source: Authors' synthesis based on UNESCO (2017, 2020), Rosario and Raimundo (2024), Vargas-Merino et al. (2025), and Nigerian Business Education literatures.

Conclusion

The changing nature of business and the growing pressure of environmental and social challenges make it increasingly important for Business Education to look beyond the traditional preparation of students for employment and conventional business activities. The discussion in this paper has shown that green entrepreneurship and ethical leadership provide useful pathways for repositioning Business Education towards sustainable development. Green entrepreneurship can help students recognise environmental challenges as opportunities for innovation, enterprise creation and employment, while ethical leadership can provide the values needed to ensure that such opportunities are pursued with integrity, fairness, accountability and concern for stakeholders. Their integration therefore offers a more balanced approach to preparing graduates who can create economic value without losing sight of social and environmental responsibilities. The paper also established that this integration is consistent with the Education for Sustainable Development framework and the broader objectives of the Sustainable Development Goals, particularly SDGs 4, 8, 9, 12 and 13. However, meaningful integration will require more than simply adding sustainability-related topics to existing courses. Curriculum review, lecturer capacity development, experiential learning, industry collaboration, interdisciplinary engagement and supportive institutional policies are necessary to translate the idea into practice.

Recommendations

Based on the discussions in this paper, the following recommendations are made:

1. Curriculum developers and regulatory bodies should ensure that green entrepreneurship, sustainable business practices and ethical leadership are reflected in entrepreneurship, management, marketing, accounting and other relevant areas of Business Education. The emphasis should be on integration rather than simply adding isolated topics.
2. Tertiary institutions should organise workshops, seminars and practical training that expose lecturers to green entrepreneurship, Education for Sustainable Development, ethical leadership and emerging sustainability practices. This would strengthen lecturers' capacity to translate these concepts into meaningful classroom experiences.
3. Students should be given opportunities to develop green business plans, undertake sustainability-related projects, participate in innovation challenges and solve community-based business problems. Such activities can help students move from understanding sustainability concepts to applying them.
4. Partnerships with environmentally responsible businesses, professional bodies, government agencies, non-governmental organisations and other stakeholders should be encouraged. These partnerships can provide students with mentoring, internships, workplace visits and practical exposure to green enterprise and ethical business practices.
5. Institutions should strengthen practices such as responsible waste management, efficient use of resources, transparent administration, ethical procurement and community engagement. When students see sustainability and ethical responsibility reflected in their learning environment, the principles are more likely to become part of their professional behaviour.

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DIGITAL OFFICE COMPETENCIES AND GRADUATE EMPLOYABILITY: BRIDGING THE SKILLS GAP IN NIGERIA'S POLYTECHNICS

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Abstract

The current worry of Nigeria's underemployment of its graduates has brought into focus the contents of polytechnic curriculum and the digital competency of graduates in a competitive labour market in Nigeria. This paper looks at the linkage between digital office skills and the employability of polytechnics graduates in Nigeria with particular emphasis on graduates of Office Technology and Management (OTM). The paper presents the theoretical framework of Human Capital Theory, and posits that the mismatch between skills learned at polytechnic and the skills required by the employers has been a factor influencing unemployment rate of OTM graduates. The paper draws on theoretical literature and practical research to determine the necessary digital competencies for OTM graduates to be effective in the present-day office, such as making and handling use of office software packages, data management, digital communication tools, social media skills, cyber security, and new technologies like cloud computing and project management software. The paper also addresses barriers to effective learning of digital skills such as lack of support on ICT resources for students, lack of ICT infrastructure, ICT literacy shortage of lecturers, and obsolescent curriculum. The paper recommends that the skills gap needs to be addressed from a multi-stakeholder perspective, through policy reform of the curriculum, support for lecturers in the development of their digital skills, strengthening the digital infrastructure, and strengthening the linkages between the industry and the institutions. Policy and Practice recommendations are given to assist polytechnic administrators, curriculum developers and policy makers to improve the employability of OTM graduates.

Keywords: Digital Competencies, Graduate Employability, Office Technology and Management, Skills Gap, Polytechnics, Nigeria

1. INTRODUCTION

1.1 Background to the Study

The world of work is changing in ways unprecedented by digitalising the way people work in the office and the abilities they need to excel at work. Digital technologies have entered the administrative space and new requirements have emerged for office workers who are equipped with traditional secretarial abilities alongside strong digital skills (Oyinloye et al., 2021). The problem of graduate unemployability has become a national worry in Nigeria, as employers have been complaining of the lack of skill by graduates of higher education institutions (Eze & Ononye, 2024).

Office Technology and Management (OTM) programmes offered in Nigerian polytechnic are training programme that produces graduates with technical, managerial and entrepreneurial skills required for effective operation in modern office environment. But, there is a growing dislocated between the skills gained by OTM graduates and the skills required in the digital era (Curriculum Relevance Study, 2026). The skills gap is experienced in the high unemployment

and underemployment rates of OTM graduates, where employers are increasingly seeking candidates who can demonstrate digital competencies (Olatunji, 2025).

Digitalisation of the workplace has been quickened in recent years, with the COVID-19 pandemic and the move to remote and hybrid work arrangements. The acquisition of digital skills like working with office software, data management, digital communication tools, and cybersecurity awareness are essential for office professionals (Nwaiwu & Nwokorie, 2026). Office Technology and Management graduates who don't have this skill set are at a disadvantage when entering the job market.

Explain the problem.State the problem.

Ideally, graduates of an Office Technology and Management programme from a Nigerian polytechnic should acquire a broad range of digital office skills that will enable them to be able to adapt well to the modern workplace. These abilities are crucial for office management positions, for the success of the organisation, and for career progression.

But, the current situation is different. Although technical training is a focus of OTM programmes, a significant challenge is the lack of development and measurement of digital skills among graduates. In recent studies, it has been observed that just a small proportion of OTM students possesses the competencies in the digital field, specifically in communication, teamwork, problem-solving, and adaptability, with unemployment and underemployment rates being extremely high among this group (Eze & Ononye, 2024).

An employer survey found that much of the surveyed employers were unhappy with the digital skills and professionalism of the graduates of OTM. Lack of good digital communication, lack of initiative when using office software and poor use of digital collaboration tools were all cited as common concerns that are hindering the employment and progression of these graduates in their career (Iheukwumere, 2025).

Moreover, observations in polytechnic institutions show a lack of addressing the digital competencies in the curriculum and methodologies used to teach them. Additionally, a lack of focus on hands-on learning, real-world scenarios, and industry-centered projects contributes to the gap between learning and the expectations of the workplace (Akudolu & Onwubuya, 2025).

1.3 Purpose of the Paper

The paper seeks to discuss the skills that are essential for the employability of the students of Office Technology and Management (OTM) in Nigeria's digital economy and outline steps towards bridging the gap between polytechnic education and the demands of the labour market. The aim of this paper is to:

i. Determine the digital office skills that OTM graduates need for employment in today's modern offices;
ii. Analyse the linkage between digital competence and graduate outcomes of employability; and
iii. Identify barriers that hinder the acquisition of digital skills in OTM programmes; and
iv. Make suggestions on how to improve digital competence and employability of OTM graduates.

2. CONCEPTUAL AND THEORETICAL FRAMEWORK

2.1 Conceptual Framework

2.1.1 Digital Office Competencies

Digital office competencies are the knowledge, skills and abilities needed to proficiently apply digital technologies in an office and administrative setting. These skills include proficient use of digital devices to access, evaluate, analyse, apply and synthesise data, and to use information and communication technologies to seek, understand, assess, create and communicate digital information (Dewi et al., 2021).

Research has found that a variety of digital office skills are needed for successful functioning of an OTM graduate in today's office, such as:

i. Technology Skills: Use a range of office technologies and equipment, effectively. This includes the ability to use computers, printers, scanner, and other office equipment (Oyinloye et al., 2021).
ii. Computer Skills: Knowledge of computer software applications such as word processing, spreadsheet, presentation, and database management. These are the skills that underpin computer literacy in the office (Iheukwumere, 2025).

iii. Information and Communication Skills: Skills to effectively use the internet for research, communication and information management. This comprises Web browsing, searching online and assessing online information (Oyinloye et al., 2021).
iv. Digital Communication Skills: Ability to communicate effectively through digital channels such as email, instant messaging, video conferencing and collaborative tools. In today's work environment, where remote and hybrid working arrangements are becoming increasingly common, these skills are becoming more and more relevant (Oyinloye et al., 2021).
v. Data Management Skills: To gather, organise, analyse and interpret data through digital means. This also involves mastery of spreadsheet applications, database management systems (Eze & Ononye, 2024; Adeshina, 2025).
vi. Social Media Literacy: Knowledge of social media and how it can be used in the professional and business world. This encompasses good communication, marketing and networking skills on social media (Nwaiwu & Nwokorie, 2026).
vii. Cybersecurity Awareness: Awareness of cybersecurity principles and practices to safeguard sensitive information. This includes understanding data security and privacy and safe online practices (Olatunji, 2025).
viii. Project Management Software Skills: This course covers the skills needed to manage office projects using project management software (Olatunji, 2025).
ix. Cloud Computing Skills: Knowledge of cloud platforms and services that allow for storage, collaboration, and document management (Olatunji, 2025).

2.1.2 Graduate Employability

Employability refers to various sets of skills that students need to acquire for successful employment upon graduation (Cronin et al., 2021). From the perspective of OTM graduates, employability means securing and sustaining jobs in office and administrative positions. Digital literacy has been recognised as an essential component to graduate employability (Curriculum Relevance Study, 2026) especially in the digital age.

In the literature, there is a clear link between the digital competence and employability. Numerous studies have proven that developing and improving digital literacy greatly enhances the employment opportunities and employment outcomes of higher education students (Dewi et al., 2021). The current knowledge-driven economy requires digital technologies to be understood and used – and engaged with – for success across a wide range of professional sectors and functional areas (Curriculum Relevance Study, 2026).

2.1.3 The Skills Gap

Skills gap relates to the difference between skills that graduates have and what employers require. Studies have revealed that OTM programmes in Nigerian polytechnics cannot cope with the technological revolutions found in automated offices because of the skills gap, which will eventually hinder job performance in the world of work (Assessment of Curriculum Improvement Needs, 2025). The skills gap comes in many shapes and forms, from weak knowledge of office software applications, poor digital communication abilities, to lack of understanding of new technologies.

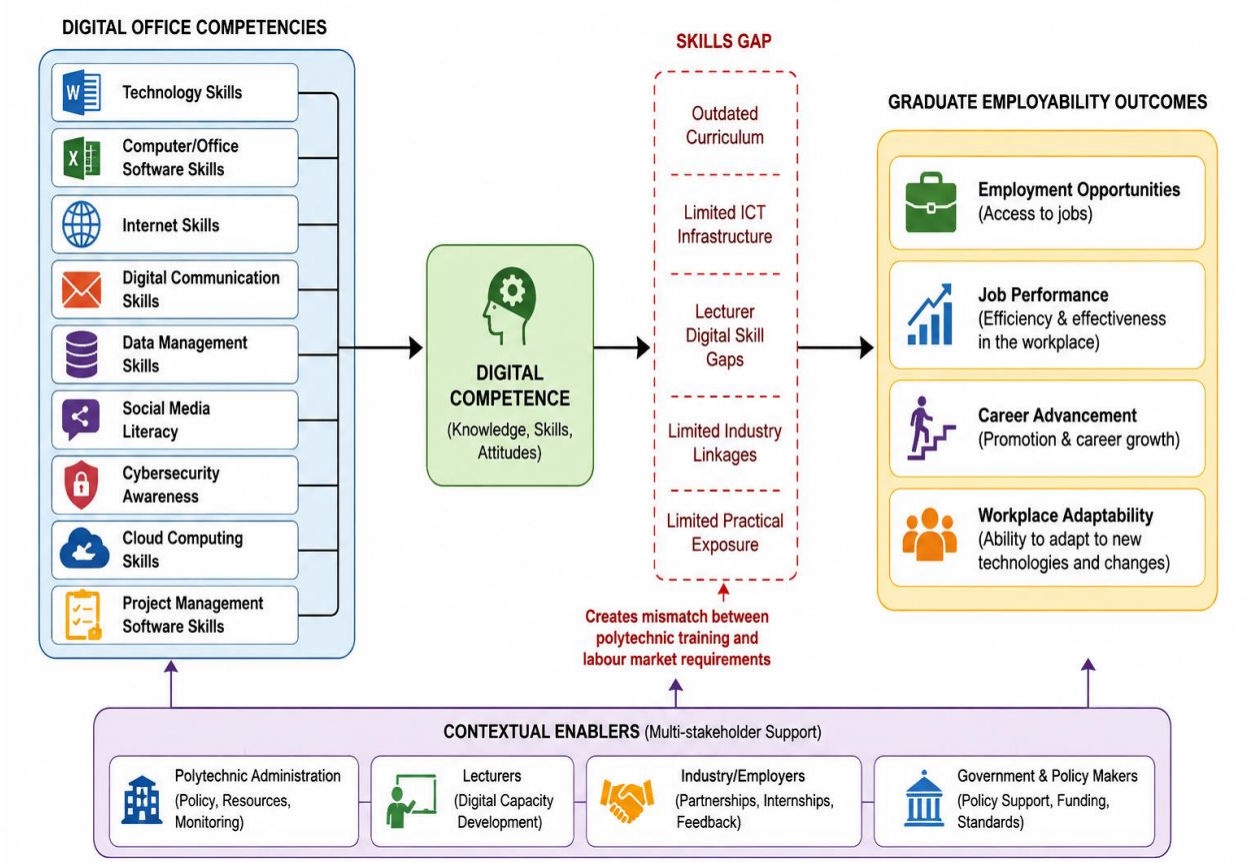


Figure 1: Conceptual framework linking digital office competencies to graduate employability
Source: adapted from Teo, T. 92029). developing a conceptual model to examine the impact of digital literacy on employability. education + training, 61(7/8), 804-821. https://doi.org/10.1108/ET-01-2019-0006

2.2 Theoretical Framework

The paper is based upon Human Capital Theory, this theory was propounded by Gary Becker (1962). The theory is that education and training are investments which can truly make people more productive. Proponents of this theory believe that more productive people can be expected to earn more money and to be more employable (Eze & Ononye, 2024).

Human capital theory is based on the belief that formal education is very instrumental and is crucial for enhancing the productive capacity of a population. In brief, human capitalists say that an educated population is a productive population. Human capital theory is made up of three: time, talent and energy (Eze & Ononye, 2024).

A Human Capital Theory perspective for this paper suggests that digital competence, which is considered as a form of human capital (i.e., education and training) and its relationships with employment outcomes. The reasons for this are that OTM graduates are more productive, and consequently more job-ready, if they have developed relevant digital competences as part of their educational programmes.

The theory is especially applicable to the study of the skills gap as it implies that education and training investments (including digital skills training) pay off in terms of increased productivity and employability. Embarrassment is the understatement of the moment when it's recognized that the polytechnics have failed to provide OTM graduates with necessary digital skills that have adverse effects on individual students as well as the economy.

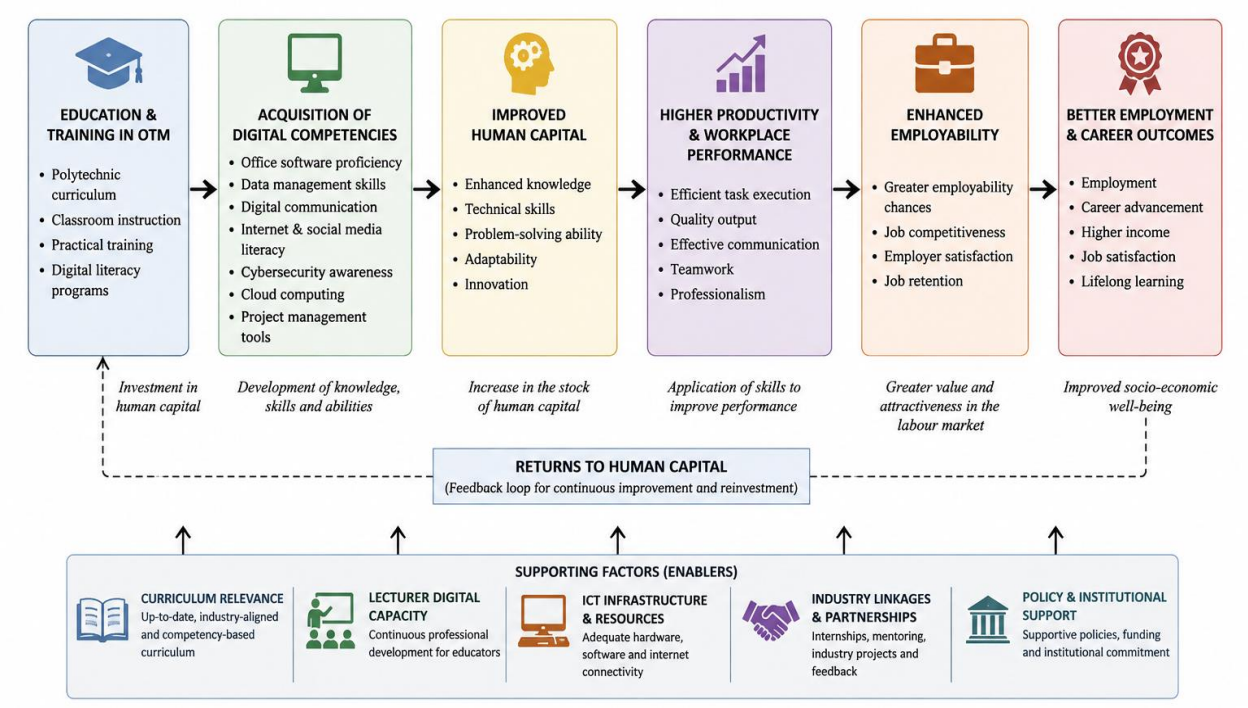


Figure 2: Human Capital Theory Framework for Digital Competence and Employability (Adapted from Becker, 1964; Schultz, 1961; and Ng, 2012)

3. LITERATURE REVIEW

3.1 Digital Skills Required by OTM Graduates

Researchers have pinpointed a series of digital competencies that are essential for OTM students to be successful in today's workplace. In Oyinloye, Asonibare and Oluwalola's (2021) study, the authors explored the skills needed in the office by OTM graduates and confirmed that OTM graduates need both hard and soft skills in the office. Hard skills that were identified were technology skills, internet skills, computer skills, presentation skills, and communication skills. The research found that in order for any graduate to be successful in the 21st century office, hard and soft skills had to be learned.

Olatunji (2025) assessed digital skills competence needed to empower and employ OTM students and found some essential digital skills such as skills in office software (MS Office Suite), data management, digital communication tools, social media literacy, and basic knowledge of cybersecurity practices. Another notable finding of the study was that skills in project management software and knowledge about cloud computing are becoming more relevant.

Adeshina (2025) examined the relationship between Information and Communication Technology skills and job opportunities of OTM graduates and concluded that OTM graduates have access to job opportunities in modern offices because of the skills acquired in the use of desktop publishing, word processing, database management and web surfing. The study determined that OTM graduates seeking employment should be able to have the following skills: networking skills, computer operations skills, web surfing skills, word processing skills and desktop publishing skills.

Iheukwumere (2025) studied the competencies of information and management technology needed for the globalised employability of OTM graduates and came up with the following major competencies required: Internet research, computer skills, data management, email and communication, word processing, spreadsheet management, data security and privacy, and file and document management. The study also revealed barriers that hinder OTM graduates in developing these competencies which are limited access to ICT resources, no ICT training for tutors, poor ICT infrastructure, digital literacy problem, technological obsolescence, and confidence and self-efficacy problem.

Nwaiwu and Nwokorie (2026) identified the emerging technologies needed in OTM programmes and concluded that the modern technologies; e-learning tools, digital marketing tools, online communication technologies are indispensable in enhancing digital skills competency in OTM and prepare the graduate for the modern office. The study also highlighted

the need for partnerships within the industry to review the OTM curriculum regularly to ensure it is relevant to the technological developments.

The curriculum is relevant and students are competent in using digital tools.

A great concern in Nigeria has been the relevance of polytechnic education to the needs of the labour market. A study by Curriculum Relevance Study (2026) looked at the relationship between curriculum relevance, digital competence and employability outcomes of university graduates in Nigeria, and the results showed that the perception of curriculum relevance was fairly aligned with the demands of the labour market with moderate level of employability outcomes among graduates while the digital competence among graduates was appreciable. Results showed that there are great relationships between the curriculum relevance and the employability outcomes, but also between digital competence and the employability outcomes. It stated that bolstering the development of curriculum responsiveness and improved digital competence development are key to improving employability of Nigerian graduates.

Akudolu and Onwubuya (2025) studied the extent to which Digital resources were used in the effective delivery of OTM courses and concluded that OTM lecturers lowly utilise Digital resources in the effective delivery of OTM courses to enhance students' acquisition of employability skills. The study found that the OTM lecturers were not able to make use of the digital resources in the best way to equip their students with the employability skills they require to be self-reliant.

According to Okoli and Okolo (2025), office application software skills required for effective implementation of Office Technology and Management Education curriculum were ascertained and it was found that business education lecturers highly needed the office application software skills required for effective implementation of the OTM curriculum. The study recommended constant training and re-training of lecturers on the use of office application software.

3.3 Challenges to Digital Skills Acquisition

There are multiple barriers to good acquisition of digital skills among OTM students. The major challenges identified by Iheukwumere (2025) are limited access to ICT resources, shortage of ICT trainings for tutors, inadequate ICT infrastructure, digital literacy gap, technological obsolescence and confidence and self-efficacy. These challenges hinder OTM graduates in gaining knowledge and management technology skills for globalised employability.

Assessment of Curriculum Improvement Needs (2025) revealed that OTM programme in polytechnics in Northern Nigeria cannot keep up with the technological revolution seen in automated offices due to the absence of the required competencies, and this will definitely affect the competence of the polytechnics graduates in the world of work. The study suggested that further improvement should be made in touch typing and communication technology at OTM level for the benefit of the students of the National Board for Technical Education (NBTE).

Studies on digital resources utilisation have also highlighted challenges related to access and utilisation. According to Odili et al. (2020), only a few of the digital resources found in the institutions in Nigeria are up to date and most of the higher learning institutions in Nigeria are without up to date e-libraries containing adequate digital resources. The authors claimed that such challenges hinder lecturers from effectively engaging digital resources in their teaching and research.

Students are expected to be able to recognize, explain, and justify the role of work-integrated learning in enhancing graduates' employability and success.

Work-integrated learning (WIL) is viewed as a key contributor to improving graduate employability. A study done in ScienceDirect (2024), examined how the relationship between work-integrated learning and graduate employability in Nigeria was mediated by digital literacy and moderated by life-career knowledge. The study revealed that students who have completed practical and real-time learning experiences in their WIL programs are more likely to be highly employable as they are exposed to a variety of skills that are valued in the workforce.

The study also revealed that the digital literacy is the intervening variable between work integrated learning and graduate employability. The knowledge of digital literacy is essential for using digital tools and technologies as well as critically analyzing the quantity of information that is available online and using digital platforms to communicate and collaborate effectively (Cetindamar-Kozanoglu & Abedin, 2020). Digital literacy is recognized as an important aspect to graduate employability, especially in the current digital era.

The study on the integration of emerging digital skills (2026) found that emerging digital skills are integrated moderately into the curriculum of business education with a low emphasis in practical skills use and digital entrepreneurship. However, the incorporation of new digital skills

had a strong and significant positive effect on the workforce readiness of graduates, in terms of employability, job performance, adaptability and confidence in using digital tools at work.

4. DISCUSSION

4.2 The Digital Competence of OTM Graduates' Attitude

The literature studied indicates medium level of Digital competence of the OTM graduates and there is a strong need to further enhance their competence in this field. Some graduates have knowledge of using simple office software applications and using digital communication tools, but many do not have the more advanced digital skills which are needed in the modern office. This was in line with the results of Curriculum Relevance Study (2026) which indicated moderate employability outcomes for graduates.

These skill deficits are especially noticeable in new technology fields like cloud computing and project management software to digital marketing tools. Nwaiwu and Nwokorie (2026) discovered these modern technologies are crucial in improving competency in digital skills among OTM and also for preparing graduates for the modern offices. But a large number of OTM programmes are not doing a good job in preparing students in these areas.

Employability and Digital Competence are tied together through the following relationship:

i. It is well documented in the literature that digital competence is linked to employability. Research consistently shows that having digital literacy is an essential part of graduates' employability (Curriculum Relevance Study, 2026; ScienceDirect, 2024). Graduates with good digital skills are more attractive to employers and have improved employment opportunities due to their OTM qualifications.
ii. Digital competence is reinforced by the transformation of office work. Administrative work has been digitalised, leading to new demands for office workers in terms of their ability to make effective use of digital technologies. Employers are looking increasingly for graduates who are able to work successfully in both traditional and remote working situations (Aroles et al., 2021; ScienceDirect, 2024).

4.4 How to Address the Skills Gap as a Systemic Challenge

It is a systemic issue that needs a multi-stakeholder approach to bridge the skills gap between polytechnic education and the needs of the labour market. There are several reasons for the gap, such as the curriculum becoming outdated, poor ICT infrastructure, lack of access to digital resources and low lecturer digital capacity.

Okoli and Okolo (2025) opined that business education lecturers were highly in need of skills in office application software to effectively implement the OTM curriculum. This indicates that the digital competence of the lecturers themselves is one of the restrictions in students' digital competence acquisition. Without lecturers' digital competencies, digital competencies can't be taught.

Akudolu and Onwubuya (2025) found that OTM lecturers lowly utilise digital resources for instructional delivery of OTM courses towards enhancing students' acquisition of employability skills. It shows that such a finding indicates that there is a need to build the capacity of lecturers with greater use of ICTs and to strengthen and improve the ICT infrastructure in polytechnics.

4.4 Strategies to close the skills gap

Addressing the gap between the skills that are taught in polytechnic schools and the requirements of the workforce will need a multi-pronged strategy that emphasizes updating curriculum and increasing applied learning opportunities. One major approach is dynamic curriculum reform in which the Office Technology and Management (OTM) programs are routinely evaluated to incorporate new technology trends. The use of tools, which include cloud computing, digital marketing platforms, and modern online communication software, in course content, ensures that students are taught the skills they need for the modern workplace (Nwaiwu & Nwokorie, 2026).

Shorediving industry-institution linkages is also very important. The involvement of feeder industries in the curriculum development process could give employers a voice in the development of the curriculum, ensuring that the ideas that are introduced in the classroom are relevant to the realities of the modern office and giving students a taste of real working life (Nwaiwu & Nwokorie, 2026). But an updated curriculum is dependent on teachers who are able to teach it. This requires persistent digital capacity building of lecturers through targeted training and retraining programs which focus on the use of modern office application software and the use of modern instructional technology (Okoli & Okolo, 2025; Akudolu & Onwubuya, 2025).

Polytechnics need to put more emphasis on investments that can aid both the implementation of updated curricula and the training of the faculty. Modernization of ICT resources such as the

upgrading of the computers, internet facilities, and digital libraries, is critical for production of an environment conducive to hands-on technical training (Oyinloye et al., 2021). Last but not least, WIL, such as structured internships and industrial training, provides students with first-hand experience of using digital skills in a practical setting, significantly enhancing their employability after graduation (ScienceDirect, 2024).

5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

In this paper, the relationship between digital office competencies and employability of graduates of OTM in Nigeria's polytechnics is discussed, specifically, Nigerian polytechnics OTM graduates. Overall, the results show that digital office skills, including knowledge of basic office software applications and data management systems, as well as digital communication tools, social media literacies, cyber security awareness, cloud computing and project management software, play a crucial role in the workplace of OTM graduates. In addition, there is a strong link between digital competence and employment, as students with high levels of technical competency are always a more attractive choice for the job market and have better career prospects.

The study reveals, however, that the current skill mismatch between polytechnic education and labour market requirements is still a systemic problem. This is mainly due to obsolescence of curriculum, poor ICT infrastructure, lack of access to digital resources, and lack of digital capacity among academic staff. In order to make this gap work, a multi-stakeholder approach is needed to effectively bridge this gap. Sustainable solutions need to be an integral part of the curriculum reforms and will involve on-going digital training for lecturers, as well as infrastructure improvements involving ICTs, industry-institution partnerships and the expansion of opportunities for work-integrated learning.

5.2 Recommendations

The administrators of Polytechnic institutions need to take the initiative by investing on modern ICT infrastructure like updated e-libraries, high speed internet connection, functional computers to make the environment in the Polytechnic resemble the real working environment. In addition to these facility enhancements, there is a need to highlight the need for OTM lecturers to continuously improve their personal digital skills through PDCs. Teachers can leverage today's digital tools within their learning approach to effectively prepare students with a diverse skill set of both soft and hard skills.

In a broader perspective, curriculum developers at the NBTE should frequently review and update the OTM curriculum to embed emerging technologies like e-learning, digital marketing, and online communication, while also modernizing foundational requirements like touch typing. To support these academic shifts, policymakers must step in to enact policies that promote institutional digital literacy, secure dedicated funding for polytechnic ICT infrastructure, and tighten regulatory oversight to ensure educational standards stay aligned with evolving market demands. Ultimately, OTM students should take full advantage of these resources to master core software like Microsoft Office, data analysis, and project management tools, committing to lifelong learning to remain competitive in the job market.

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DIGITAL LITERACY SKILL ACQUISITION, INSTITUTIONAL ENTREPRENEURIAL SUPPORT, AND TECHNO-PRENEURIAL INTENTIONS AMONG NIGERIAN TERTIARY STUDENTS

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Abstract

The increasing emphasis on digital economy participation and youth entrepreneurship within Nigeria's policy framework necessitates understanding how both individual competencies and institutional factors shape students' technology-driven entrepreneurial aspirations.This study examined the impact of digital literacy skill acquisition and institutional entrepreneurial support on techno-preneurial intentions among Business Education students in Lagos State, Nigeria. The research was anchored on the Theory of Planned Behaviour and employed a descriptive survey design. A sample of Business Education students was drawn from Lagos State University of Education. Data were collected using three structured questionnaires adapted from validated instruments measuring digital literacy dimensions and techno-preneurial intentions.

The result indicated that there is low institutional entrepreneurial support for Business education students (Mean = 2.31). The findings revealed significant positive among between both digital literacy skill acquisition and institutional entrepreneurial support and students' techpre-neurial intention(R = 572, P<000, R=294, P < 000, R=561, P < 000). The result also showed that digital literacy skill acquisition and institutional entrepreneurial support contributed significantly (R^2 = .361; $F_{(2, 237)}$ = 54.838; p<.05). to techno-preneurial intentions among Business Education students in Lagos State, Nigeria.The study concludes that enhancing techno-preneurial intentions among Business Education students requires strengthening digital literacy skill acquisition through curriculum integration and practical skills training. It is recommended that university should provide institutional based entrepreneurial support like improved technological infrastructure, structured mentorship and funding programmes, stronger university-industry partnerships, and alignment of business education curricula.

Keywords: Digital literacy, institutional entrepreneurial support, techno-preneurial intentions, Business Education, entrepreneurship,

Introduction

The imperative for structural economic diversification in sub-Saharan Africa, particularly in Nigeria, has elevated technology-driven entrepreneurship (techno-preneurship) to the center of national development strategy. As traditional labor markets contract and public sector employment reduces, youth unemployment in Nigeria remains a pressing socioeconomic challenge (National Bureau of Statistics [NBS], 2023). Entrepreneurship can effectively increase employment opportunities and alleviate employment pressure (Katz et al., 2016), becoming a key channel for development in both developed and emerging countries (Mathias et al., 2015). However, the role of universities in stimulating entrepreneurship among tertiary students remains a subject of ongoing debate.

Technopreneurship is a branch of entrepreneurship that describes the process of developing new ventures by combining entrepreneurial skills with technology (Fowosire et al., 2017; Hoque, 2017). Defined as the creation and management of innovative, tech-enabled business ventures, technopreneurship presents a vital path for wealth creation, employment, and digital economic growth (Adebayo & Ogundele, 2023; Ojo et al., 2021). A technopreneur is a tech-savvy entrepreneur who leverages technological business opportunities through personal talent, capital investment, and real-time decision-making skills (Hoque, 2017) and play a crucial role in transforming the global economy by improving existing technologies, noting further that failing to cultivate competent technopreneurs will widen socio-economic gaps across nations and cultures (Abbas, 2018).

Central to cultivating a vibrant technopreneurial culture among graduates is understanding what shape technopreneurial intentions. Grounded in Ajzen's (1991) Theory of Planned Behavior and Becker's

(1964) Human Capital Theory, entrepreneurial intention is widely recognized as the primary immediate antecedent of actual venture creation behavior (Liñán & Fayolle, 2015; Okonkwo & Eze, 2022). Technopreneurial intention refers to a cognitive state of mind that directs an individual's actions toward developing and implementing new technology-based business concepts (Salhieh et al., 2022). Boldureanu et al. (2020) maintained that technology entrepreneurship serves as a key strategy to combat global graduate unemployment by empowering students to become technopreneurs. However, empirical research focusing specifically on intentions toward technology-based entrepreneurship remains insufficient, as the majority of existing studies concentrate on traditional entrepreneurship. Consequently, there is a scarcity of research examining technology entrepreneurship as a career choice among university students, leaving the underlying determinants of technopreneurial intentions insufficiently clarified (Abd Rahim et al., 2023; Belmonte & Lira, 2023). It is important to also add that employers are increasingly seeking employee that are proficient in data analysis, programming, digital marketing, and other technology-related skills (Cham et al., 2021). Unfortunately, Cham et al., (2021) affirmed that global surveys conducted by organizations such as the World Economic Forum and LinkedIn consistently show that employers struggle to find candidates with requisite digital competencies. Concurrently, educational institutions have faced challenges in adapting curricula rapidly enough to align with the evolving demands of the labor market (Alenezi, 2021). In the contemporary Nigerian digital economy, digital literacy skill acquisition has shifted from an optional asset to an essential prerequisite for economic participation (Federal Ministry of Communications, Innovation and Digital Economy [FMCIDE], 2023).

Digital literacy encompasses all competencies necessary to utilize digital technology effectively. This form of literacy involves navigating technology while enabling individuals to perform information retrieval and operational tasks in technology-driven environments (Biradar & Naik, 2017; Buckingham, 2006). Specifically, digital literacy skills refer to the ability to effectively locate, evaluate, create, and communicate information using technology (Charles-Owaba, 2021). Beyond basic operational computer literacy, digital literacy encompasses cognitive, analytical, and strategic capabilities, including software development, data analytics, cloud integration, digital marketing, and cybersecurity awareness (Carretero et al., 2017; Egbetokun et al., 2020). To be digitally literate implies familiarity with a wide array of digital practices, allowing individuals to create, share, and communicate content efficiently across multiple formats (Onome, 2022).

Empirical research in Nigerian universities demonstrates that students who acquire advanced digital skills report significantly higher self-efficacy, improved risk assessment capabilities, and heightened alertness to market opportunities (Akanbi & Olamade, 2021; Nwosu et al., 2024). Early studies noted that the adoption of digital media for learning in informal educational environments in Nigeria was in its infancy due to inadequate digital skills (Ebele et al., 2013). However, Ukwoma et al. (2016) reported that many students demonstrated significant digital competencies, enabling them to enhance technology use for academic purposes. When individuals master digital tools, their perceived behavioral control increases, directly enhancing their intention to launch technology-driven ventures rather than seeking conventional wage employment (Lawal & Mustapha, 2022).

Nevertheless, findings regarding student digital literacy levels remain mixed. Rahman et al. (2020) evaluated the digital literacy capabilities of students using a quantitative survey design and found that student competencies were only at an average level. Similarly, Omeodu and Charles-Owaba (2021) identified a lack of digital skills among graduates as a major driver of graduate unemployment in Nigeria. Consequently, Harerimana et al. (2022) highlighted the need to integrate digital literacy education that extends beyond basic device operational skills. In allied contexts, Brown et al. (2020) found high levels of basic everyday digital literacy among nursing professionals, while Frings et al. (2022) observed that healthcare students were no better prepared in terms of digital literacy skills than their non-healthcare peers.

Need to say that individual human capital capabilities do not operate in isolation; institutional entrepreneurial support serves as a crucial environmental moderator within regional innovation systems (Olutuase et al., 2023; Scott, 2014). In Nigeria, higher education institutions, comprising universities, polytechnics, and colleges of education are mandated to embed entrepreneurship education into their curricula. Institutional support spans financial enablement, normative/cultural validation and structural support (technology business incubators, maker-spaces, and industry mentorship networks) (Ezenwafor & Okeke, 2021; Onuoha et al., 2020). University support for student entrepreneurship programs includes providing funding, entrepreneurship training, access to mentors, and internship opportunities (Amalia & Von Korflesch, 2021). Such support assists students in developing skills, launching ventures, and enhancing their innovative capabilities to navigate business challenges (Maritz et al., 2022). Furthermore, Pradana and Kartawinata (2020), Shane and Venkataraman (2000),

confirmed that supportive university entrepreneurship policies foster business idea generation, motivation, and an improved understanding of entrepreneurial opportunities. When universities actively integrate digital skill development with robust institutional support, students experience lower entry friction and reduced perceived operational risk, resulting in a stronger conversion of digital skills into concrete technopreneurial intentions (Ademola et al., 2024).

Despite widespread smartphone penetration and substantial youth engagement with digital technologies in Nigeria, a severe empirical paradox persists: high digital tool consumption has failed to yield a proportional increase in high-growth, scalable technopreneurial ventures (FMCIDE, 2023; World Economic Forum, 2023). A vast majority of digital activity among tertiary students remains restricted to passive social media browsing, entertainment, and informal commerce, rather than tech-driven innovation or product development (Akanbi & Olamade, 2021; Nwosu et al., 2024). Although entrepreneurship courses are compulsory across Nigerian universities, institutional support mechanisms remain largely theoretical, fragmented, and detached from practical digital skill acquisition ecosystems (Ezenwafor & Okeke, 2021; Olutuase et al., 2023). Most university entrepreneurship centers lack functional digital incubators, high-speed connectivity infrastructure, seed capital funds, and specialized tech-mentorship programs (Onuoha et al., 2020). Consequently, students acquire theoretical entrepreneurial concepts without practical digital competencies, or acquire isolated IT skills without the institutional commercialization framework required to build viable tech ventures.

Furthermore, prior empirical studies in Nigeria have predominantly investigated digital skills or institutional support in isolation (Adebayo & Ogundele, 2023; Omeodu & Charles-Owaba, 2021; Ukwoma et al., 2016). There remains a critical lack of integrative empirical frameworks testing how institutional entrepreneurial support and digital literacy skill acquisition jointly impact technopreneurial intentions among Nigerian tertiary students.

Objective of the Study

The main objective of this study was to investigate digital literacy skill acquisition, institutional entrepreneurial support, and technopreneurial intentions among Nigerian tertiary students. Specifically, the study sought to:

1. Assess the level of institutional entrepreneurial support available to Business Education students.
2. Determine the relationship among digital literacy skill acquisition, institutional entrepreneurial support, and students' intentions to engage in technology-driven entrepreneurship.
3. Examine the joint impact of digital literacy skill acquisition and institutional entrepreneurial support on students' technopreneurial intentions.

Research Questions

1. What is the level of institutional entrepreneurial support available to Business Education students?
2. What is the relationship among digital literacy skill acquisition, institutional entrepreneurial support, and students' intentions to engage in technology-driven entrepreneurship?
2. To what extent do digital literacy skill acquisition and institutional entrepreneurial support jointly influence students' technopreneurial intentions?

Methodology

A descriptive survey design was adopted for this study. The target population comprised all Business Education students at Lagos State University of Education. A sample of 240 Business Education students across 200 to 400 levels was selected using a simple random sampling technique via balloting. Data were collected using three structured questionnaires adapted from validated instruments measuring digital literacy, institutional entrepreneurial support, and technopreneurial intentions:

(i). Digital Literacy Questionnaire: Contained 15 items scored on a 4-point Likert scale ranging from Very High Extent (4), High Extent (3), Low Extent (2), to Very Low Extent (1).

(ii).Institutional Entrepreneurial Support Questionnaire: Measured perceived university support across three dimensions (business development support, educational support, and concept development support) using an 11-item scale adapted from Kraaijenbrink et al. (2010), structured on a 4-point Likert scale (Strongly Agree, Agree, Disagree, Strongly Disagree).

(iii)Technopreneurial Intentions Questionnaire: was adopted from the work of **Salhieh and Abdallat (2022).** It was a seven items questionnaire on four points likert scale. The instruments were given to specialist to check for face and content validity of the instrument. Suggestions made by these experts were used in drafting the final copy before administration. To obtain reliability coefficient, the instrument used administered on twenty students outside the sample size of the study. The instrument's reliability coefficient was defined using the Cronbach Alpha reliability formula which indicated 0.86,0.79 and 0.77

respectively for the three instruments. The researcher visited the university and administered the questionnaire with the assistance of research assistant from the University.

Research questions were analyzed using descriptive statistics (mean and standard deviation), while hypothesis was tested with inferential statistics (regression analyses) at the 0.05 significance level. The study used benchmark mean criterion of 2.5 was established based on the 4-point scale.

Result

1. What is the level of institutional entrepreneurial support for Business education students**?**

Table 1: Mean and Standard representation of institutional entrepreneurial support for Business education students

	Statements	Mean	SD
1	The university provides business incubation facilities that help me in growing my business.	2.32	.439
2	I have access to business mentors through programs offered by the university.	1.98	.411
3	The university provides access to financial resources, such as funding or grants, to develop my business.	1.67	.298
4	The university actively assists me in building strong business networks with entrepreneurs and investors.	2.33	.322
5	The university offers entrepreneurship courses that enrich my knowledge of business management.	2.73	.210
6	I receive practical training from the university that helps me understand the operational aspects of business.	2.51	.088
7	The university provides seminars and workshops on innovation and entrepreneurship that are beneficial for the development of my business.	2.54	.763
8	The university grants access to educational materials and resources relevant to my business needs.	2.43	.401
9	The university helps me refine my business ideas through structured guidance and consultation.	2.22	.381
10	I receive support from the university in developing product prototypes that align with my business concept.	2.17	.093
11	The university offers programs that encourage the development of creative and innovative ideas to be implemented in my business.	2.42	.521
	Aggregate Mean 2.31	2.31	

Table 1 presents the extent of institutional support for Business Education students. With an aggregate mean of 2.31, indicates that students' institutional support is low. Individual items show, having recorded aggregate mean below benchmark mean 2.5. Individual item analysis showed that only three items have mean scores of above 2.50. The university offers entrepreneurship courses that enrich my knowledge of business management (2.73), I receive practical training from the university that helps me understand the operational aspects of business (2.51) and the university provides seminars and workshops on innovation and entrepreneurship that are beneficial for the development of my business (2.54). The implication is that students experience low institutional support

2. What is the relationship among digital literacy skill acquisition, institutional entrepreneurial support and students' Technopreneurial intention?

Table 2: Correlation among Digital literacy skill acquisition, institutional entrepreneurial support and Technopreneurial intentions

		Digital Literacy	Institutional Support	Technopreneurial intentions
Literacy	Pearson Correlation	1	.572**	.294**
	Sig. (2-tailed)		.000	.000
	N	240	240	240
Institutional	Pearson Correlation	.572**	1	.561**
	Sig. (2-tailed)	.000		.000
	N	240	240	240
Technopreneurial intentions	Pearson Correlation	.294**	.561**	1
	Sig. (2-tailed)	.000	.000	
	N	240	240	240

**. Correlation is significant at the 0.01 level (2-tailed).

Table 2 show the result of the relationship among Digital literacy skill acquisition, institutional entrepreneurial support and Technopreneurial intentions. The result showed significant relationship Digital literacy and institutional support (R = 572, P<000), Digital literacy and Technopreneurial intentions (R=294, P < 000) while institutional support and Technopreneurial intentions similarly showed significant relationship (R=561, P < 000). Hence there is significant relationships among the pairs of Digital literacy skill acquisition, institutional entrepreneurial support and Technopreneurial intentions.
3. Digital literacy skill acquisition and institutional entrepreneurial support will not significantly impact students' Technopreneurial intentions.

Table 3 Regression Analysis of Digital literacy skill acquisition and institutional entrepreneurial support on Technopreneurial intentions

Source of variation	Sum of Squares	Df	Mean Square	F-Ratio	P
Regression	322.685	2	161.342	54.838	.000[b]
Residual	697.299	237	2.942		
Total	1019.983	239			

Model Summary: R=.562; $R^{2=}$.316; Adj R^2=.311; Std Err:1.715

a. *Dependent Variable: Technopreneurial intentions*

b. Predictor: (Constant), Digital literacy skill acquisition and institutional entrepreneurial support

The results in Table 3 indicated that Digital literacy skill acquisition and institutional entrepreneurial support in the regression model show significant prediction on Technopreneurial intentions (R = .562; R^2 = .361; Adj. R^2 = .311; $F_{(2, 237)}$ = 54.838; p<.05). This showed that the predictor variable accounted for 31.6% of the variance in Technopreneurial intentions among Business Education students. Thus, Digital literacy skill acquisition and institutional entrepreneurial support have significant impact on Technopreneurial intentions.

Discussion of Findings

The empirical finding indicating that Business Education students experience low institutional support implies that higher education institutions are currently failing to provide the infrastructural, financial, mentorship, and administrative frameworks necessary to nurture viable entrepreneurial ventures. This deficiency manifests in outdated curriculum structures, poorly equipped business incubators, insufficient practical training facilities, and limited access to venture funding or industry linkages, thereby stifling students' capacity to translate theoretical knowledge into functional enterprises. This outcome aligns with existing literature. It aligned with the finding of Athreye et al. (2023) which highlighted that developing economic contexts often suffer from weak institutional support structures and organizational apathy within universities, forcing students to rely disproportionately on personal drive rather than systematic institutional support. Similarly, Binuomote (2014) and Okolocha (2025) noted that tertiary institutions offering business education frequently lack functional entrepreneurial development centers, modern technology-enabled learning facilities, and experiential learning pathways, compelling graduates to seek scarce white-collar jobs rather than initiating self-reliant ventures. Furthermore, Indarti and Langenberg (2004) as well as De Silva et al. (2018) emphasized that university level environmental constraints, such as administrative complexities, lack of seed capital, and underdeveloped industry academia linkages significantly affect student entrepreneurial development.

The results also revealed significant bivariate relationships among digital literacy skill acquisition, institutional entrepreneurial support, and technopreneurial intentions, demonstrating that these three variables are interconnected. Higher levels of digital literacy enable students to recognize and leverage technology-driven market opportunities, while robust institutional entrepreneurial support provides the essential resources, infrastructure, and validation needed to translate digital competencies into concrete technopreneurial intentions. Conversely, strong institutional backing enhances student engagement with digital tools, collectively fueling their desire to launch technology-focused ventures. This interconnectedness aligns with theoretical and empirical research. Grounded in the Theory of Planned Behavior, empirical evidence by Isma (2024) and recent studies in MDPI publications (2026) reveals that digital skills and institutional digital transformation sequentially foster entrepreneurial mindsets and technological venture intentions. Moreover, research by Mustain et al. (2024) and Oktaviani (2025) confirms a strong direct correlation between digital literacy skills and positive student attitudes toward technology-driven self-employment.

Finally, the finding that digital literacy skill acquisition and institutional entrepreneurial support exert a joint, statistically significant impact on students' technopreneurial intentions demonstrates that technical competence and environmental backing are co-essential determinants in cultivating future technology entrepreneurs. This result implies that possessing digital literacy alone is insufficient to drive technological entrepreneurship unless paired with active institutional backing, such as incubation programs, faculty mentorship, and seed funding. When institutions pair digital skill-building curricula with systemic entrepreneurial support, students gain both the cognitive capability and structural empowerment necessary to undertake technology-based business creation. This outcome finds strong validation in previous studies: Prasetyo Adi Nugroho et al. (2025) and Maziriri et al. (2024) confirmed that digital literacy and academic support act as powerful joint predictors of technopreneurial intention, accounting for a substantial proportion of variance in technology venture creation models. Furthermore, Nasir et al. (2020) emphasized that the interplay between an individual's digital competencies and a supportive institutional ecosystem accelerates digital business adoption and reduces perceived technological entry barriers.

Conclusion and Recommendations

This study investigated digital literacy skill acquisition, institutional entrepreneurial support, and technopreneurial intentions among Nigerian tertiary students. Although Business Education students currently experience low levels of institutional support, the combined influence of digital literacy skill acquisition and institutional entrepreneurial support significantly drives students' technopreneurial intentions. Based on these findings, the following recommendations are made:

1. **Synergize Theory and Practical Application:** Tertiary institutions should align entrepreneurship education with practical execution, tailoring programs not only to general institutional curricula but also to students' specific areas of technological interest.
2. **Target Institutional Support Needs:** University administrations should expand institutional entrepreneurial support structures by providing accessible seed funding, modern incubator facilities, and specialized mentorship tailored to student needs.
3. **Enhance Curriculum Practicality:** The Business Education (BED) curriculum should be updated to strengthen its digital literacy component, placing greater emphasis on practical, hands-on technological applications over purely theoretical instruction.

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GREEN BUSINESS, SOCIAL ENTREPRENEURSHIP AND ETHICAL LEADERSHIP FOR DIGITAL TRANSFORMATION IN AFRICA

BY

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Abstract

This paper investigates the transformative potential of integrating green business models, social entrepreneurship, and ethical leadership within the context of Africa's ongoing digital and entrepreneurial revolutions. It argues that digital transformation acts as a powerful catalyst, enabling a new wave of entrepreneurship that is not only economically viable but also environmentally sustainable and socially inclusive. The paper begins by conceptualizing each of the three core variables green business, social entrepreneurship, and ethical leadership while simultaneously framing them within the dynamics of digital and entrepreneurship transformation sweeping across the continent. It then establishes the critical interrelationships between these forces, demonstrating how digital technologies amplify their synergy to address Africa's unique socio-economic and environmental challenges. The importance of this integrated, digitally enabled model for Africa's economic transformation is highlighted, focusing on its capacity to foster inclusive growth, drive innovation, build resilience, and attract impact investment. The paper concludes with a forward-looking perspective, offering actionable recommendations for policymakers, business leaders, entrepreneurs, and academic institutions to harness this synergy, ensuring that Africa's digital future is purpose-driven, sustainable, and just. The framework of green business, social entrepreneurship, and ethical leadership, when viewed through the lens of digital and entrepreneurship transformation, offers a coherent and powerful pathway forward.it was recommended that consider creating digital feedback loops that allow stakeholders to have a genuine voice in company decisions, embodying the principles of inclusive governance.

Key words; Social Entrepreneurship, Green Business, Ethical Leadership, Business Education

Introduction:

Africa is currently experiencing two profound and simultaneous transformations. The first is the Digital Transformation, moved by the rapid diffusion of mobile technology, expanding internet connectivity, and the rise of innovative fintech, agritech, and healthtech solutions (World Bank, 2023). This digital wave is fundamentally altering how Africans communicate, access information, conduct business, and receive services. The second is an entrepreneurship transformation, marked by a burgeoning community of young, innovative problem-solvers who are moving beyond necessity-based ventures to create high-growth, opportunity-driven enterprises (Global Entrepreneurship Monitor, 2024). These entrepreneurs are increasingly looking to address pressing societal needs, blurring the lines between commercial and social value creation.

Moreover, the continent faces the urgent imperatives of climate change adaptation and the need for more inclusive economic models that can absorb a growing youth population and reduce persistent inequality (African Development Bank, 2023). It is at the dynamic intersection of these digital, entrepreneurial, social, and environmental currents that the potential for a truly transformative economic paradigm lies. This paper posits that the key to unlocking this potential is the deliberate and synergistic integration of green business, social entrepreneurship, and ethical leadership, with digital transformation serving as the essential accelerator and enabler.

To explore this integrated potential, it is necessary to reconceptualise the three core variables through the lens of these contemporary African transformations.

Green Business

Green business is an enterprise that strategically integrates environmental stewardship into its core operations, aiming for a net-positive impact on the planet (Schaltegger et al., 2023). This involves minimising ecological footprints, adopting circular economy principles, and developing products and services that contribute to environmental sustainability.

Digital Transformation Link: Digital technologies are revolutionising green business in Africa. The Internet of Things (IoT) enables precision agriculture, optimising water and fertiliser use. Big data analytics can track deforestation and illegal wildlife trade. Blockchain can create transparent and verifiable supply chains for sustainably sourced goods, assuring consumers of their authenticity (Kshetri, 2021). Fintech platforms facilitate pay-as-you-go models for solar home systems, making clean energy accessible to off-grid communities. Digital transformation, therefore, provides the tools for green businesses to scale, become more efficient, and verify their impact.

Social Entrepreneurship in the Digital Age

Social entrepreneurship involves the pursuit of sustainable, innovative solutions to entrenched social problems, prioritising the creation of social value alongside financial sustainability (Saebi et al., 2019). The primary mission is to address market failures and serve marginalised communities.

Digital Transformation Link: Digital platforms are the great equaliser for social entrepreneurs. They can reach remote customers and beneficiaries at a fraction of traditional costs. Mobile money platforms like M-Pesa have enabled financial inclusion for millions, which social enterprises leverage for microloans, savings, and insurance products (Aker & Mbiti, 2010). E-learning platforms can deliver education and skills training to underserved youth. Telemedicine platforms can connect patients in rural areas with doctors in cities. Digital tools allow social entrepreneurs to scale their impact far beyond geographical constraints, creating new models for service delivery.

Ethical Leadership in the Digital Age

Ethical leadership is the demonstration of normatively appropriate conduct through personal actions and interpersonal relationships and the promotion of such conduct to followers (Brown & Treviño, 2006). It is about leading with integrity, transparency and a commitment to the greater good.

Digital Transformation Link: The digital age presents both opportunities and threats for ethical leadership. On one hand, technology can enhance transparency. Data analytics can be used to monitor compliance with ethical standards and detect anomalies that might indicate corruption or fraud. On the other hand, new ethical dilemmas arise concerning data privacy, algorithmic bias, digital surveillance and the spread of misinformation (Floridi et al., 2018). An ethical leader in the digital era must champion responsible data use, ensure that digital tools do not exacerbate inequality, and build a culture of digital trust within their organisation and with their stakeholders. In the African context, this also means bridging the digital divide and ensuring that the benefits of digitalisation are shared equitably.

EntrepreneurshipTransformation:

These digitally enabled forms of green and social enterprise are giving rise to a new archetype of African entrepreneurship. This is not the traditional micro-entrepreneur of the informal sector alone, but a new breed of venture builder who is tech savvy, globally connected, and deeply purpose driven. They are building businesses that are "born digital" and "born sustainable," with business models that inherently blend profit and purpose from day one (George et al., 2021). This entrepreneurship transformation is characterised by a focus on scalable impact, innovation, and the use of technology to leapfrog traditional development pathways.

To grasp the potential of this integrated model, it is crucial to looked into how each variable is being reshaped by digitalisation and the new entrepreneurial landscape in Africa.

Green Business: Digitally-Enabled Sustainability

The concept of green business in Africa has evolved from a niche focus on conservation to a mainstream economic opportunity, driven by digital innovation.

Circular Economy: Digital platforms are creating marketplaces for waste materials, connecting informal waste pickers with recyclers and manufacturers. This formalises and scales the circular economy, turning waste into a valuable resource. Apps can guide consumers on proper recycling and reward sustainable behaviour (Kirchherr et al., 2023).

Climate Tech Innovation: A vibrant climate technological ecosystem is emerging, with African startups developing solutions for climatic adaptation and mitigation. These range from drone based reforestation and AI-powered weather forecasting for farmers to platforms for trading carbon credits from community-led conservation projects (Belt et al., 2022).

Sustainable Supply Chain Transparency: Consumers and regulators globally are demanding proof of sustainability. African exporters of commodities like coffee, cocoa, and minerals are using blockchain and other digital ledgers to provide immutable proof that their products are ethically sourced, deforestation-free, and fairly traded (Sternberg et al., 2021).

Social Entrepreneurship: Tech-Driven Social Impact

Social entrepreneurship is being supercharged by digital platforms, moving from local, manual interventions to tech-enabled models capable of reaching millions.

Platform Co-operatives: New models are emerging where digital platforms are owned and governed by the workers themselves, such as delivery riders or freelance professionals. This ensures that the value created by the platform is distributed equitably among those who create it, a powerful blend of social mission and digital business model (Scholz & Schneider, 2017).
Fintech for Inclusion: This remains a cornerstone. Beyond basic payments, fintech social enterprises now offer micro-investment products, crowdfunding for community projects, and parametric insurance for smallholder farmers that automatically pays out based on weather data, providing a critical safety net (Arner et al., 2020).
EdTech for Employability: Social entrepreneurs are leveraging digital learning platforms to tackle the skills gap. They offer vocational training, coding bootcamps, and soft skills development tailored to the needs of the digital economy, directly linking marginalised youth to employment opportunities (Trucano, 2022).

Ethical Leadership:

Ethical leadership in this new context requires a broader set of competencies and a deeper awareness of the societal implications of technology.
Data Stewardship: Ethical leaders must act as stewards of the vast amounts of data their digital enterprises generate. This means implementing robust data protection, being transparent about data usage, and obtaining meaningful consent. It means resisting the temptation to exploit user data for short-term gain and instead using it to create value for the users themselves (Taddeo & Floridi, 2018).
Algorithmic Fairness: As AI and machine learning become more prevalent, leaders must ensure their algorithms are not biased against certain groups. An AI-powered hiring tool, for example, must be audited to ensure it doesn't discriminate based on gender or ethnicity. This requires a commitment to diversity within the tech teams that build these systems (Raji et al., 2020).
Combating Digital Divides: An ethical leader in Africa is acutely aware of the digital divide the gap between those with access to technology and digital literacy and those without. They actively work to bridge this gap, whether by designing user interfaces for low-literacy users, offering services in local languages, or investing in community digital literacy programs.

Entrepreneurship Transformation: The Rise of the "Purpose Driven Technopreneur"

The convergence of the above forces is giving rise to a distinct new actor: the purpose driven technopreneur. This individual combines the technical skills of a technologist, the business acumen of an entrepreneur, and the moral compass of a social reformer. They are building ventures where the business model, the social mission, and the technological platform are inseparable. Examples include founders creating digital platforms that connect smallholder farmers directly to urban markets (increasing farmer income and reducing food waste) or developing apps that provide sexual and reproductive health information to adolescents in conservative communities (Estrin et al., 2022).

Importance of the Integrated Model for Africa's Economic Transformation

The integrated model, supercharged by digital technology, is not just a nice-to-have; it is critically important for achieving a fundamental and lasting economic transformation in Africa. Its importance can be understood through several key dimensions.

Fostering Inclusive and Sustainable Growth

Digital tools allow African economies to leapfrog carbon-intensive infrastructure. Instead of building traditional power plants, countries can deploy distributed renewable energy systems managed via mobile platforms. Instead of sprawling, waste-producing landfills, cities can build data-driven circular economy systems (World Economic Forum A huge portion of Africa's economy is informal. A Digital platforms can help formalise these activities by providing digital identities, payment trails, and access to markets and credit for informal traders and artisans. This brings them into the tax net and provides them with social protections, fostering more inclusive growth (Chen, 2022). This synergy creates a new category of jobs from solar panel installers who use digital scheduling apps to agritech specialists who advise farmers via SMS to data analysts working for climate-smart agriculture firms. These are often higher-skilled, more resilient jobs that appeal to the continent's youth.

Driving Innovation and Enhancing Competitiveness

Frugal Innovation**:** African entrepreneurs are masters of "frugal innovation" doing more with less. Digital tools amplify this. They enable the creation of low cost, scalable solutions to local problems that can then be exported to other emerging markets, creating a global competitive advantage (Prabhu, 2022).
Data as a New Asset Class: For the first time, Africa can generate and own its own data. Data from agricultural sensors, mobile money transactions, and health apps can be used to optimise systems, inform policy, and create entirely new data-driven businesses tailored to African realities, reducing dependence on foreign models and expertise.

Building Resilience to Shocks

Digital platforms enable economic diversification at the individual and national level. A farmer can use a mobile platform to access market prices, weather information, and microloans, making them more resilient to climate shocks or market volatility (Asongu & Le Roux, 2023). The COVID-19 pandemic showed the power of digital tools for resilience. Digital platforms enabled remote work, e-learning, and the delivery of essential goods and services during lockdowns. Social enterprises with digital infrastructure were best placed to adapt and continue serving their communities.

Mobilising Capital: The Rise of Digital Impact Investing

Digital tools allow social and green enterprises to collect real-time data on their impact. This is immensely attractive to impact investors who want verifiable proof that their money is making a difference. A digital platform can track the number of trees planted, tons of waste recycled, or kilowatt-hours of clean energy generated, providing a level of transparency previously impossible (Brest & Born, 2023). Digital platforms also enable new forms of financing. African entrepreneurs can bypass traditional gatekeepers and raise capital directly from a global pool of retail impact investors through crowdfunding platforms dedicated to sustainable development.

Empowering the Next Generation

The image of a tech-savvy entrepreneur building a business that saves the planet and helps their community is incredibly compelling for Africa's youth. This integrated model provides a powerful and attractive narrative that can channel the continent's demographic dividend into productive and meaningful careers, stemming the tide of "brain drain" and fostering a new generation of home-grown leaders (UNDP, 2022).

The Relationship: How Digital Transformation Links the Triad

The core argument of this paper is that digital transformation is not a separate variable but the connective tissue and amplifier that binds green business, social entrepreneurship, and ethical leadership into a powerful, synergistic whole. It fundamentally changes the nature of their relationships, creating a virtuous cycle of transformation.

Digital Transformation as an Amplifier of Green Business

Digital platforms allow green businesses to scale their impact exponentially. A company selling efficient cookstoves can use a mobile platform to manage a network of local distributors, process payments, and collect customer feedback across a wide geographic area. Without digital tools, this scale would be prohibitively expensive and logistically complex. Sensors in a water purification system can monitor performance and predict maintenance needs remotely, ensuring uptime and reducing operational costs. Smart grids can balance energy supply and demand in real-time, minimising waste. Blockchain technology can create an unchangeable record of a product's journey, from a sustainably managed forest to a furniture store in Europe. This provides verifiable proof of the "green" claim, combating greenwashing and building consumer trust (Hastig & Sodhi, 2020).

Digital Transformation as an Accelerator of Social Entrepreneurship

A social enterprise focused on maternal health can use a simple SMS service to deliver vital health tips to expectant mothers in even the most remote villages, bypassing the need for a large network of community health workers for basic information dissemination. Digital platforms allow for the mass customisation of services. An ed-tech platform can adapt its learning material to the pace and style of each individual student, dramatically improving educational outcomes compared to a one-size-fits-all approach. A social enterprise aggregating produce from smallholder farmers can use a mobile app to coordinate logistics, track inventory, and make payments, dramatically reducing transaction costs and spoilage, which are major barriers in traditional agricultural supply chains (Aker, 2011).

Digital Transformation as a Test and Platform for Ethical Leadership

Digital systems can create an indelible record of decisions and transactions. This can be a powerful tool for an ethical leader, as it makes corrupt or unethical behaviour more difficult to hide. It provides a clear, auditable trail that builds trust with investors, employees, and the community. Social media and online review platforms give a powerful voice to stakeholders. An ethical lapse can be instantly broadcast and scrutinised, holding leaders publicly accountable in real-time. This external pressure reinforces the need for genuine, consistent ethical behaviour. As discussed, digital tools create new ethical dilemmas. How an organisation handles data privacy, algorithmic bias, and the digital divide becomes a direct reflection of its leadership's ethics. Navigating these challenges successfully builds a reputation for responsible and trustworthy leadership in the digital age, which is a significant competitive advantage.

How the Triad Informs and Shapes Digital Transformation

Social Entrepreneurship ensures Digital Inclusion: The social mission of these ventures pushes them to ensure their digital solutions are accessible to the most marginalised, preventing the digital divide

from becoming a new source of inequality. They design for low-bandwidth environments, low-literacy users, and in local languages.

Green Business ensures Digital Sustainability: The environmental ethos of green business encourages a focus on the "greenness" of the digital infrastructure itself. This means considering the e-waste generated by devices, the energy consumption of data centres, and the environmental footprint of the technology supply chain, promoting a more sustainable digital ecosystem (Pihkola et al., 2022).

Ethical Leadership ensures Digital Trust: Ultimately, the success of the entire digital economy depends on trust. People will not use digital services for finance, health, or commerce if they do not trust the institutions providing them. Ethical leadership, with its focus on integrity and stakeholder well-being, is the fundamental builder of this digital trust, which is the bedrock upon which a thriving digital society is built.

In summary, digital transformation provides the infrastructure, tools, and reach. Social entrepreneurship provides the purpose and ensures inclusivity. Green business provides the environmental framework and sustainable model. Ethical leadership provides the governance, trust, and moral compass. Together, they form a powerful, self-reinforcing system for transformative change.

Conclusion:

1 Africa stands at a historic crossroads. The convergence of a youthful population, a digital revolution, an entrepreneurial awakening, and the urgent need for sustainable development presents an unprecedented opportunity. This paper has argued that the key to seizing this opportunity lies not in pursuing any one of these trends in isolation, but in consciously and strategically integrating them.

2 The framework of green business, social entrepreneurship, and ethical leadership**,** when viewed through the lens of digital and entrepreneurship transformation, offers a coherent and powerful pathway forward. We have seen how digital technologies are not merely tools but are fundamentally reshaping the very nature of these three variables. They enable green businesses to scale and verify their impact, empower social entrepreneurs to reach millions, and present both new challenges and new tools for ethical leadership. This synergy gives rise to a new generation of purpose-driven technopreneurs who are building ventures where profit, purpose, and planet are inextricably linked from the start.

3 The importance of this integrated model for Africa's economic transformation cannot be overstated. It is the key to fostering growth that is not only rapid but also inclusive and sustainable. It positions African innovators at the forefront of global industries like climate tech and fintech for inclusion. It builds resilience into the fabric of economies and communities. And, perhaps most critically, it creates a compelling and meaningful vision for the future that can harness the energy and talent of Africa's burgeoning youth population.

However, this future is not automatic. It requires deliberate effort, thoughtful policy, and committed leadership. The path forward involves moving beyond pilot projects and isolated successes to build a cohesive ecosystem where this integrated approach can flourish at scale. It requires a collective commitment to ensuring that Africa's digital transformation is not just a copy of other models, but a uniquely African path one that is guided by a deep sense of purpose, grounded in ethical principles, and relentlessly focused on creating a prosperous, just, and sustainable future for all its people.

Recommendations:

To translate this vision into reality, a concerted effort from all stakeholders is required. The following recommendations are designed to foster an enabling environment for the growth of digitally-enabled, purpose-driven enterprises across Africa.

1 Building the Digital and Regulatory Foundation: Invest in Digital Public Infrastructure, Prioritise investment in affordable universal broadband access, particularly in rural and underserved areas. Treat internet access as a basic utility. Support the development of digital public goods like open-source identity systems and interoperable payment platforms that entrepreneurs can build upon (NDI, 2023)

2 Develop Interdisciplinary Curricula: Break down silos between computer science, business and social science faculties. Create new degree programs and courses in areas like Digital Social Innovation, Climate Tech Entrepreneurship, and Ethics of AI that are grounded in African case studies and contexts (Manda & Backhouse, 2022). Foster Hands-On, experiential Learning, establish university-based incubators and makerspaces that support student ventures in the green and social tech space. Integrate project-based learning where students work with real-world social enterprises and green businesses to solve their digital problem.

3 Adopt a Digital-First, Purpose-Driven Mindset: Design your business model with digital technology as a core enabler from the outset, not an add-on. Simultaneously, embed your social and environmental mission into your company's DNA, using it as your North Star for all strategic decisions. Integrate ethical considerations into the very design of your digital products and services. Conduct "algorithmic impact

assessments" to check for bias. Build data privacy and security into your platform's architecture. Be transparent with users about how their data is used.

4 Leverage Digital Tools for Stakeholder Governance: Use digital platforms to communicate transparently with all stakeholders' employees, customers, suppliers and the community. Consider creating digital feedback loops that allow stakeholders to have a genuine voice in company decisions, embodying the principles of inclusive governance.

5 Move beyond traditional ESG criteria, develop investment frameworks that specifically assess a venture's digital maturity, its approach to data ethics, its contribution to bridging the digital divide, and the sustainability of its own digital operations (e.g., energy use, e-waste plan).

By working together on these fronts, Africa's stakeholders can ensure that its digital and entrepreneurial revolutions are guided by a powerful and unifying purpose, to build a future where technology serves humanity, where economic growth regenerates the planet, and where leadership is synonymous with integrity and a commitment to the common good.

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GREEN BUSINESS, SOCIAL ENTREPRENEURSHIP AND ETHICAL LEADERSHIP AMONG SELECTED FAMILY BUSINESSES IN NIGERIA

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Abstract

This study examines the nexus between green business practices, social entrepreneurship, and ethical leadership among selected family businesses in Nigeria. Family businesses constitute a dominant segment of the Nigerian private sector and contribute significantly to employment generation, wealth creation, and socio-economic development. However, the growing demand for environmental sustainability, corporate social responsibility, and ethical governance has compelled family-owned enterprises to rethink traditional business models. The study adopts a qualitative and conceptual analytical approach supported by empirical evidence from selected Nigerian family businesses across manufacturing, agriculture, retail, transportation, and hospitality sectors. The study explored how ethical leadership influences sustainable business decisions and how social entrepreneurship contributes to community development and environmental stewardship. The Stakeholder Theory, Stewardship Theory, and Triple Bottom Line Theory provide the theoretical foundation for the study. The study found that ethical leadership significantly promotes environmental consciousness, responsible resource utilisation, employee welfare, transparency, and long-term sustainability among family businesses. Furthermore, social entrepreneurship initiatives such as youth empowerment, waste recycling, renewable energy adoption, and community investments enhance business reputation and sustainability. The study identified weak regulatory enforcement, poor environmental awareness, corruption, inadequate financing, and resistance to innovation as major challenges. The study concludes that integrating green business principles with ethical leadership and social entrepreneurship can improve the sustainability and competitiveness of family businesses in Nigeria. The study recommends that the government should provide incentives for green enterprises, ethical leadership training, sustainability reporting frameworks, and institutional support for family-owned businesses.

Keywords: Green Business, Social Entrepreneurship, Ethical Leadership, Family Businesses, and Nigeria.

Introduction: Globally, businesses are increasingly under pressure to adopt sustainable and environmentally responsible practices due to climate change, environmental degradation, social inequality, and rising stakeholder expectations. The emergence of green business and social entrepreneurship represents a transformative shift from profit-centred operations toward sustainable and socially responsible business models. Green business emphasises environmentally friendly production, sustainable resource utilisation, waste reduction, and eco-innovation, while social entrepreneurship focuses on solving societal challenges through innovative and sustainable entrepreneurial initiatives. Clem (2008) adds that going green reflects a social consciousness around saving and advancing the earth's natural resources, preserving and protecting them for the sake of civilisation. The increasing trend of adopting eco-friendly business, eco-friendly technologies and services is creating new business opportunities, presenting strong potential for making profit and satisfying stakeholders who have significant influence on the availability of financial, human and other resources of companies (Biloslavo & Trnavcevic, 2009; Abanyam & Uwameiye, 2019).

Nigeria's Energy Transition Plan (ETP), launched in 2021, offers a pathway to meet net zero by 2060 while meeting the country's energy needs. The OECD (2013) describes Green Growth as an approach to economic growth that puts human development at the centre while ensuring that natural assets continue to provide the resources and environmental services to support sustainable development. According to Abanyam et al (2019), the purpose of going green is to use products and methods that

would not negatively impact the environment through pollution or depleting natural resources. Dallas (2008) observed that the use of natural resources will be reduced by using alternative sources. This will have positive outcomes such as keeping the environmental footprint small, reducing waste and re-using materials as much as possible. Furthermore, it will result in using scarce natural resources efficiently and effectively, while keeping the environment free from detrimental products. In Nigeria, family businesses dominate the informal and formal sectors of the economy and contribute significantly to national development through employment generation, poverty reduction, and wealth creation. Family-owned enterprises in sectors such as agriculture, manufacturing, hospitality, transportation, construction, and retail trade have become important drivers of economic activities. However, many of these businesses face increasing demands to align their operations with global sustainability standards and ethical business practices.

Ethical leadership has emerged as a critical determinant of sustainable business success. Ethical leaders promote integrity, accountability, transparency, fairness, and environmental consciousness within organisations. In family businesses, leadership often reflects family values, traditions, and long-term orientations, making ethical leadership particularly relevant for sustainability and business continuity. Studies have shown that ethical leadership positively influences employee engagement, organisational trust, environmental responsibility, and long-term business sustainability. Enhancing organisational performance requires ethical leadership as it fosters harmonious relationships between leaders and employees, cultivates trust among staff, and subsequently promotes commitment, job satisfaction, and an improved working environment (Alshurideh et al., 2016; Modise, 2025).

Furthermore, social entrepreneurship has become an important strategy for addressing societal challenges such as unemployment, poverty, environmental pollution, and inadequate infrastructure in Nigeria. Many Nigerian family businesses now integrate social investments into their operations through youth empowerment, educational support, environmental sanitation, renewable energy projects, and community development programs. Despite the growing relevance of sustainability and ethical leadership, many Nigerian family businesses still operate with limited environmental awareness, weak governance structures, poor succession planning, and inadequate sustainability frameworks. Environmental pollution, unethical business practices, and resistance to innovation continue to threaten the sustainability of many enterprises. This study, therefore, investigates the relationship between green business practices, social entrepreneurship, and ethical leadership among selected family businesses in Nigeria with a view to identifying opportunities, challenges, and strategies for sustainable development. Thus, besides the general objective, this study specifically sought to: investigate the role of social entrepreneurship in sustainable business development; assess the influence of ethical leadership on sustainability practices among family businesses; ascertain challenges affecting the adoption of green business practices in Nigeria; and examine strategies for enhancing sustainability and ethical business conduct among family-owned enterprises. The questions this study sought to answer were: how does social entrepreneurship influence sustainable business development? What role does ethical leadership play in promoting sustainability among family businesses? What challenges hinder the adoption of green business practices in Nigeria? What strategies can improve sustainability and ethical leadership among family businesses?

Conceptual Review

Green Business: Green business, according to Menon, Chowdhury, and Jankovich (2009), refers to those policies, procedures, and practices that explicitly account for concerns about the natural environment in pursuing the goal of creating revenue and providing outcomes that satisfy organisational and individual objectives for a product or line. Similarly, Čekanavičius, Bazytė and Dičmonaitė (2014) referred to green business as an organisation that is committed to the principles of environmental sustainability in its operations, strives to use renewable resources, and tries to minimise the negative environmental impact of its activities. Green business refers to business operations that minimise negative environmental impacts while promoting sustainable development. Green businesses adopt environmentally friendly production methods, renewable energy utilisation, waste management systems, recycling practices, and sustainable supply chains. The concept emerged from growing global concerns about environmental degradation, climate change, and unsustainable industrial practices. Green entrepreneurship emphasises balancing economic growth with environmental sustainability and social responsibility. Green business practices include: renewable energy adoption, eco-friendly production methods, waste reduction and recycling, sustainable packaging, carbon emission reduction, environmental compliance and green marketing. Relatedly, green entrepreneurship combines economic opportunities with environmental sustainability and social development (Felishia & Hemalatha, 2020). This involves creating innovative businesses that address environmental challenges while remaining financially viable (Meenakshi, 2020). It identifies opportunities to develop cleaner and

more efficient production methods, promote renewable energy, and create eco-friendly products and services (Ognjanović et al., 2024). For Nigerian family businesses, green practices can improve operational efficiency, corporate reputation, and long-term sustainability.

Social Entrepreneurship: Social entrepreneurship involves the use of entrepreneurial strategies to solve social and environmental problems while generating sustainable economic value. Unlike traditional businesses focused primarily on profit maximisation, social enterprises prioritise social impact alongside financial sustainability. Social entrepreneurs in Nigeria address issues such as poverty reduction, youth unemployment, environmental pollution, access to education, community healthcare, and women's empowerment.

Many family businesses now integrate social entrepreneurship into their corporate strategies through community development initiatives, scholarships, environmental sanitation, and empowerment programs.

Ethical Leadership: Ethical leadership refers to leadership behaviour characterised by integrity, honesty, fairness, accountability, transparency, and moral responsibility. Ethical leaders influence followers through ethical conduct and value-based decision-making. Ethical leadership promotes: organisational trust, employee commitment, corporate accountability, environmental responsibility, stakeholder satisfaction, and long-term sustainability.

Research indicates that ethical leadership positively affects employees' pro-environmental behaviour and organisational sustainability.

In family businesses, ethical leadership is often shaped by family values, cultural orientation, and long-term generational considerations.

Theoretical Framework

Stakeholder Theory: The Stakeholder Theory, propounded by Edward Freeman (1984), posits that organisations should consider the interests of all stakeholders, including employees, customers, communities, suppliers, investors, and the environment, in decision-making processes. This theory supports green business and social entrepreneurship because sustainable organisations prioritise broader societal interests beyond shareholder profits.

Stewardship Theory: According to Donaldson et al. (1991) and Davis et al. (1997), stewardship theory holds that leaders act as responsible stewards, protecting organisational resources to ensure long-term sustainability. Family businesses often exhibit stewardship behaviour because owners seek to preserve the business legacy for future generations. Ethical leadership aligns with stewardship principles through responsible management and sustainability-oriented decision-making.

Triple Bottom Line Theory: The Triple Bottom Line Theory according to Elkington (1997). emphasises three dimensions of business performance: profit, people, and planet. The theory states that companies should measure success by three factors: people (social responsibility), planet (environmental sustainability), and profit (financial health). It suggests businesses should care about their impact on the world just as much as their bank accounts. The theory advocates balancing economic prosperity, social responsibility, and environmental sustainability. Sustainability = Profit + People + Planet. This framework is highly relevant for understanding green business and social entrepreneurship among family enterprises.

Empirical Review

Several studies have examined sustainability, ethical leadership, and family business performance. Diaz-Sarachaga & Ariza-Montes (2022) examined the role of social entrepreneurship in the attainment of the Sustainable Development Goals. The study proposes a new system to assess the alignment of social enterprises with the achievement of the Sustainable Development Goals.

Lavanya and Senthilmathi () explored the intersection of social entrepreneurship and the SDGs by examining how entrepreneurial ventures can contribute to sustainable development while driving economic growth and innovation. The paper examines the ways in which social entrepreneurship initiatives are actively contributing to the advancement of the SDGs across multiple domains. These include poverty alleviation, access to education and healthcare, gender equality, environmental sustainability, and inclusive economic growth. The study found that social enterprises vary widely in terms of their missions, structures, and approaches to addressing social and environmental challenges. Hence, different types of social enterprises may face distinct barriers and opportunities in aligning with SDGs, which may not be adequately reflected in the analysis. The findings of this paper underscore the transformative power of social entrepreneurship in addressing complex societal issues. By harnessing entrepreneurial principles and innovative business models, social entrepreneurs have demonstrated their ability to create positive social impact while generating sustainable financial returns.

Sri Latha (2025) analysed social entrepreneurship's impact on sustainable development. The study explored the function of social entrepreneurs in tackling urgent social and environmental challenges,

emphasising the significance of this innovative business model. Social entrepreneurship entails tackling complex societal challenges and confronting concerns such as unemployment, violence, substance addiction, poverty, and isolation. It promotes sustainable development that respects fundamental rights and maximises resource utilisation. This study adopted a conceptual approach and examines the definition, characteristics, and significance of social entrepreneurship. Impact of social enterprise, Obligations and duties of social entrepreneurs to society. The study found that government initiatives and entrepreneurship education were designed to attract highly driven businesspeople who can effectively solve socioeconomic problems with innovative ideas. The study concludes that social entrepreneurship hasn't made much of an impact on society's long-term growth.

Bolaji et al (2024) examined the effect of environmental factors on the adoption of GSCM in the Nigerian SMEs. The study found that environmental factors such as regulations, customer demands, supplier relationships, and collaboration are also crucial predictors of GSCM adoption. The findings of the study indicated that the environmental factor is a very good predictive factor for the GSCM adoption of SMEs' business in Nigeria, most especially in the areas of customer demand, environmental regulation, environmental uncertainty, and supplier relationships. This study recommends that SME owners and managers should develop a comprehensive environmental strategy, which requires the implementation of environmental factor initiatives and cooperation from both suppliers and customers. To enable SMEs to adopt and sustain green practices, financing, technical help, capacity-building workshops, and governmental incentives are needed.

Ihemeje et al (2020) evaluated the effect of green production practices on the continued survival of agro-allied businesses in Nigeria. This study was carried out on 306 owners and managers of Agro-Allied small businesses within the study area. The primary and secondary data were respectively collected using a questionnaire and literature, and were statistically analysed. A null hypothesis was formulated that was tested using the Z-test statistical tool and the SPSS package. The findings revealed that green agricultural production would significantly affect the continued survival of agro-allied businesses in Nigeria. The study concluded that despite notable changes in legislation and regulations to protect the environment, Nigeria and various other countries are constrained by unprecedented environmental problems arising from climate change and established that environmental problems can only be solved through technological advancement with the input of ecopreneurship. The study recommended, among other things, that the government of Nigeria should strengthen its external forces concerning establishing national standards for the quality of the environment and the implementation of environmental regulations.

Karina (2024) assessed the influence of ethical leadership on corporate social initiatives in Peru. This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources, preferably because of its low cost advantage as compared to field research. The study found that ethical leadership significantly enhances the effectiveness and credibility of CSR efforts. Employees under ethical leadership are more likely to engage in socially responsible behaviours, support sustainability efforts, and promote community welfare. Furthermore, ethical leadership enhances stakeholder trust and corporate reputation, making CSR initiatives more impactful and credible. The study concludes that ethical leadership is a critical determinant of successful CSR implementation and outcomes. The study recommends collaborating with industry associations, regulatory bodies, and government agencies to help establish standards and best practices for ethical leadership practices, CSR reporting, and accountability mechanisms. Kanyamukenge & Kagwaini (2024) evaluated the role of ethical leadership in promoting sustainable business practices. The findings showed pertinent characteristics of ethical leadership in support of sustainable business practices, and that employee involvement in sustainability initiatives was very important. The study concludes that ethical leadership plays a significant role in modern organisations in developing sustainable business practices.

Abanyam and Uwameiye (2019) sought to ascertain the green business best practices for enterprise sustainability in South-South Nigeria. This study adopted a descriptive survey research design. The population for the study was 23,985 managers of registered enterprises in the six states of South-South Nigeria. A multistage sampling technique was adopted in this study. Taro Yamane's formula was used to determine a sample of 393 respondents; a proportionate sampling technique was used to select managers of business enterprises. A structured questionnaire with 61 items was used for data collection. The data collected for the study were analysed using mean, standard deviation and analysis of variance (ANOVA). Mean was used to answer the research questions, and standard deviation was used to determine the closeness or otherwise of the responses from the mean. The study found that the developed green business product, promotion and distribution best practices enhanced enterprise sustainability. The study recommends, amongst others, that business enterprises need to develop

systems and structures within their business that satisfy the requirements of green business practices while still achieving strategic business goals.

Nnabugwu and Onuora (2025) examined the effect of green entrepreneurship and the sustainability of small and medium manufacturing enterprises in South-East Nigeria. Specifically, the study investigated the effect of Green entrepreneurial initiatives, green entrepreneurial innovation and green entrepreneurial marketing on environmental sustainability, product sustainability, and marketing sustainability. The study adopted a survey research design. The population of the study comprises 8039 registered owners of small and medium manufacturing enterprises in the South East, Nigeria. The statistical formula by Borg and Gall was employed to determine the sample size of 1554. The study revealed that green entrepreneurial initiatives had a significant positive effect on environmental sustainability, green entrepreneurial marketing had a significant positive effect on marketing sustainability, and green entrepreneurial innovation had a significant positive effect on product sustainability of small and medium manufacturing enterprises in the South-East. The study concluded that green entrepreneurship significantly positive effect on the sustainability of small and medium manufacturing enterprises in South-East Nigeria. The study recommended that small and medium enterprises' management should engender more concerns for green entrepreneurial marketing by considering consumers' concerns about promoting preservation and conservation of natural resources in advertising and packaging, as this will enhance sustaining the enterprise.

Mamabolo et al (2025) investigated the relationship between ethical leadership and community engagement moderated by the treatment of SMEs as suppliers and customers. Using a quantitative technique with a sample consisting of 276 participants, the data were analysed using multiple hierarchical regressions. The study found that ethical leadership predicted community engagement. The study concludes that the ethical leadership practised in SMEs is the key driver of community engagement, despite the challenges they encounter when engaging with large corporates. The study recommends that future research should focus more on qualitative studies to understand the experiences of SMEs as customers and suppliers. Amisano and Anthony (2017) examined the relationship between ethical leadership and financial, social, and environmental sustainability in small businesses. The sample consisted of 80 small business owners and managers who were members of a chamber of commerce in Miami, Florida. The objective of the study was to provide small business leaders with information regarding the relationship of their ethical leadership behaviours with financial, social, and environmental sustainability. Using correlation analysis and Bonferroni corrected calculation, the study found significant relationships ($p < .001$) between ethical leadership behaviours and social and environmental sustainability.

Kekeocha et al (2025) investigated the relationship between Artificial Intelligence (AI) adoption and the sustainability of Small and Medium Scale Enterprises (SMEs) in Delta State, Nigeria**.** The study was based on Dynamic Capabilities Theory, which affirms that AI enables firms to adapt and innovate to take advantage of business opportunities. The descriptive survey research method was used, while the population of the study was 150, made up of owners, managers and employees of registered SMEs in Delta State. The study found a significant positive relationship between robotics and supply chain efficiency in SMEs in Delta State, Nigeria, with $r = 0.675$, $n = 150$ and $p<0.05$. Also, there was a statistically positive relationship between predictive analytics and business continuity planning in small and medium-scale enterprises in Delta State, Nigeria, with $r=0.897$, $n=150$ and ($p<0.05$). The study, therefore, concluded that AI adoption impacts positively on the sustainability of SMEs in Delta State. The study, among others, recommended that governmental and non-governmental organisations should establish programs to inform SMEs about the advantages and practical uses of AI-based technologies, in addition to offering training to improve their technological proficiency.

Onyeneke & Ogochukwu (2025) examined the adoption of green business practices among Small and Medium-Scale Enterprises (SMEs) for the sustainable development of Anambra State, Nigeria. Two research questions and two null hypotheses guided the study, utilising a descriptive survey research design. The population of the study comprised 2093 registered small and medium-scale enterprises (SMEs) in Anambra State, Nigeria. The sample size of 325 managers of SMEs was selected using Krejcie and Morgan's (1970) Table for sample size determination. Findings revealed that managers of SMEs in Anambra State do not adopt the majority of green business practices examined for the sustainable development of the state. It was also revealed that the size of the business was a significant factor in their adoption of green business practices. The study concluded that SMEs in Anambra State are facing significant barriers that prevent them from fully adopting green business practices, thereby hindering their contribution to sustainable development within the State, region, and Nigeria in general. This study recommended, among others, that the Anambra State government should implement targeted educational programmes and workshops to increase SME managers' understanding of the

benefits of green business practices and their role in sustainable development. This should include practical examples and case studies relevant to the local context.

Kanu et al (2020) document that banks in Nigeria have various green banking products that they showcase, but they have not given them their correct nomenclature. The study reveals that educational level, age group, lack of basic ICT knowledge, and illiteracy among rural and urban dwellers have negative effects on green banking awareness and operation in Nigeria. The study concludes that addressing the issue of education and the lack of infrastructure will support efforts towards the sustainability of green banking activities in the country. The study recommends collaboration of government and service providers on par in order to initiate the policies that will make green banking activities user-friendly. Ebong (2022) investigated the role of entrepreneurship in sustainable economic development: An empirical study on the South-South region of Nigeria. To achieve the objectives of the study, the researcher employed a descriptive research design for analysis; data were collected from both secondary and primary sources. Under the primary source, 80 respondents from three selected trading and contracting companies in Port Harcourt through questionnaires. The study revealed that entrepreneurship increases the employment level of the country and region, the productivity, and also makes a considerable change in the living standards of those involved in the entrepreneurial activities. The study recommends that both the central and regional governments should establish a centre for the coordination of entrepreneurship and come up with policies and programs aimed at improving and encouraging entrepreneurial endeavours.

Ike (2019) examines the benefits and challenges of green growth as a tool for achieving sustainable economic development in Nigeria using a qualitative approach by collecting documents on the implementation of green growth internationally and in Nigeria and by conducting in-depth interviews with experts in this field. The study found that green growth policy addressed the main challenges related to environmental issues, such as poverty reduction, social equity and sustainable development objectives. The study recommends improving the institutions and policies to promote green growth. Prokopenko et al (2025) analysed the increasing demand to recognise the role of ethical leadership in sustainability performance under high-risk and multi-dimensional business conditions. The study relies on secondary statistical data from globally reputable databases, including environmental performance, governance quality, and socio-economic development variables. Through panel fixed effects regressions, the research found positive and significant associations between ethical leadership and sustainability, especially when good governance and education systems are in place. The study concludes that ethical leadership implemented within a supportive institutional and educational framework is one of the principal factors that positively influence sustainability in risky business environments.

Nkpurukwe et al (2025) investigated the relationship between green entrepreneurship and women's empowerment in Taraba State, Nigeria. Using a descriptive survey design, data were collected from a purposive sample of 97 women entrepreneurs in agriculture, crafts, and small-scale manufacturing sectors. The results reveal statistically significant positive correlations: engagement in green process practices correlates with skill acquisition participation ($r = 0.532$, $p < 0.05$), while workshops strongly correlate with the adoption of green products ($r = 0.817$, $p < 0.05$). A moderate correlation was observed between green process and workshop attendance ($r = 0.607$, $p < 0.05$), and green products and skill acquisition ($r = 0.433$, $p < 0.01$), indicating a need for enhanced training on sustainable packaging practices. The study concludes that eco-friendly training is needed in driving green entrepreneurship and women's empowerment in Taraba State. The study recommends that workshops expand their focus to include sustainable packaging, improve access to eco-friendly resources, facilitate networking among women entrepreneurs, and implement follow-up support programs to ensure the successful adoption of sustainable practices.

Norhidayah et al (2025) examine the impact of regulatory, financial, market, technological, and infrastructure barriers, as well as knowledge management barriers, on business growth across renewable energy, sustainable agriculture, and eco-friendly product sectors. Using a quantitative approach, data from 376 entrepreneurs were analysed through ANOVA and multiple regression. Results show significant sectoral differences for regulatory ($p = 0.035$) and financial barriers ($p = 0.033$). All barriers significantly affected growth, with financial ($\beta = 0.443$) and regulatory ($\beta = 0.188$) showing the strongest influence, while knowledge management had a negative effect ($\beta = –0.141$). The findings imply an urgent need for streamlined regulations, targeted financial mechanisms, enhanced technological infrastructure, and stronger knowledge management systems to support innovation, competitiveness, and long-term sustainability in Malaysia's green entrepreneurship ecosystem.

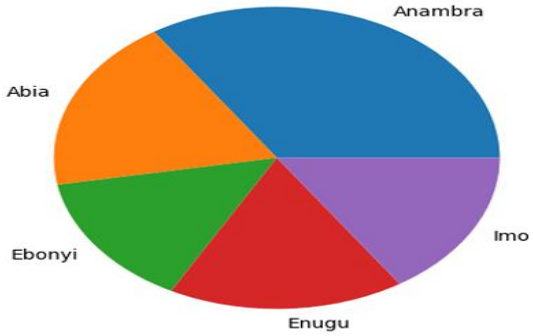
Methodology

This study adopts a qualitative and descriptive research design using secondary data obtained from journals, textbooks, reports, and scholarly publications relating to sustainability, social entrepreneurship, ethical leadership, and family businesses in Nigeria. Selected family businesses were conceptually and extensively analysed across sectors, including manufacturing, agriculture, hospitality, transportation, retail trade and construction. Data were analysed using content analysis and thematic interpretation.

Data Presentation, Analysis and Results

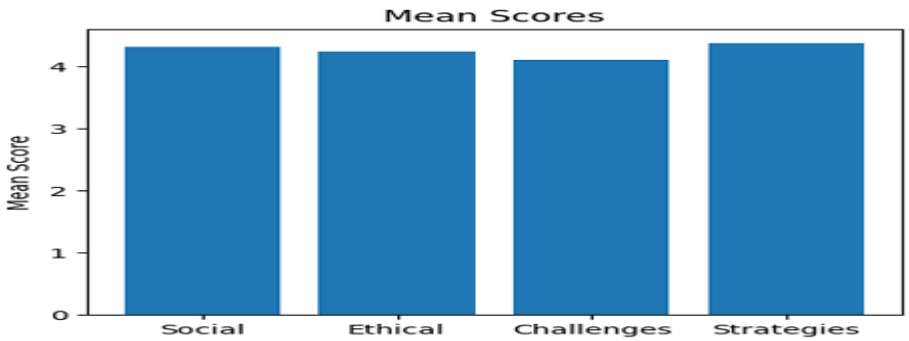
Distribution of Respondents by State

State	Frequency	Percentage (%)
Abia	65	18.6%
Anambra	120	34.3%
Ebonyi	50	14.3%
Enugu	60	17.1%
Imo	55	15.7%
Total	350	100%



Regression Summary Table

Hypo.	Value	Mean	Beta (β)	Std. Dev.	t-value	p-value	Decision
H01	Social Entrepreneurship	4.32	0.684	0.74	9.84	0.000	Reject H0
H02	Ethical Leadership	4.25	0.592	0.69	8.27	0.001	Reject H0
H03	Challenges	4.11	-0.511	0.83	-6.91	0.003	Reject H0
H04	Sustainability Strategies	4.38	0.636	0.65	8.93	0.000	Reject H0



The results above indicate high agreement among respondents regarding the importance of social entrepreneurship, ethical leadership, and sustainability strategies in promoting green business practices

Decision Rule: Reject the null hypothesis when the p-value is less than 0.05.

Summary of Findings: The results indicate that social entrepreneurship, ethical leadership, green business challenges, and sustainability strategies significantly influence sustainable business practices among the selected family businesses. Since all the p-values are below the 0.05 significance level, the four null hypotheses are therefore rejected.

Green Business Practices among Selected Family Businesses in Nigeria: Selected family businesses in Nigeria increasingly adopt green business practices such as recycling initiatives, renewable energy utilisation, waste management systems, eco-friendly packaging, tree planting programs and sustainable agriculture. Some examples include: agricultural family firms adopting organic farming, manufacturing firms introducing waste recycling, hospitality businesses adopting energy-efficient systems, and transportation firms investing in cleaner fuel alternatives. These initiatives contribute to reduced environmental degradation and improved corporate reputation.

Social Entrepreneurship Initiatives among Family Businesses: Many Nigerian family businesses undertake social entrepreneurship initiatives through youth empowerment programs, scholarship schemes, community healthcare projects, skills acquisition programs, women's empowerment initiatives and environmental sanitation campaigns. Such interventions improve community relations, social inclusion, and business legitimacy. Social entrepreneurship also creates shared value by simultaneously addressing societal problems and enhancing business sustainability.

Ethical Leadership and Sustainability: Ethical leadership significantly influences sustainability practices in family businesses through transparent governance, employee welfare, responsible environmental practices, fair labour relations, accountability mechanisms and corporate social responsibility (CSR). Ethical leaders create organisational cultures that encourage environmental consciousness and social responsibility. Furthermore, ethical leadership enhances stakeholder trust and long-term organisational stability.

Challenges Affecting Green Business and Ethical Leadership in Nigeria: Several challenges hinder sustainable business practices among Nigerian family businesses:

i. Poor Environmental Awareness: Many enterprises lack adequate knowledge about sustainability and green business opportunities.
ii. Weak Regulatory Enforcement: Environmental regulations are often poorly enforced due to corruption and institutional weaknesses.
iii. Inadequate Financing: Green technologies and sustainable innovations require significant financial investment.
iv. Corruption and Unethical Practices: Corruption undermines transparency, accountability, and sustainable business conduct.
v. Resistance to Change: Traditional business practices and conservative leadership structures often resist sustainability innovations.
vi. Poor Infrastructure: Inadequate electricity, transportation, and waste management systems hinder green business implementation.

Strategies for Enhancing Sustainability among Family Businesses: To improve sustainability and ethical leadership among family businesses in Nigeria, the following strategies are recommended:

i. The government should provide tax incentives for green businesses.
ii. Financial institutions should support sustainable enterprises through low-interest green financing.
iii. Family business owners should adopt ethical leadership training programs.
iv. Environmental education and awareness should be strengthened.
v. Sustainability reporting frameworks should be encouraged.
vi. Corporate governance structures should be improved.
vii. Universities and research institutions should promote sustainability studies.
viii. Public-private partnerships should support green entrepreneurship initiatives.

Conclusion: This study examined green business, social entrepreneurship, and ethical leadership among selected family businesses in Nigeria. The paper established that sustainability has become increasingly important for long-term business survival and competitiveness. Ethical leadership plays a critical role in promoting environmental responsibility, accountability, and social inclusion within family businesses. The study further revealed that social entrepreneurship initiatives contribute significantly to community development, environmental sustainability, and business legitimacy. Despite challenges such as weak regulation, corruption, inadequate financing, and resistance to innovation, family businesses in Nigeria possess significant potential to drive sustainable economic transformation. Integrating green business principles, social entrepreneurship, and ethical leadership will not only enhance business sustainability but also contribute to national development, environmental protection, and social welfare.

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INFLUENCE OF BANK OF INDUSTRY CREDIT AND FINANCIAL ADVISORY SERVICES ON RURAL WOMEN'S ENTREPRENEURIAL SUCCESS IN NORTH CENTRAL, NIGERIA

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Abstract
This study examined the influence of Bank of Industry credit and financial advisory services on rural women's entrepreneurial success in North Central, Nigeria. Two research questions were answered, and two null hypotheses were tested at the 0.05 level of significance. The study was anchored on the Resource-Based Theory and the Social Capital Theory and adopted an explanatory sequential mixed-methods design (QUAN → qual). The population comprised rural women entrepreneurs operating micro and small-scale businesses in North Central Nigeria; because the population was indeterminate, a sample of 400 respondents was determined using Taro Yamane's formula for an unknown population and selected through multistage sampling across six Local Government Areas in Niger, Benue and Kwara States, while 10 participants were purposively selected for the qualitative phase. Data were collected using the validated Influence of Bank of Industry and Cooperative Societies on Rural Women's Entrepreneurial Success Questionnaire and an interview guide, with analysis based on 289 returned questionnaires and a split-half reliability coefficient of 0.78. Mean and standard deviation were used to answer the research questions, one-way Analysis of Variance (ANOVA) with the Tukey HSD post-hoc test was used to test the hypotheses, and qualitative data were analysed thematically. The findings revealed that Bank of Industry credit services ($\bar{x}$ = 2.67) and financial advisory services ($\bar{x}$ = 3.02) influenced rural women's entrepreneurial success to a high extent. The test of hypotheses showed a significant difference in the perceived influence of credit services by nature of business ($F(2, 286) = 3.676$, $p = 0.026$), with women in small-scale production rating credit significantly higher than those in agriculture, and no significant difference in the perceived influence of financial advisory services by level of education ($F(3, 285) = 1.008$, $p = 0.389$). Qualitative findings corroborated these results, showing that the usefulness of credit once obtained was widely acknowledged but that access, transparency and timeliness were the binding constraints, while advisory services reached women of all educational levels. The study concluded that Bank of Industry credit and advisory services contribute meaningfully to rural women's entrepreneurial success, though the value of credit is constrained by access barriers that fall unevenly across business types. It was recommended, among others, that the Bank of Industry simplify access to credit and align repayment schedules with the income patterns of different rural enterprises.
Keywords: *Bank of Industry, credit services, financial advisory services, rural women, entrepreneurial success*

Introduction
Rural women entrepreneurs occupy a central place in the economic life of North Central Nigeria, where they operate micro and small-scale businesses in agriculture, trading, and small-scale production that sustain households and local communities. Despite their contribution, many of these women continue to record poor business performance, constrained by limited access to credit, weak business skills, and inadequate institutional support. Addressing these constraints has become a policy priority, and development finance institutions such as the Bank of Industry have been positioned as important

vehicles for extending financial and non-financial support to underserved entrepreneurs, including rural women.

The Bank of Industry (BOI) is a development finance institution established to provide financial and advisory support to enterprises, with the aim of stimulating industrialisation, employment, and inclusive economic growth. Among the services most relevant to rural women entrepreneurs are its credit services and its financial advisory services. Credit services provide the capital that women need to acquire equipment and inputs, expand operations, and improve profitability, while financial advisory services equip them with the knowledge to manage business finances, plan, budget, and reinvest. Together, these two services represent the financial pillar of the Bank of Industry's support to rural women's enterprises, and their influence on entrepreneurial success is the concern of this study.

Entrepreneurial success, in the context of this study, refers to the growth, profitability, stability, and sustainability that rural women achieve in their businesses. It is reflected in improved profit margins, the acquisition of productive assets, the ability to reinvest, and the overall growth of the enterprise. Credit services are expected to contribute to success by relaxing the capital constraint that limits many rural enterprises, while financial advisory services are expected to contribute by strengthening the financial management practices on which sustainable success depends. The extent to which each service actually influences success, and whether that influence is experienced uniformly across different categories of women, are empirical questions of considerable policy relevance.

This study is anchored on the Resource-Based Theory and the Social Capital Theory. The Resource-Based Theory holds that the performance of an enterprise depends on its access to and deployment of valuable resources, of which finance and financial knowledge are among the most critical; it therefore provides an apt lens for understanding how Bank of Industry credit and advisory services, as external resources, shape rural women's entrepreneurial success. The Social Capital Theory complements this by drawing attention to the networks and relationships through which resources and information flow, which is relevant to how rural women access and benefit from institutional services.

The influence of Bank of Industry credit and advisory services may vary across the personal and business characteristics of rural women. The nature of a woman's business, whether agriculture, trading, or small-scale production, may shape how she experiences credit services, since different enterprises generate income in different rhythms and therefore relate differently to fixed repayment schedules. The level of a woman's education may shape how she experiences advisory services, since the delivery of financial guidance may reward prior schooling. Examining these moderating factors alongside the two services affords a fuller understanding of the conditions under which Bank of Industry support translates into entrepreneurial success. Against this background, this study examined the influence of Bank of Industry credit and financial advisory services on rural women's entrepreneurial success in North Central, Nigeria.

Statement of the Problem

Rural women entrepreneurs in North Central Nigeria are expected to contribute significantly to economic development, yet many continue to experience poor business performance owing to limited access to credit, weak financial management, and inadequate institutional support. The Bank of Industry was established, in part, to relieve these constraints by providing credit and financial advisory services to enterprises, including those operated by rural women. However, concerns persist about whether these services are reaching rural women effectively, and about the extent to which they actually translate into improved entrepreneurial success. Observation suggests that while some women benefit substantially from BOI credit and advice, others encounter difficulties in accessing credit or in applying the guidance they receive.

It is also unclear whether the influence of these services is evenly distributed across rural women. If the perceived influence of credit services differs significantly by the nature of a woman's business, or if the influence of advisory services differs significantly by her level of education, then interventions would need to be tailored accordingly. In the absence of systematic evidence on these questions within the North Central context, efforts to strengthen the Bank of Industry's support to rural women risk being misdirected. This study therefore sought to determine the extent to which Bank of Industry credit and financial advisory services influence rural women's entrepreneurial success, and to establish whether these influences differ significantly by nature of business and level of education respectively.

Significance of the Study

The findings of this study are significant to rural women entrepreneurs, the Bank of Industry, policy makers, development agencies, and researchers. For rural women entrepreneurs, the study clarifies how credit and advisory services can support their business success and where the barriers to benefit lie. For the Bank of Industry, the evidence on how its credit and advisory services are experienced, and

on the groups that benefit least, provides a basis for strengthening outreach and refining service delivery. For policy makers and development agencies, the findings inform the design of financial-inclusion and enterprise-support interventions targeted at rural women. For researchers, the study contributes empirical evidence on the influence of development-finance services on rural women's entrepreneurial success and on the business and demographic factors that condition it.

Research Questions

The following research questions guided the study:

1. To what extent do Bank of Industry credit services influence rural women's entrepreneurial success in North Central, Nigeria?
2. To what extent do financial advisory services received from the Bank of Industry influence rural women's entrepreneurial success in North Central, Nigeria?

Research Hypotheses

The following null hypotheses were formulated and tested at the 0.05 level of significance:

$H_0$1: There is no significant difference in the mean ratings of respondents regarding the extent to which credit services from the Bank of Industry influence rural women's entrepreneurial success in North Central Nigeria based on the nature of business.

$H_0$2: There is no significant difference in the mean ratings of respondents regarding the extent to which financial advisory services from the Bank of Industry influence rural women's entrepreneurial success in North Central Nigeria based on the level of education.

Methodology

The study employed an explanatory sequential mixed-methods research design (QUAN → qual), in which quantitative data were collected and analysed first, and qualitative data were subsequently gathered to explain and enrich the quantitative findings, with priority given to the quantitative phase. A descriptive survey design was adopted for the quantitative component, while a phenomenological approach informed the qualitative component. The population comprised all rural women entrepreneurs operating micro and small-scale businesses in the North Central geopolitical zone of Nigeria, specifically in Niger, Benue, and Kwara States. Because there were no official statistics documenting the total number of such women, the population was indeterminate.

A sample of 400 respondents was determined using Taro Yamane's (1967) formula for an unknown population, and a multistage sampling procedure was employed. Purposive sampling was used to select three states and two Local Government Areas from each (Wushishi and Lavun in Niger, Gwer West and Apa in Benue, and Kaiama and Baruten in Kwara), after which the sample was allocated equally across the six Local Government Areas and respondents were selected through systematic random sampling using cooperative membership lists and local enterprise registers. For the qualitative phase, 10 rural women entrepreneurs were purposively selected for in-depth interviews. Of the 400 questionnaires administered, 289 were duly completed and returned, giving a return rate of 72.3%, and all quantitative analyses were based on these 289 valid responses.

The instrument for quantitative data collection was the Influence of Bank of Industry and Cooperative Societies on Rural Women's Entrepreneurial Success Questionnaire, whose clusters relevant to the present study measured credit services (ten items) and financial advisory services (ten items) on a four-point Likert scale of Very High Extent (4), High Extent (3), Low Extent (2), and Very Low Extent (1). A semi-structured interview guide was used for the qualitative phase. The instruments were validated by two experts in Business and Entrepreneurship Education and one in Test and Measurement at Kwara State University, Malete. Reliability was established through a pilot study of 30 rural women entrepreneurs in Kaduna State using the split-half method, which yielded a coefficient of 0.78, indicating high internal consistency.

Mean and standard deviation were used to answer the research questions, with mean ratings interpreted using the real limits of 3.25–4.00 (Very High Extent), 2.50–3.24 (High Extent), 1.75–2.49 (Low Extent), and 1.00–1.74 (Very Low Extent); a mean of 2.50 and above was taken to indicate a high (positive) influence. One-way Analysis of Variance (ANOVA), complemented by the Tukey HSD post-hoc test where a significant difference was found, was used to test the hypotheses at the 0.05 level of significance, with a null hypothesis rejected where the p-value was less than 0.05 and retained where it was greater than or equal to 0.05. Qualitative data were transcribed and analysed thematically to complement the quantitative findings. In terms of the moderating variables, the 289 respondents comprised 118 (40.8%) in agriculture, 102 (35.3%) in trading, and 69 (23.9%) in small-scale production, while their levels of education ranged across no formal education (54; 18.7%), primary (78; 27.0%), secondary (92; 31.8%), and tertiary (65; 22.5%).

Results

Research Question One: To what extent do Bank of Industry credit services influence rural women's entrepreneurial success in North Central, Nigeria?

Table 1: Mean and Standard Deviation of Respondents' Ratings on the Influence of Bank of Industry Credit Services

S/N	Item Statement	Mean	SD	Remarks
1	I have been able to access credit from the Bank of Industry.	2.72	0.68	High Extent
2	The credit I received was sufficient for expanding my business.	2.59	0.67	High Extent
3	BOI credit services are easily accessible to rural women.	2.55	0.66	High Extent
4	The process of applying for BOI loans is simple and transparent.	2.55	0.70	High Extent
5	BOI loans have enabled me to buy equipment or inputs.	2.76	0.69	High Extent
6	Access to BOI loans improved my profit margin.	2.83	0.66	High Extent
7	The repayment plan of BOI credit is favourable to my business.	2.63	0.63	High Extent
8	BOI loans are disbursed in a timely manner.	2.55	0.62	High Extent
9	BOI loan terms are better than those of local money lenders.	2.64	0.69	High Extent
10	BOI credit services have contributed to the success of my business.	2.85	0.70	High Extent
	Cluster Mean	**2.67**		**High Extent**

Source: Field Survey, 2026.

Table 1 shows that all ten items on Bank of Industry credit services returned mean scores above the criterion mean of 2.50 and were rated at a high extent, producing a cluster mean of 2.67. Respondents rated the contribution of BOI credit to business success highest (mean = 2.85), followed by the improvement of profit margin (mean = 2.83) and the purchase of equipment or inputs (mean = 2.76). The weakest ratings, though still within the high-extent band, fell on the ease of access to credit (mean = 2.55), the simplicity and transparency of the application process (mean = 2.55), and the timeliness of disbursement (mean = 2.55). The results therefore show that Bank of Industry credit services influence rural women's entrepreneurial success to a high extent, with the three weakest items all concerning access rather than the value of the credit once obtained, indicating that reaching the credit is itself the binding constraint.

Research Question Two: To what extent do financial advisory services received from the Bank of Industry influence rural women's entrepreneurial success in North Central, Nigeria?

Table 2: Mean and Standard Deviation of Respondents' Ratings on the Influence of Bank of Industry Financial Advisory Services

S/N	Item Statement	Mean	SD	Remarks
11	I have received financial advisory services from the Bank of Industry.	3.02	0.64	High Extent
12	BOI provides guidance on how to manage business finances.	3.00	0.72	High Extent
13	I was taught how to budget with the help of BOI staff.	3.07	0.66	High Extent
14	I was taught how to plan with the help of BOI staff.	3.09	0.62	High Extent
15	BOI advisory services helped me separate personal and business income.	2.94	0.71	High Extent
16	I keep better financial records because of BOI guidance.	2.95	0.66	High Extent
17	BOI advisory services helped me reinvest my capital into the business.	2.92	0.68	High Extent
18	I feel more confident about business decisions after BOI advice.	3.08	0.65	High Extent
19	BOI advisory services increased my understanding of financial risks.	2.97	0.65	High Extent
20	BOI enlightened me on savings and reinvestment strategies.	3.18	0.63	High Extent
	Cluster Mean	**3.02**		**High Extent**

Source: Field Survey, 2026.

Table 2 shows that every item in the financial advisory cluster exceeded the criterion mean of 2.50 and was rated at a high extent, producing a cluster mean of 3.02. The enlightenment respondents received on savings and reinvestment strategies attracted the highest rating (mean = 3.18), followed by being taught how to plan with the assistance of BOI staff (mean = 3.09) and the greater confidence respondents felt in taking business decisions after BOI advice (mean = 3.08). The lowest ratings went to the reinvestment of capital (mean = 2.92) and the separation of personal from business income (mean = 2.94), though both remained comfortably within the high-extent band. The results therefore show that financial advisory services received from the Bank of Industry influence rural women's entrepreneurial success to a high extent, and that this cluster outperformed the credit cluster by a clear margin, suggesting that what the Bank offers in knowledge reached these women more readily than what it offers in money.

Test of Hypotheses

$H_0$1: There is no significant difference in the mean ratings of respondents regarding the extent to which credit services from the Bank of Industry influence rural women's entrepreneurial success based on the nature of business.

Table 3: One-way ANOVA of Respondents' Mean Ratings on Bank of Industry Credit Services by Nature of Business

Group	N	Mean	SD	F	df	p-value	Decision
Agriculture	118	2.63	0.56				
Trading	102	2.75	0.54	3.676	2, 286	0.026	Ho_1 Rejected
Small-scale Production	69	2.84	0.51				

Source: Field Survey, 2026; significant at $p < 0.05$

Table 3 shows that the mean ratings on Bank of Industry credit services differed by the nature of the respondent's business. Women in small-scale production returned the highest mean (mean = 2.84, SD = 0.51), followed by those in trading (mean = 2.75, SD = 0.54) and those in agriculture (mean = 2.63, SD = 0.56). The one-way ANOVA produced $F(2, 286) = 3.676$, $p = 0.026$, which is below the 0.05 level of significance. The null hypothesis was therefore rejected, indicating that rural women in different lines of business do not perceive the influence of BOI credit services in the same way. A Tukey HSD post-hoc test was conducted to identify the source of the difference, as presented in Table 4.

Table 4: Tukey HSD Post-hoc Comparison of Respondents' Mean Ratings on Bank of Industry Credit Services by Nature of Business

Pairwise Comparison	Mean Diff.	Std. Error	q	p-value	Remark
Agriculture vs Trading	-0.12	0.050	2.383	0.212	Not significant
Agriculture vs Small-scale Production	-0.21	0.056	3.721	0.021	Significant
Trading vs Small-scale Production	-0.09	0.058	1.550	0.526	Not significant

Source: Field Survey

Table 4 shows that of the three pairwise comparisons, only one reached significance. Women engaged in small-scale production rated BOI credit services significantly higher than women in agriculture, with a mean difference of 0.21 ($q = 3.721$, $p = 0.021$). The comparisons between agriculture and trading ($q = 2.383$, $p = 0.212$) and between trading and small-scale production ($q = 1.550$, $p = 0.526$) were not significant, so that trading occupies an intermediate position statistically indistinguishable from either extreme. The overall difference detected by the ANOVA is thus attributable specifically to the gap between agriculture and small-scale production. This is a meaningful distinction: agricultural income arrives in concentrated bursts tied to harvest and market seasons, whereas production-based enterprises generate takings across the year, so that a repayment schedule built on fixed monthly instalments sits more comfortably on a producer's cash flow than on a farmer's.

$H_0$2: There is no significant difference in the mean ratings of respondents regarding the extent to which financial advisory services from the Bank of Industry influence rural women's entrepreneurial success based on the level of education.

Table 5: One-way ANOVA of Respondents' Mean Ratings on Bank of Industry Financial Advisory Services by Level of Education

Group	N	Mean	SD	F	df	p-value	Decision
No formal education	54	2.97	0.47				
Primary education	78	2.89	0.50	1.008	3, 285	0.389	Ho_2 Retained
Secondary education	92	3.02	0.50				
Tertiary education	65	3.01	0.50				

Source: Field Survey, 2026; not significant at p > 0.05

Table 5 shows that the mean ratings on Bank of Industry financial advisory services clustered closely across all four educational levels, ranging only from 2.89 among respondents with primary education to 3.02 among those with secondary education. The one-way ANOVA produced F(3, 285) = 1.008, p = 0.389, which exceeds the 0.05 level of significance. The null hypothesis was therefore retained, and no post-hoc test was required. This indicates that rural women of differing educational attainment experienced the advisory services as similarly beneficial, suggesting that the substance of the advice, on separating household from business money, on planning repayment, and on saving towards reinvestment, was accessible irrespective of how much formal schooling a respondent had received.

Qualitative Findings

The qualitative phase involved ten rural women entrepreneurs (coded RW01 to RW10) drawn from the six Local Government Areas, with business experience ranging from four to twenty-two years across agriculture, trading, and small-scale production. Two themes relevant to the present study emerged.

Theme One: Accessibility and Benefits of Bank of Industry Credit. Consistent with the quantitative finding, participants who had received BOI credit reported tangible improvements in their businesses; RW03, a poultry farmer, used a ₦500,000 loan to acquire equipment, and RW08 used a ₦600,000 loan to increase shop stock. Once obtained, credit translated fairly directly into business gains. However, the same accounts explained why credit returned the lowest cluster mean and why access, transparency, and timeliness were its weakest items: several participants described distant application points, demanding guarantor and documentation requirements, and disbursements that arrived later than planned. This corroborates the quantitative pattern in which the usefulness of credit outscored its accessibility.

Theme Two: Value of Financial Advisory Services. Participants described the advisory services as prompting concrete changes to their financial practice. RW01 explained that the guidance taught her to separate business money from household money, calculate costs, keep a simple sales record, and plan repayment, while RW03 singled out cash-flow planning as the most useful element. These accounts, drawn from women of varying educational backgrounds, align with the quantitative finding that advisory services were experienced as similarly beneficial across educational levels.

Discussion of Findings

The first finding revealed that Bank of Industry credit services influence rural women's entrepreneurial success to a high extent (cluster mean = 2.67). This indicates that credit, once obtained, contributes meaningfully to business success by enabling the purchase of equipment and inputs and improving profitability. The finding is consistent with the Resource-Based Theory, which holds that access to valuable resources such as finance underpins enterprise performance. Yet the pattern of item ratings, in which access, transparency, and timeliness were the weakest elements, shows that the binding constraint is reaching the credit rather than benefiting from it once reached, a reading strongly reinforced by the qualitative accounts of distant application points and delayed disbursement.

The test of the first hypothesis established a significant difference in the perceived influence of credit services by nature of business, F(2, 286) = 3.676, p < 0.05, with the Tukey HSD test locating the difference between women in small-scale production and those in agriculture. This suggests that fixed repayment schedules fit the year-round cash flow of production enterprises more comfortably than the seasonal, harvest-tied income of agricultural enterprises. The finding underscores that the design of credit products, particularly repayment structures, conditions how different rural enterprises benefit from them, and it points to the need for repayment terms aligned with the income rhythms of specific business types.

The second finding revealed that financial advisory services influence rural women's entrepreneurial success to a high extent (cluster mean = 3.02), outperforming credit services. This indicates that the knowledge the Bank of Industry provides, on budgeting, planning, record-keeping, and reinvestment, reached these women more readily than its capital did, and that such knowledge

strengthened the financial management practices on which sustainable success depends. The finding aligns with the Resource-Based Theory's emphasis on knowledge as a valuable resource and with the qualitative accounts of concrete changes to financial practice.

The test of the second hypothesis established no significant difference in the perceived influence of advisory services by level of education, $F(3, 285) = 1.008$, $p > 0.05$. This indicates that the advisory services were experienced as similarly beneficial by women across all educational levels, from those with no formal education to those with tertiary education. The finding is instructive when set against the credit result: whereas the benefit of credit varied with business type, the benefit of advice did not vary with schooling, suggesting that the advisory content was delivered in an accessible, practical register. Taken together, the two findings indicate that the Bank of Industry's financial support is valuable to rural women but that its credit arm requires reform to make access more equitable across enterprise types.

Conclusion

The study concluded that Bank of Industry credit and financial advisory services contribute meaningfully to rural women's entrepreneurial success in North Central, Nigeria, each influencing success to a high extent. The two services nonetheless behave differently with respect to the moderating variables examined: the perceived influence of credit services differed significantly by nature of business, being lowest among women in agriculture and highest among those in small-scale production, whereas the perceived influence of advisory services did not differ significantly by level of education. The findings indicate that while advisory services reach rural women broadly and equitably, the value of credit is constrained by access barriers and by repayment structures that fall unevenly across business types, and that reform of the credit arm is central to realising the full potential of the Bank of Industry's support for rural women.

Recommendations

Based on the findings, the following recommendations were made:

3. The Bank of Industry should simplify and decentralise access to credit for rural women, reducing documentation and guarantor burdens, bringing application points closer to rural communities, and improving the timeliness of disbursement, since access rather than usefulness emerged as the binding constraint on credit.
4. The Bank of Industry should align loan repayment schedules with the income patterns of different rural enterprises, offering flexible, seasonally adjusted repayment for agricultural businesses whose income arrives in concentrated bursts, so as to close the gap in perceived benefit between agriculture and small-scale production.
5. Given the broad and equitable benefit of financial advisory services, the Bank of Industry should expand and sustain these services, using them as an entry point through which more rural women can be prepared for and linked to credit.
6. Policy makers and development agencies should support the Bank of Industry in strengthening its rural outreach, so that the financial knowledge already reaching rural women is matched by improved access to the capital they need to act on it.

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SUB-THEME 5
COMPETENCY BASED BUSINESS EDUCATION AND EXPERIENTIAL LEARNING

IMPORTATION OF INNOVATIVE TECHNOLOGY FOR COMPETENCY-BASED BUSINESS EDUCATION PROGRAMME IN UNIVERSITIES IN RIVERS AND BAYELSA STATES, NIGERIA

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Abstract

The rapid transformation of the global economy through digitalisation, artificial intelligence, automation, cloud computing, data analytics and other emerging technologies has significant implications for the preparation of graduates of Business Education programmes in Nigerian universities. Business Education is expected to equip learners with competencies that enable them to function effectively as employees, entrepreneurs, managers, educators and technology-enabled professionals. However, the increasing divergence between university-based learning and the technological competencies demanded by contemporary workplaces raises questions about the adequacy of conventional approaches to Business Education. This paper examines the imperative of importing and strategically integrating innovative technologies into competency-based Business Education programme in universities in Rivers and Bayelsa States, Nigeria. The paper is conceptual and non-empirical, drawing on relevant literature, policy documents and contemporary developments in technology-enhanced education. It discusses competency-based education, innovative technology, Business Education and technology importation, and examines the potential contribution of artificial intelligence, learning management systems, virtual and augmented reality, cloud technologies, business simulation, data analytics and other digital tools to competency development. The paper argues that technology importation should not be understood merely as the acquisition of sophisticated hardware and software; rather, it should involve the purposeful transfer, adaptation, contextualisation and sustainable utilisation of technologies that support authentic learning and workplace competencies. The paper further highlights infrastructural, financial, human-capacity, ethical and contextual challenges that may constrain effective technology integration. It concludes that universities in Rivers and Bayelsa States require a deliberate technology-importation and integration framework aligned with competency-based curriculum implementation, industry requirements and the Nigerian higher-education context.

Keywords: Innovative technology, Competency-Based Education, Business Education, Technology Importation, Digitalisation

Introduction

The contemporary knowledge economy is characterised by rapid technological development, digital transformation, automation and changing patterns of employment. Universities are consequently under increasing pressure to produce graduates who possess not only theoretical knowledge but also demonstrable competencies that can be applied to authentic workplace and entrepreneurial situations (Okenema, 2025). This development has strengthened the relevance of competency-based education (CBE), which places emphasis on what learners can demonstrably know, understand and perform rather than solely on the completion of prescribed academic content. Business Education occupies an important position within this transformation because its curriculum is inherently connected with the world of work, business organisations, accounting, entrepreneurship, marketing and distribution, office education and administration, and information and communication technology (Amesi & Ellah, 2020). Contemporary Business Education therefore requires learning experiences that expose students to technologies and practices similar to those encountered in modern organisations.

The National Universities Commission's Core Curriculum and Minimum Academic Standards (CCMAS) provides a contemporary framework for university curriculum development and includes competency-oriented learning outcomes and technology-related expectations within education programmes. The Education CCMAS, for example, identifies competencies involving Information and Communication Technology, online classes, learning resources, hybrid teaching and competency-based learning. The CCMAS emphasis on graduates of Business Education is that it will afford its students the opportunity to learn and develop 21st Century skills like,team work, digital literacy; creative and innovative, information literacy, media literacy skills, digital citizenship, flexibility, critical thinking, and multitasking skills, that will enable them to fit into and take up contemporary business opportunities, employment opportunities and be self employed or employers of labour. This development makes the question of innovative technology particularly important for universities in Rivers and Bayelsa States. The two states constitute an important educational and economic environment in the Niger Delta, with universities preparing graduates for employment, entrepreneurship and professional practice. Business Education programmes within these institutions need to respond to technological changes occurring in accounting, banking, commerce, entrepreneurship, marketing, office education and administration, education and other business-related sectors.

Recent Nigerian scholarship like Olawoyin; Adeniji, Jummai, Mohammed, and Hawa (2025) and Okoro, J., and Okoro, P. E. (2025), demonstrates growing attention to technologies such as artificial intelligence, learning management systems, intelligent tutoring systems, machine learning, virtual reality and emerging digital technologies in Business Education. Against this background, this position paper argues for a systematic approach to the importation, adaptation and integration of innovative technologies into competency-based Business Education programmes in universities in Rivers and Bayelsa States.

Conceptual Clarifications

Innovative technology according to Igbongidi (2022), refers to new, emerging or significantly improved technological tools, systems and applications capable of transforming existing processes, practices and outcomes. In education, such technologies may include artificial intelligence, virtual reality, augmented reality, cloud computing, learning management systems, data analytics, simulation technologies, intelligent tutoring systems and collaborative digital platforms. Innovative technology ought not be interpreted simply as the possession of modern computers or internet facilities. Its educational value lies on how effectively it improves teaching, learning, assessment, collaboration, problem-solving and competency development.

Competency-based education according to Amadi, Wogboroma and Levi (2024), is an approach to education that focuses on the acquisition and demonstration of clearly defined knowledge, skills, attitudes and abilities required for effective performance. In Business Education, competency-based learning implies that students ought to be able to demonstrate practical capabilities such as: digital communication; accounting and financial analysis, business data analysis, office technology application, entrepreneurship, marketing and distribution, business information management, problem-solving, creativity and innovation, teamwork, critical thinking, and use of emerging business technologies. The competency orientation is consistent with contemporary curriculum expectations within Nigeria's CCMAS framework.

Business Education has traditionally combined business knowledge with pedagogical and vocational competencies. However, the contemporary workplace has expanded the competencies required of business professionals. For example, accounting professionals increasingly interact with digital accounting systems and data analytics. Entrepreneurs increasingly use e-commerce, digital payment systems and social media platforms. Marketing professionals use social media, digital advertising and customer analytics (Oladunni-Mohammad, 2024). Office professionals operate cloud-based information systems and collaborative platforms. Consequently, Business Education programme can no longer rely predominantly on conventional classroom lectures and theoretical demonstrations. Students need opportunities to practise using technologies in simulated or authentic business environments. Recent Nigerian studies have reported increasing attention to learning management systems, adaptive learning, artificial intelligence and other emerging technologies in Business Education (Anireh, 2026; Mishra & Koehier, 2006).

In the context of this paper, importation of innovative technology refers to the deliberate acquisition, transfer, adaptation and institutionalisation of relevant technological tools, systems, knowledge and practices from technologically advanced environments into universities for educational and professional development. Importation therefore, ought to be viewed broadly as it involves technology:

1. Acquisition: obtaining appropriate technological equipment and software

2. Transfer: transferring relevant technical knowledge and expertise
3. Adaptation: modifying imported technologies to suit local educational conditions
4. Integration: embedding technology into curriculum, teaching, learning and assessment
5. Sustainability: ensuring maintenance, upgrading and continuous utilisation and
6. Human-capacity development: equipping lecturers and students with the competencies required to use the technology effectively. Thus, simply purchasing sophisticated technological equipment without developing the human and institutional capacity to use it does not constitute meaningful technology importation.

Innovative Technologies Relevant to Competency-Based Business Education

Artificial intelligence: this can support personalised learning, automated feedback, intelligent tutoring, content generation, research assistance, business simulations and data analysis (Ibe, 2026). For Business Education students, artificial intelligence can facilitate practical activities involving: accounting; business decision-making, communication, entrepreneurship, financial analysis, marketing, research, and problem-solving. Recent Nigerian research has specifically examined artificial intelligence tools in Business Education and reported the importance of educators' competence, training and access to technology. However, artificial intelligence integration requires attention to academic integrity, data privacy, bias, responsible use and the development of students' independent thinking.

Learning Management Systems (LMS): this provide digital environments through which lecturers can distribute instructional materials, administer assessments, communicate with students, monitor learning activities and provide feedback. Learning management systems can strengthen competency-based learning by allowing students to complete practical tasks, submit digital portfolios and receive continuous feedback (Tijjani; Yaduma & Ibelegbu, 2026). Evidence from recent Nigerian Business Education research indicates substantial utilisation of learning management systems for teaching and learning, although other emerging approaches such as adaptive learning and flipped classrooms appear less extensively integrated.

Virtual and Augmented Reality: virtual reality (VR) and augmented reality (AR) can provide simulated environments in which students practise activities that may otherwise be expensive or difficult to reproduce in conventional classrooms (Ohobu; abang & Atah, 2025). To this, Business Education students could use simulations to practise: office management; customer service, entrepreneurship, business negotiation, retail management, marketing, workplace communication, and business decision-making. Research on virtual reality in Nigerian higher education has identified its potential for improving engagement, understanding and practical business skills, while also noting the need to strengthen its classroom-based application.

Technology and Competency Development

The central argument of this paper is that technology ought to be connected directly to demonstrate competencies. This is shown in Tables 1 and 2:

Table 1: Technology Potential of Business Education Competency

Technology	Potential Business Education Competency
Artificial Intelligence	Problem-solving and decision-making
Learning Management Systems	Digital learning and communication
Cloud computing	Collaboration and information management
Data analytics	Analytical and decision-making skills
VR/AR	Practical and experiential learning

Table 2: Business Simulation and Entrepreneurial and Managerial Competence

Business Simulation	Entrepreneurial and Managerial Competence
E-commerce platforms	Digital entrepreneurship
Accounting software	Accounting and financial-management competence
Digital communication tools	Professional communication
Digital portfolios	Demonstration and assessment of competence

This relationship is important because technology adoption without competency alignment can result in technology-driven teaching rather than competency-driven learning.

Constructivism holds that learners actively construct knowledge through interaction with their environment and through meaningful learning experiences. Innovative technologies can support this process by allowing students to investigate problems, collaborate, simulate business situations and develop solutions.

Experiential learning emphasises learning through experience, reflection, conceptualisation and application. This perspective is particularly relevant to competency-based Business Education

because students need opportunities to perform business activities rather than merely read about them. Business simulations, virtual environments, case-based digital learning and enterprise projects can therefore connect theoretical knowledge with practical experience.

Successful technology integration depends partly on users' perceptions of the usefulness and usability of technology (Amesi & Babalola, 2022). Therefore, universities ought not assume that technology acquisition automatically results in technology utilisation. Lecturers and students require training, technical support and opportunities to develop confidence in using new technologies.

The position of this paper is that universities in Rivers and Bayelsa States ought to adopt a deliberate, competency-oriented strategy for importing and integrating innovative technologies into Business Education programmes. This position rests on five major arguments.

1. Technology ought to be selected according to the competencies students are expected to demonstrate rather than because the technology is fashionable.
2. Technologies developed elsewhere ought to be adapted to Nigerian institutional, economic, cultural and infrastructural realities.
3. The effectiveness of innovative technology depends substantially on the capacity of lecturers to design meaningful learning experiences around it.
4. Competency-based education requires assessment of actual performance. Digital portfolios, simulations, projects, practical demonstrations and authentic assessments can complement conventional examinations.
5. Business Education is fundamentally connected to employability and enterprise. Universities ought to therefore engage employers, professional bodies, technology companies, and relevant industries when identifying the competencies and technologies required by graduates.

The Rivers and Bayelsa context makes this issue particularly significant. Universities in the two states operate within an environment where graduates require competencies relevant to commerce, entrepreneurship, public and private-sector employment, education, accounting, administration and technology-enabled business. The technological ecosystem of the Niger Delta also creates opportunities for universities to develop Business Education programmes around: digital entrepreneurship; e-commerce, financial technology, business analytics, digital marketing, virtual business operations, office automation, online education, accounting technologies, and innovation management. Evidence from Bayelsa State has already highlighted the relevance of technological competence to evaluation practices in Business Education.

Challenges to Technology Importation and Integration

Despite its potential, several challenges require attention.

Inadequate infrastructure: unreliable electricity supply, internet connectivity and inadequate information and communication technology facilities can restrict technology utilisation.

Cost: acquiring, licensing, maintaining and upgrading sophisticated technologies can be expensive.

Lecturer competency: technology cannot produce meaningful learning without competent lecturers capable of integrating it pedagogically.

Resistance to change: some lecturers and students may be reluctant to abandon familiar instructional approaches.

Maintenance and sustainability: universities need technical personnel and maintenance arrangements to prevent technological investments from becoming obsolete.

Ethical and security concerns: Artificial intelligence and other digital technologies raise concerns relating to plagiarism, data privacy, cybersecurity, algorithmic bias and responsible technology use.

Contextual mismatch: imported technologies may fail to address local needs when they are transferred without adequate adaptation.

Recent Nigerian scholarship similarly identifies inadequate facilities, funding and technical manpower among challenges affecting effective implementation of contemporary Business Education curriculum reforms.

Proposed Framework for Technology Importation

The researchers are of the view that a useful framework for universities in Rivers and Bayelsa States can be represented as shown in Figure 1:

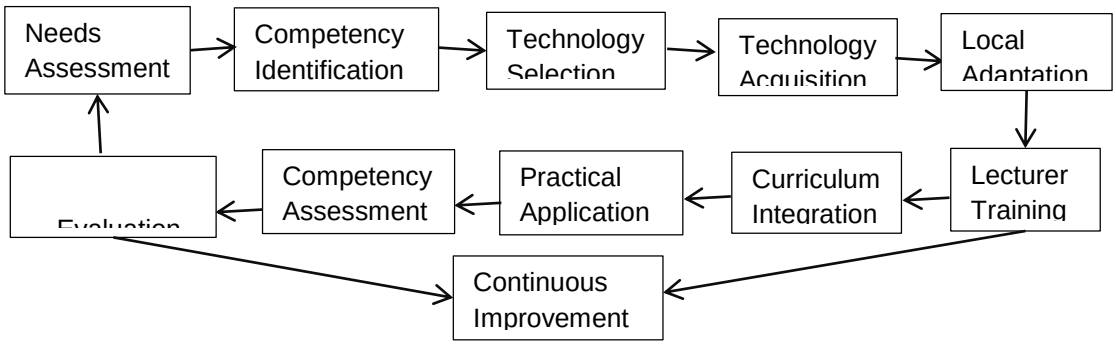


Fig. 1: Researchers Conceptulised Framework on Importation of Innovative Technology for Competency-based Business Education Programme

This framework ensures that technology acquisition begins with educational needs rather than technological availability and progresses to evaluation and continuous improvement of the teaching staff.

Implications for Business Education

1. For curriculum: Curriculum content ought to incorporate emerging digital business competencies.
2. For teaching: Lecturers ought to move from predominantly teacher-centred approaches towards experiential, project-based, collaborative and technology-supported learning.
3. For assessment: Assessment ought to increasingly measure students' ability to apply knowledge and perform authentic tasks.
4. For lecturers: Continuous professional development in artificial intelligence, data analytics, digital pedagogy and emerging technologies is essential.
5. For students: Students ought to graduate with demonstrable digital, entrepreneurial, analytical and professional competencies.
6. For university management: Technology investment ought to be linked to curriculum objectives, institutional strategy and measurable educational outcomes.

Conclusion

The transformation of the workplace through digitalisation, artificial intelligence, automation and other emerging technologies has created a compelling need to rethink the preparation of Business Education graduates in Nigerian universities. Competency-based Business Education provides an appropriate framework because it emphasises demonstrable knowledge, skills, attitudes and capabilities relevant to real-world performance. The importation of innovative technology into universities in Rivers and Bayelsa States should therefore go beyond the purchase of computers, software and digital equipment. It should constitute a comprehensive process involving technology acquisition, knowledge transfer, local adaptation, lecturer development, curriculum integration, practical application and competency assessment.

The ultimate objective should be to produce Business Education graduates capable of using technology to solve problems, create value, manage information, communicate effectively, innovate, establish enterprises and perform successfully in contemporary workplaces. Consequently, technology should not replace the Business Education lecturer; rather, it should strengthen the lecturer's capacity to create authentic, experiential and competency-oriented learning environments. The successful integration of innovative technology can thus contribute to repositioning Business Education programmes in Rivers and Bayelsa States for the demands of the emerging digital economy.

Suggestions

Based on the conceptual arguments presented, the researchers suggests that:

1. Universities in Rivers and Bayelsa States should develop institutional frameworks for technology-enabled competency-based Business Education.
2. Technology acquisition should be preceded by systematic identification of the competencies required by students and employers.
3. Universities should establish or strengthen Business Education technology laboratories equipped with relevant contemporary technologies.
4. Continuous professional development programmes should be organised for Business Education lecturers on AI, data analytics, LMS, digital entrepreneurship, simulation and other emerging technologies.

5. Universities should establish partnerships with technology companies, industries and professional organisations for technology transfer and practical training.
6. Imported technologies should be adapted to Nigerian economic, cultural, infrastructural and educational conditions.
7. Business Education programmes should incorporate authentic digital projects, simulations, portfolios and practical demonstrations into assessment.
8. University management should provide reliable internet connectivity, electricity, technical support and maintenance systems.
9. Ethical guidelines should be developed for the responsible use of AI and other emerging technologies.
10. Technology integration should be continuously reviewed to ensure alignment with CCMAS requirements and changing workplace competencies. The NUC currently provides the CCMAS framework, including the Education discipline standards, which provides an important policy reference for this alignment.

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COMPETENCY-BASED BUSINESS EDUCATION AND EXPERIENTIAL LEARNING AS PREDICTORS OF EMPLOYABILITY READINESS AMONG BUSINESS EDUCATION UNDERGRADUATES IN NIGERIAN UNIVERSITIES

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Abstract

The study examined competency-based Business Education and experiential learning as predictors of employability readiness among Business Education undergraduates in Nigerian universities. Threeobjectives, three corresponding research questions and two null hypotheses guided the study. A correlational research design was adopted. The population comprised 380 final-year Business Education undergraduates from three universities in Cross River State, Nigeria, from which a sample of 194 students was selected using proportionate sampling. Data were collected using a 21-item Competency-Based Business Education, Experiential Learning and Employability Readiness Questionnaire (CBEELERQ), structured on a four-point scale ranging from Very Great Extent (VGE) to Very Low Extent (VLE). The reliability of the questionnaire was established through a pilot test involving 40 Business Education students from a university outside the selected study institutions. Cronbach's alpha reliability coefficients of 0.89, 0.91 and 0.93 were obtained for competency-based Business Education, experiential learning and employability readiness, respectively, indicating satisfactory internal consistency. Mean and standard deviation were used to answer the research questions, while multiple linear regression was employed to test the hypotheses at the 0.05 level of significance. The findings showed that competency-based Business Education was rated to a great extent (M = 2.64), as was experiential learning (M = 2.63), while employability readiness was also rated to a great extent (M = 2.71). The regression model was statistically significant, $F(2, 191) = 83.84$, $p < .001$, explaining 46.7% of the variance in employability readiness. Competency-based Business Education significantly and positively predicted employability readiness ($\beta = .418$, $p < .001$), while experiential learning also made a significant positive contribution ($\beta = .459$, $p < .001$). Both null hypotheses were therefore rejected. The study concluded that competency-based Business Education and experiential learning significantly predict employability readiness among Business Education undergraduates. It was recommended that universities strengthen workplace-relevant competencies, authentic assessment, practical projects, industry engagement, digital skills and structured experiential learning within Business Education programmes to enhance students' preparedness for the contemporary world of work.

Keywords: competency-based education, Business Education, experiential learning, employability readiness and undergraduates

Introduction

The changing nature of the contemporary workplace has intensified the demand for university graduates who can do more than demonstrate disciplinary knowledge. Rapid technological advancement, digitalisation, evolving business practices and increasing competition for employment have transformed the competencies required for effective participation in the labour market. Employers increasingly expect graduates to communicate effectively, collaborate with others, solve problems, think critically, adapt to changing circumstances and apply knowledge to authentic work situations. Consequently, graduate employability has become an important concern in higher education, with universities under increasing pressure to ensure that students are adequately prepared to make the transition from academic study to employment and to remain productive as workplace demands evolve.

Evidence from the employability literature indicates that graduate outcomes are closely associated with the competencies developed during higher education and the extent to which university preparation corresponds with employers' expectations (Succi & Canovi, 2020). More recent research similarly emphasises the contribution of employability-oriented educational practices to students' skills development and labour-market preparation (Scandurra et al., 2023).

Within this changing environment, employability readiness represents an important dimension of graduate preparation. It refers to the extent to which students possess the knowledge, skills, attitudes and personal attributes required to enter the workplace, perform effectively and adapt to changing employment conditions. It therefore extends beyond technical or subject-specific knowledge to include transferable capabilities such as communication, teamwork, problem-solving, critical thinking, adaptability, self-management and the capacity to apply knowledge in practical contexts. These capabilities are particularly important for young people entering the labour market because they often have limited opportunities to acquire workplace experience before their first employment. The International Labour Organization (ILO, 2024) emphasises the importance of core employability skills in supporting young people's transition into work. This places a significant responsibility on higher education institutions to provide learning experiences through which students can develop, practise and demonstrate these competencies before graduation.

The challenge is particularly important in Nigeria, where the transition from university education to productive employment remains a significant concern. Nigerian higher education institutions have continued to face questions about the extent to which graduates possess the generic and occupational competencies demanded by employers. Okolie et al. (2020), for instance, identified challenges associated with the development of high-level generic skills in Nigerian higher education, including inadequate learning environments, limited industry experience among some academic staff and an overreliance on theoretical content. Similar concerns have been reported within Business Education, where questions have been raised about the extent to which university programmes adequately equip students with the competencies required for contemporary employment (Ore, 2023). These concerns suggest that the issue is not simply whether students complete university programmes, but whether the learning they receive equips them with capabilities that can be effectively transferred to the workplace.

This concern is especially relevant to Business Education, given the vocational and occupational orientation of the programme. Business Education is expected to prepare students for employment and entrepreneurship across areas such as accounting, office administration, management, marketing, information and communication technology and related business occupations. Consequently, the quality of Business Education should be assessed not only in terms of students' mastery of theoretical concepts but also in terms of their ability to apply knowledge and skills to authentic business and workplace situations. Akeke et al. (2023) identified computing and accounting competencies among the important competencies required for the employability of university Business Education graduates, while Akpomi and Ikpesu (2020) highlighted professional skills development, curriculum relevance and practical exposure as important components of employability-oriented Business Education. These findings point to the need for Business Education programmes to remain responsive to changing occupational and labour-market requirements.

One educational response to this challenge is competency-based Business Education. Competency-based education shifts attention from the mere coverage of prescribed content to what learners can demonstrate through their knowledge, skills, abilities and attitudes. It emphasises clearly defined learning outcomes, practical application, performance-based assessment and the development of competencies that have relevance beyond the classroom. This orientation is particularly relevant to employability because it provides a framework for connecting educational outcomes with the capabilities expected in professional practice. A systematic review by Pérez Zúñiga et al. (2025) found that competency-based approaches, together with appropriate teaching and assessment practices, are associated with employability-related outcomes, including teamwork, problem-solving, critical thinking, technical skills and digital competencies. Similarly, the employability literature has consistently identified the mismatch between graduates' competencies and employers' expectations as an important concern requiring stronger alignment between higher education and the world of work (Succi & Canovi, 2020).

In the Nigerian university context, the emphasis on competency development is also consistent with broader efforts to strengthen the relevance and quality of university curricula. The introduction of the Core Curriculum and Minimum Academic Standards (CCMAS) by the National Universities Commission represents an effort to establish contemporary curriculum standards while allowing universities to respond to emerging educational, societal and labour-market needs (National Universities Commission [NUC], 2022). For Business Education, such an orientation provides an opportunity to move instructional practice beyond the transmission of business concepts towards the

demonstration of practical competencies. Students, for example, may be expected to prepare accounting records, use digital business applications, communicate with clients, analyse business problems, develop business plans, manage simulated business operations or demonstrate office and entrepreneurial skills. These activities make learning outcomes more observable and potentially more relevant to employment.

Empirical evidence from Nigeria supports the importance of such competency development. Akeke et al. (2023) found that specific occupational competencies were required by university Business Education graduates for employability, while Edet and Udida (2019) reported concerns about the acquisition of employability skills among Business Education graduates in Cross River State. Ore (2023) similarly identified limitations in the development of some workplace-related soft skills among Business Education students. More recent evidence from technical education also suggests that competency-based education can contribute to employability, although implementation challenges such as resource limitations, instructor preparedness and weak curriculum-industry linkages may constrain its effectiveness (Ogunbote et al., 2026). The latter study, although conducted outside Business Education, provides useful evidence that competency-based approaches can strengthen the connection between educational outcomes and employment requirements.

However, developing competencies through curriculum design and classroom instruction alone may not be sufficient. Students need opportunities to apply, test and refine what they have learned in situations that resemble the realities of work. This brings experiential learning into focus. Experiential learning provides opportunities for learners to acquire knowledge through experience, reflection, application and active engagement with authentic or realistically simulated tasks. In higher education, it may involve practical exercises, projects, simulations, case studies, fieldwork, internships, industrial attachments, workplace visits, business challenges and other activities that require students to apply theoretical knowledge to practical situations. Motta and Galina (2023), in a systematic review, found that experiential learning has become increasingly prominent in entrepreneurship education because of its potential to develop entrepreneurial skills and competencies through learning by doing. Similarly, Duchatelet et al. (2024) found that experiential learning environments can support generic learning outcomes such as critical thinking, communication and self-regulation, all of which are relevant to employability.

The relevance of experiential learning is particularly evident in Business Education because the programme is inherently connected to practical business activities and occupational performance. When students engage in practical business tasks, they have opportunities to make decisions, solve problems, collaborate with others, communicate ideas, receive feedback and learn from mistakes. Such experiences can help them move from knowing about business to being able to perform business-related tasks. For example, a student who participates in a business project may be required to identify a problem, develop a solution, work with team members, manage available resources and present the outcome. Similarly, industrial attachment or workplace-based activities can expose students to organisational procedures, professional expectations, digital tools and real-world business challenges. Akpomi and Ikpesu (2020) identified experiential learning and professional skills development as important components of an employability-centred Business Education curriculum, while more recent evidence has linked practical learning experiences with employment-related outcomes among Business Education graduates (Olatoye et al., 2025).

The contribution of experiential learning to employability readiness can therefore be understood through its emphasis on application and transfer. A student may understand the principles of communication, teamwork or problem-solving theoretically, but authentic learning experiences provide opportunities to practise these capabilities under conditions that approximate workplace demands. Experiential learning can also create opportunities for reflection, allowing students to evaluate their performance, receive feedback and modify their approach to subsequent tasks. This is important because employability readiness involves not only possessing competencies but also being able to apply them appropriately in unfamiliar and changing situations. The growing body of higher education research on experiential learning supports this position by linking well-designed experiential environments with generic competencies that are relevant to successful participation in work and other professional contexts (Duchatelet et al., 2024; Scandurra et al., 2023).

Nevertheless, the potential benefits of both competency-based education and experiential learning depend substantially on quality of implementation. A competency-based curriculum may have limited effect when learning outcomes are poorly aligned with workplace requirements, assessment remains predominantly theoretical, lecturers lack adequate preparation, or students have insufficient access to practical facilities and industry exposure. Similarly, experiential learning may become less meaningful when practical activities are poorly structured, insufficiently supervised or disconnected from course

outcomes. Recent Nigerian evidence indicates that competency-based education may strengthen problem-solving, workplace readiness and skills acquisition, but its effectiveness can be constrained by inadequate resources, insufficiently prepared instructors and weak curriculum-industry alignment (Ogunbote et al., 2026). These considerations suggest that the question is not simply whether competency-based and experiential approaches exist, but whether their implementation is sufficiently meaningful to influence students' readiness for employment.

Against this background, there is a need to examine the relationship between competency-based Business Education, experiential learning and employability readiness within the Nigerian university context. Existing studies have provided useful evidence on Business Education curriculum relevance, specific competencies, workplace learning and employability skills, but these strands of research have largely been examined separately. Akeke et al. (2023), for example, focused on competencies required for the employability of Business Education graduates, while Ore (2023) examined the effectiveness of Business Education programmes in developing employability skills. Akpomi and Ikpesu (2020) examined an employability-centred curriculum, whereas other studies have considered experiential learning and workplace exposure. Consequently, comparatively limited empirical attention has been given to the simultaneous predictive contribution of competency-based Business Education and experiential learning to employability readiness among Business Education undergraduates in Nigerian universities.

This gap is important because employability readiness should be developed before students enter the labour market, rather than being treated primarily as an outcome that begins after graduation. Final-year students are approaching the transition from university to employment, self-employment or other forms of productive economic participation and therefore provide an important population for assessing whether university learning has equipped them for this transition. Understanding the extent to which competency-based Business Education and experiential learning predict employability readiness can provide evidence for curriculum planners, lecturers, university administrators and policymakers seeking to strengthen the relevance of Business Education in Nigeria.

Accordingly, the present study examined competency-based Business Education and experiential learning as predictors of employability readiness among Business Education undergraduates in Nigerian universities. Specifically, the study determined the extent to which competency-based Business Education predicted employability readiness and the extent to which experiential learning predicted employability readiness. By examining these two educational approaches within a single predictive framework, the study seeks to provide empirical evidence on how Business Education can better connect university learning with the competencies and practical experiences required for successful participation in the contemporary world of work.

STATEMENT OF THE PROBLEM

The changing nature of the contemporary workplace has increased the demand for university graduates who possess not only academic knowledge but also practical competencies, adaptability, problem-solving ability, communication skills, teamwork, digital competence and the confidence to apply their knowledge in real work situations. This expectation is particularly important for Business Education, which is designed to prepare students for employment and self-employment in areas such as accounting, office administration, management, entrepreneurship and related business occupations. However, possessing a university qualification does not necessarily guarantee adequate readiness to meet workplace expectations.

A major concern is the possible gap between the competencies developed through formal instruction and those required for effective workplace performance. When Business Education students receive predominantly theoretical instruction without sufficient opportunities to practise and demonstrate relevant competencies, they may graduate with academic knowledge but limited practical confidence and workplace readiness. This raises questions about whether existing approaches to Business Education adequately prepare undergraduates for the realities of contemporary employment.

Competency-based Business Education offers a potential response to this challenge by emphasising what learners can demonstrate through their knowledge, skills, attitudes and abilities rather than focusing mainly on course content. Similarly, experiential learning provides opportunities for students to connect theoretical knowledge with practice through projects, simulations, case studies, field experiences, industrial attachment and other authentic learning activities. Both approaches can potentially strengthen students' ability to apply knowledge, solve problems, collaborate, communicate and adapt to workplace demands. However, their actual contribution to employability readiness among Business Education undergraduates in Nigerian universities requires empirical verification.

Although previous studies have examined employability skills, curriculum relevance, competency development and practical learning, limited empirical attention has been given to the combined predictive relationship between competency-based Business Education, experiential learning and employability readiness among Business Education undergraduates in Nigerian universities. Consequently, there is insufficient evidence on the extent to which these two educational approaches predict students' readiness for the world of work while they are still undergraduates.

This gap is important because inadequate workplace preparation may result in graduates who possess theoretical knowledge but lack the practical competence and confidence required for effective employment. Empirical evidence is therefore needed to guide curriculum planners, Business Education lecturers, university administrators and policymakers in strengthening teaching and learning approaches that promote employability readiness. Against this background, the study examined competency-based Business Education and experiential learning as predictors of employability readiness among Business Education undergraduates in Nigerian universities.

Objectives of the Study

The main objective of the study was to examine competency-based Business Education and experiential learning as predictors of employability readiness among Business Education undergraduates in Nigerian universities. Specifically, the study sought to:

1. determine the extent to which competency-based Business Education predicted employability readiness among Business Education undergraduates in Nigerian universities.
2. determine the extent to which experiential learning predicted employability readiness among Business Education undergraduates in Nigerian universities.
3. To determine the extent of employability readiness among Business Education undergraduates in Nigerian universities.

Research Questions

The following research questions guided the study:

1. To what extent does competency-based Business Education predict employability readiness among Business Education undergraduates in Nigerian universities?
2. To what extent does experiential learning predict employability readiness among Business Education undergraduates in Nigerian universities?
3. To what extent are Business Education undergraduates in Nigerian universities employability-ready?

Research Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

H_{01}: Competency-based Business Education does not significantly predict employability readiness among Business Education undergraduates in Nigerian universities.

H_{02}: Experiential learning does not significantly predict employability readiness among Business Education undergraduates in Nigerian universities.

Methodology

The study adopted a correlational research design. The design was considered appropriate because the study sought to determine the extent to which competency-based Business Education and experiential learning predicted employability readiness among Business Education undergraduates without manipulating any of the study variables. The design enabled the researcher to obtain data on the respondents' perceptions of competency-based Business Education, experiential learning, and employability readiness and to examine the relationships between the predictor variables and the criterion variable.

The study was conducted in Cross River State, located in the South-South Geopolitical Zone of Nigeria. The study covered three universities offering Business Education programmes, namely the University of Calabar (UNICAL), University of Cross River State (UNICROSS), and University of Education and Entrepreneurship, Akamkpa. These institutions were selected because they offer Business Education programmes and provide an appropriate setting for examining how competency-based learning and experiential learning relate to the employability readiness of Business Education undergraduates.

The population of the study comprised 380 final-year Business Education undergraduate students drawn from three selected universities in Cross River State, Nigeria. Specifically, the University

of Calabar had 53 students, the University of Cross River State had 289 students, while the University of Education and Entrepreneurship, Akamkpa, had 38 students. The sample size for the study was determined from the population of 380 students using the Taro Yamane formula at an approximate 5.1% level of precision, which yielded a sample size of 194 students. The sample was subsequently distributed proportionately across the three universities based on their respective population sizes. Accordingly, 27 students were selected from the University of Calabar, 148 students from the University of Cross River State, and 19 students from the University of Education and Entrepreneurship, Akamkpa, giving a total sample of 194 final-year Business Education undergraduates. A proportionate sampling technique was adopted to ensure that each university was represented in the sample according to its population size.

Data were collected using a structured questionnaire titled Competency-Based Business Education, Experiential Learning and Employability Readiness Questionnaire (CBEELERQ). The questionnaire was developed by the researcher based on the objectives of the study and relevant literature on competency-based Business Education, experiential learning, and employability readiness. The instrument comprised 21 items divided into three sections. Section A contained seven items measuring competency-based Business Education; Section B contained seven items measuring experiential learning; while Section C contained seven items measuring employability readiness. The items were structured on a four-point rating scale of Very Great Extent (VGE) = 4, Great Extent (GE) = 3, Low Extent (LE) = 2, and Very Low Extent (VLE) = 1. Respondents were required to indicate the extent to which each statement reflected their experiences as final-year Business Education undergraduates. The questionnaire was subjected to face and content validation by experts in Business Education and Measurement and Evaluation. The experts examined the instrument in terms of the clarity, relevance, adequacy, appropriateness, and coverage of the items in relation to the study variables and objectives. Their observations and suggestions were used to modify and improve the instrument before its final administration.

The reliability of the questionnaire was established through a pilot test involving 40 Business Education students from a university outside the selected study institutions. The pilot-test responses were analysed using Cronbach's alpha reliability coefficient to determine the internal consistency of the items in each cluster and the overall instrument. The reliability coefficients obtained for competency-based Business Education, experiential learning and employability readiness were 0.89, 0.91 and 0.93, respectively. These coefficients were considered adequate for the main study, indicating that the instrument demonstrated satisfactory internal consistency for measuring the three study variables.

The researchers administered 194 copies of the questionnaire to final-year Business Education undergraduates in the three selected universities, with the assistance of three trained research assistants. The purpose of the study was explained to the respondents, and they were encouraged to provide honest responses. The completed questionnaires were retrieved immediately after administration, checked for completeness, and prepared for data analysis. All 194 copies of the questionnaire administered were successfully retrieved and found usable, representing a 100% return rate.

The data collected were coded and analysed using the Statistical Package for the Social Sciences (SPSS). Mean and standard deviation were used to answer the research questions and determine the extent to which competency-based Business Education and experiential learning predicted employability readiness among Business Education undergraduates. Multiple linear regression analysis was used to test the null hypotheses at the 0.05 level of significance. The regression analysis determined the combined predictive relationship of competency-based Business Education and experiential learning with employability readiness, as well as the unique contribution of each predictor variable to the prediction of employability readiness.

The regression model was specified as:

$ER = \beta_0 + \beta_1 CBE + \beta_2 EL + \varepsilon$

where:

- ER = Employability Readiness
- β_0 = Constant/intercept
- β_1 = Regression coefficient for Competency-Based Business Education
- CBE = Competency-Based Business Education
- β_2 = Regression coefficient for Experiential Learning
- EL = Experiential Learning
- ε = Error term

The decision rule for the hypotheses was that the null hypothesis was rejected when the probability value (p-value) was less than 0.05 and not rejected when the p-value was greater than or

equal to 0.05. The coefficient of determination (R^2) was used to determine the proportion of variance in employability readiness explained by the predictor variables, while the regression coefficients (β) indicated the direction and relative contribution of each predictor variable.

Presentation Of The Results

Research Question 1

To what extent does competency-based Business Education predict employability readiness among Business Education undergraduates in Nigerian universities?

To answer Research Question 1, the seven items measuring competency-based Business Education were analysed using mean and standard deviation. The criterion mean was 2.50.

Table 1: Mean and Standard Deviation of Respondents' Ratings on Competency-Based Business Education

S/N	Competency-Based Business Education Items	Mean	SD	Decision
1	Business Education courses provide opportunities for me to develop competencies relevant to workplace requirements.	2.53	1.13	GE
2	The teaching of Business Education enables me to demonstrate practical skills rather than only acquire theoretical knowledge.	2.68	1.06	GE
3	Business Education activities enable me to apply my knowledge to authentic business and occupational tasks.	2.73	1.15	GE
4	Assessment activities in Business Education require me to demonstrate competencies relevant to employment.	2.59	1.1	GE
5	Business Education courses develop my ability to use digital and technological tools required in modern workplaces.	2.71	1.09	GE
6	The competencies developed through Business Education prepare me to solve practical problems encountered in business and workplace situations.	2.66	1.16	GE
7	The Business Education programme enables me to develop competencies applicable to both paid employment and self-employment.	2.56	1.09	GE
	Overall cluster mean	**2.64**	**0.82***	**GE**

*Cluster SD is the standard deviation of respondents' composite scores.

The data in Table 1shows that the respondents rated all seven indicators of competency-based Business Education above the criterion mean of 2.50. The item means ranged from 2.53 to 2.73. The highest mean of 2.73 was recorded for the statement that Business Education activities enable students to apply their knowledge to authentic business and occupational tasks, while the lowest mean of 2.53 was recorded for the statement concerning opportunities to develop competencies relevant to workplace requirements. The overall cluster mean of 2.64 indicates that competency-based Business Education was experienced by the respondents to a great extent. This suggests that the Business Education programme provides students with opportunities to acquire practical, workplace-related, technological and problem-solving competencies that may enhance their readiness for employment. However, the descriptive result alone does not establish prediction. The predictive effect is determined through regression analysis.

Research Question 2

To what extent does experiential learning predict employability readiness among Business Education undergraduates in Nigerian universities?

Table 2: Mean and Standard Deviation of Respondents' Ratings on Experiential Learning

S/N	Experiential Learning Items	Mean	SD	Decision
8	I participate in practical activities that enable me to apply classroom knowledge to real-life business situations.	2.63	1.08	GE
9	I engage in projects that require me to solve practical business problems.	2.73	1.13	GE
10	I participate in simulations or case-based activities that reflect real workplace situations.	2.59	1.07	GE
11	I have opportunities to interact with practising business professionals or entrepreneurs as part of my learning.	2.66	1.11	GE
12	I participate in field-based, workplace-based or industry-related learning activities during my programme.	2.6	1.07	GE
13	Practical learning activities encourage me to reflect on my experiences and improve my performance.	2.52	1.15	GE
14	Experiential learning activities enable me to work collaboratively with others on practical business tasks.	2.67	1.13	GE
	Overall cluster mean	**2.63**	**0.81***	**GE**

*Cluster SD is the standard deviation of respondents' composite scores.

The results in Table 2 indicate that all seven experiential-learning items obtained mean scores above the criterion mean of 2.50. The mean scores ranged from 2.52 to 2.73. The highest mean score of 2.73 was recorded for students' engagement in projects requiring them to solve practical business problems. The lowest mean of 2.52 was recorded for the use of practical learning activities to encourage reflection and improvement. The overall mean of 2.63 indicates that respondents experienced experiential learning to a great extent. This implies that students are exposed to practical activities, projects, simulations, professional interactions, field-based learning and collaborative tasks that provide opportunities to connect classroom knowledge with workplace situations. Again, the regression analysis is required to establish whether experiential learning significantly predicts employability readiness.

Research Question 3

To what extent are Business Education undergraduates in Nigerian universities employability-ready?

Table 3: Mean and Standard Deviation of Respondents' Ratings on Employability Readiness

S/N	Employability Readiness Items	Mean	SD	Decision
15	I can apply my Business Education knowledge and skills to practical workplace tasks.	2.83	1.12	GE
16	I can communicate effectively with colleagues, clients and other workplace stakeholders.	2.67	1.15	GE
17	I can work effectively with others to accomplish workplace-related tasks.	2.64	1.12	GE
18	I can identify and solve problems that may arise in a workplace situation.	2.7	1.13	GE
19	I can adapt effectively to changes in workplace practices, technologies and expectations.	2.58	1.19	GE
20	I am confident in using digital technologies and business applications required in the workplace.	2.68	1.15	GE

21	I am prepared to take initiative and demonstrate responsibility when performing workplace tasks.	2.89	1.08	GE
	Overall cluster mean	**2.71**	**0.84***	**GE**

Table 3 shows that all the employability-readiness items recorded mean scores above 2.50. The item means ranged from 2.58 to 2.89. The highest mean of 2.89 was recorded for students' preparedness to take initiative and demonstrate responsibility in workplace tasks, while the lowest mean of 2.58 concerned adaptability to changes in workplace practices, technologies and expectations. The overall mean of 2.71 indicates that the respondents demonstrated employability readiness to a great extent. This suggests that the final-year Business Education undergraduates perceive themselves as reasonably prepared to apply their knowledge, communicate, collaborate, solve problems, use digital technologies, adapt to workplace changes and take responsibility.

Test of Hypotheses

Hypothesis One

H_{01}: Competency-based Business Education does not significantly predict employability readiness among Business Education undergraduates in Nigerian universities.

Table 4: Regression Coefficients on Competency-based Business Education does not significantly predict employability readiness among Business Education undergraduates in Nigerian universities.

Predictor	B	Std. Error	Standardised β	t	p-value	Decision
Constant	0.356	0.189	0	1.89	0.06	Not significant
Competency-Based Business Education	**0.421**	**0.063**	**0.418**	**6.736**	**< .001**	**Significant**

Decision rule: Reject H_0 if $p < .05$; otherwise, do not reject H_0.

The result in Table 4 shows that competency-based Business Education had a positive and statistically significant predictive effect on employability readiness ($B = 0.421$, $\beta = 0.418$, $t = 6.736$, $p < .001$). Since the obtained p-value of $< .001$ is less than the 0.05 level of significance, the null hypothesis, which states that competency-based Business Education does not significantly predict employability readiness, is rejected. Therefore, competency-based Business Education significantly and positively predicts employability readiness among Business Education undergraduates in Nigerian universities. The standardised beta coefficient of 0.418 indicates that competency-based Business Education makes a substantial positive unique contribution to employability readiness when experiential learning is held constant. The positive coefficient also indicates that students who experience greater competency-based Business Education tend to report higher levels of employability readiness.

Hypothesis Two

H_{02}: Experiential learning does not significantly predict employability readiness among Business Education undergraduates in Nigerian universities.

Table 5: Regression Coefficients on Experiential learning does not significantly predict employability readiness among Business Education undergraduates in Nigerian universities

Predictor	B	Std. Error	Standardised β	t	p-value	Decision

Constant	0.356	0.189	0	1.89	0.06	Not significant
Experiential Learning	**0.473**	**0.064**	**0.459**	**7.396**	**< .001**	**Significant**

Decision rule: Reject H_0 if $p < .05$; otherwise, do not reject H_0.

The result in Table 5 shows that experiential learning had a positive and statistically significant predictive effect on employability readiness (B = 0.473, β = 0.459, t = 7.396, p < .001). Since the p-value of < .001 is less than the 0.05 level of significance, the null hypothesis that experiential learning does not significantly predict employability readiness is rejected. Therefore, experiential learning significantly and positively predicts employability readiness among Business Education undergraduates in Nigerian universities. The standardised beta coefficient of 0.459 indicates that experiential learning makes a substantial positive unique contribution to employability readiness, controlling for competency-based Business Education. The result further indicates that increased exposure to practical projects, simulations, field-based activities, professional interactions, problem-solving tasks and collaborative learning is associated with higher employability readiness.

Discussion of the Findings

The first finding revealed that competency-based Business Education significantly predicted employability readiness among Business Education undergraduates. The descriptive result showed that respondents rated competency-based Business Education to a great extent, with a cluster mean of 2.64, while the regression result indicated a significant positive predictive effect (β = 0.418, t = 6.736, p < .001). This finding suggests that greater exposure to competency-oriented teaching, practical skill development, workplace-relevant assessment, digital competence and problem-solving activities is associated with higher levels of students' readiness for employment. The finding provides empirical support for the argument that Business Education becomes more relevant to labour-market demands when emphasis is placed not merely on the acquisition of theoretical knowledge but on the demonstration and application of occupational competencies. The finding agrees with Akpomi and Ikpesu (2020), who found that professional skills development, experiential learning and career-oriented curriculum content were important for improving the labour-market prospects of Business Education students. The agreement is particularly evident in the present study's finding that competency-based Business Education significantly contributes to employability readiness. Although Akpomi and Ikpesu examined an employability-centred curriculum rather than competency-based Business Education as a statistical predictor, both studies point to the importance of structuring Business Education around skills and competencies that students can apply in employment contexts.

The finding is also consistent with Edet and Udida (2019), who reported that Business Education curriculum content was important for the acquisition of employment-related skills among university graduates in Cross River State. The present finding extends this earlier evidence by moving beyond the general importance of curriculum content to demonstrate statistically that competency-based Business Education significantly predicts employability readiness. This suggests that the effectiveness of Business Education may depend not only on what is included in the curriculum but also on how effectively students are enabled to acquire and demonstrate the competencies embedded in it. Similarly, the finding corroborates Akeke et al. (2023), who identified computing and accounting competencies as particularly important for the employability of Business Education graduates. The present study's finding that competency-based Business Education significantly predicts employability readiness reinforces the relevance of such occupational competencies. The emphasis on digital and technological skills in the present instrument is particularly pertinent given the changing nature of contemporary workplaces, where graduates are increasingly expected to demonstrate both disciplinary and digital competencies. The finding further agrees with Ogunbote et al. (2026), who reported a significant positive relationship between competency-based education and employability among technical education graduates. Although their study focused on technical education rather than Business Education, the convergence of findings suggests that competency-based approaches may have broader applicability across vocationally oriented programmes. The present study consequently provides complementary evidence from Business Education, indicating that competency-oriented education is similarly relevant to students' preparation for employment.

The finding also aligns with the systematic review by Pérez Zúñiga et al. (2025), which identified competency-oriented teaching and assessment as increasingly associated with employability

development, particularly through communication, teamwork, critical thinking and problem-solving. The present study provides empirical support for this position by demonstrating a significant positive predictive relationship between competency-based Business Education and employability readiness. Taken together, these findings suggest that competency-based approaches can help narrow the gap between university learning and the practical competencies demanded by employers. However, the present finding also provides an important qualification to the concerns raised by Ore (2023), who found that some soft skills required in the workplace were not adequately developed among students in public universities in Lagos State. While that study identified inadequacies in the development of employability-related skills, the present study found a positive and significant contribution of competency-based Business Education to employability readiness. The apparent difference may be attributable to differences in institutional context, programme implementation, curriculum practices and the characteristics of the students studied. Nevertheless, both findings point to the same underlying issue: Business Education curricula need to be deliberately aligned with the competencies required in contemporary workplaces.

Overall, the first finding demonstrates that competency-based Business Education is not merely a curricular preference but an important educational approach for strengthening students' preparedness for employment. The implication is that universities should place greater emphasis on demonstrable competencies, authentic assessment, digital skills, problem-solving and workplace-oriented learning rather than relying predominantly on theoretical instruction.

The second finding showed that experiential learning significantly predicted employability readiness among Business Education undergraduates. Respondents rated experiential learning to a great extent, with a cluster mean of 2.63, while the regression analysis revealed a significant positive predictive effect ($\beta = 0.459$, $t = 7.396$, $p < .001$). The finding indicates that opportunities to participate in practical activities, projects, simulations, case-based learning, professional interactions, field-based activities and collaborative tasks are associated with greater readiness for workplace responsibilities. This finding agrees with Obi et al. (2022), who found that Business Education students were exposed to simulations, role plays, business laboratory activities, real-life case studies, peer assessment and projects that provided opportunities for developing 21st-century workplace competencies. The agreement is particularly strong because both studies focus on Business Education and recognise the importance of learning experiences that allow students to apply knowledge in practical contexts. While Obi et al. primarily examined the nature of experiential learning activities, the present study extends their findings by establishing that experiential learning significantly predicts employability readiness. The finding also corroborates Chukwuedo and Ementa (2022), who reported a positive relationship between workplace learning and students' perceived employability skills among technical and vocational education undergraduates in Nigerian universities. Both studies demonstrate the value of connecting academic learning with authentic workplace experiences. Although the population and programme context differed, the consistency of the findings suggests that exposure to real or simulated work environments can enhance students' ability to transfer theoretical knowledge into practical performance.

The present finding further supports Motta and Galina (2023), whose systematic review found that experiential approaches in entrepreneurship education enabled students to apply knowledge, develop practical competencies and engage with authentic entrepreneurial situations. This is relevant to Business Education because the programme prepares graduates not only for paid employment but also for entrepreneurial and self-employment opportunities. Experiential learning therefore provides students with opportunities to practise decision-making, problem-solving, collaboration and initiative in situations that resemble those encountered beyond the university. The finding is also consistent with Scheuring and Thompson (2024), who reported that business simulation activities positively influenced students' life-skill development and learning. The present study reinforces this evidence by showing that experiential learning is not simply beneficial for academic engagement but also has a significant predictive relationship with employability readiness. Simulations, projects and case-based activities can provide students with relatively safe environments in which to practise workplace behaviours before entering actual employment.

Similarly, the finding agrees with Scandurra et al. (2024), who found that practical activities such as placements and internships were widely associated with the development of labour-market-relevant skills. The present study adds to this evidence by demonstrating the predictive importance of experiential learning specifically among Business Education undergraduates in Nigerian universities.

An important aspect of the present finding is that experiential learning had a slightly stronger unique predictive contribution to employability readiness ($\beta = 0.459$) than competency-based Business

Education (β = 0.418). This suggests that while the acquisition of workplace-relevant competencies is important, opportunities to apply those competencies through practical experience may be particularly influential in shaping students' readiness for employment. In other words, knowing what to do may be insufficient if students are not given adequate opportunities to practise doing it. The finding should nevertheless be interpreted alongside the observation by Obi et al. (2022) that reflective learning activities were comparatively less evident. Experiential learning is most effective when practical experience is accompanied by reflection, feedback and opportunities for improvement. Thus, simply increasing students' exposure to practical activities may not be sufficient; universities should ensure that experiential activities are structured, supervised and followed by meaningful reflection.

Taken together, the evidence indicates that experiential learning provides an important bridge between academic knowledge and workplace performance. Business Education students are likely to become more employability-ready when they are given sustained opportunities to participate in authentic or realistically simulated business activities, interact with professionals, undertake projects, solve practical problems and reflect on their experiences.

Conclusion

Based on the findings of the study, it was concluded that competency-based Business Education and experiential learning are important predictors of employability readiness among Business Education undergraduates in Nigerian universities. The students rated both competency-based Business Education and experiential learning to a great extent, while their overall employability readiness was also rated to a great extent. The regression results demonstrated that competency-based Business Education made a significant positive contribution to employability readiness. This indicates that curriculum practices that emphasise practical competencies, workplace relevance, digital skills, problem-solving and authentic assessment can contribute meaningfully to students' preparedness for employment.

Similarly, experiential learning significantly and positively predicted employability readiness. The finding indicates that practical projects, simulations, field-based activities, workplace exposure, professional interaction and collaborative learning can strengthen students' capacity to translate academic knowledge into workplace performance. The two predictors jointly accounted for 46.7% of the variance in employability readiness, indicating that they constitute important educational factors in preparing Business Education undergraduates for the world of work. Experiential learning recorded a slightly higher standardised predictive coefficient than competency-based Business Education, suggesting that opportunities to apply acquired competencies through practical experiences may have particularly strong relevance for students' workplace readiness. The study therefore concludes that improving the employability readiness of Business Education undergraduates requires a shift from predominantly theoretical instruction towards an integrated model that combines competency development with meaningful experiential learning.

Recommendations

Based on the findings, the following recommendations were made:

1. Universities should strengthen competency-based Business Education curricula by ensuring that course content, instructional activities and assessment practices are explicitly aligned with current workplace requirements.
2. Business Education lecturers should increase the use of practical and authentic assessment methods. Students should be assessed not only on their ability to recall theoretical knowledge but also on their ability to demonstrate workplace competencies, solve practical problems and complete realistic business tasks.
3. Universities should expand experiential learning opportunities through business projects, simulations, case studies, fieldwork, industrial attachment, internships and other structured workplace-based activities.
4. Stronger partnerships should be established between universities and industry. Such partnerships can facilitate workplace placements, guest lectures, mentoring, professional interactions and opportunities for students to experience current business practices and technologies.
5. Digital and technological competencies should be integrated across Business Education courses. Students should receive sustained opportunities to use contemporary business applications and digital tools that are relevant to modern employment and entrepreneurial activities.

6. Experiential learning should incorporate structured reflection and feedback. Lecturers should provide opportunities for students to reflect on practical experiences, identify areas of weakness and improve their performance.
7. Business Education lecturers should receive continuous professional development in competency-based pedagogy, experiential teaching methods, digital technologies and authentic assessment so that they can effectively implement workplace-oriented learning.
8. Employers and professional practitioners should be involved in curriculum review. Their input can help universities identify emerging competencies and ensure that Business Education programmes remain responsive to changing labour-market expectations.

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EXPERIENTIAL TEACHING PRACTICES AND ENTREPRENEURIAL COMPETENCY DEVELOPMENT IN BUSINESS EDUCATION PROGRAMMES IN TERTIARY INSTITUTIONS IN RIVERS STATE

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Abstract

The increasing demand for graduates who can translate entrepreneurial knowledge into practical business activities has intensified the need for experiential approaches in Business Education. This study examined the relationship between experiential teaching practices and entrepreneurial competency development in Business Education programmes in tertiary institutions in Rivers State. Specifically, the study determined the relationships between project-based teaching practices, problem-based teaching practices and entrepreneurial competency development. Two research questions and two null hypotheses guided the study. A correlational research design was adopted. The population comprised 142 Business Education lecturers from four tertiary institutions in Rivers State. The entire population was studied using a census approach. Data were collected using the Experiential Teaching Practices and Entrepreneurial Competency Development Questionnaire (ETPECDQ), which was validated by three experts. A trial test conducted among Business Education lecturers at Federal University Otuoke yielded a Cronbach alpha reliability coefficient of .79. Pearson Product Moment Correlation was used for data analysis at .05 level of significance. Findings revealed significant positive relationships between project-based teaching practices and entrepreneurial competency development (r = .576, p < .001) and between problem-based teaching practices and entrepreneurial competency development (r = .720, p < .001). The study concluded that experiential teaching practices are significantly associated with entrepreneurial competency development and recommended increased integration of project- and problem-based activities into Business Education.

Keywords: Business Education, entrepreneurial competency, experiential teaching, problem-based teaching, project-based teaching

Introduction

Business Education is expected to prepare individuals with occupational, entrepreneurial and transferable competencies required to function effectively in contemporary economic environments. This responsibility has become increasingly important as employers and society expect graduates not merely to possess theoretical knowledge but to demonstrate creativity, opportunity recognition, decision-making, problem-solving, communication and other competencies required for productive employment and entrepreneurship. Nwaokokorom and Ikpeama (2023) established that problem-solving skills are highly required of Business Education students for effective job performance in organisations in the digital era. Their finding reinforces the need for instructional approaches capable of developing students' capacity to apply knowledge to practical situations.

Entrepreneurial competency development therefore constitutes an important outcome of Business Education. Entrepreneurial competencies comprise the knowledge, abilities and behavioural capacities required to recognize and evaluate opportunities, solve problems, mobilize resources and undertake entrepreneurial activities. Okolie et al. (2021), in a study involving 1,191 final-year undergraduates from 12 Nigerian public universities, established that participation in entrepreneurship education was

positively associated with competencies including opportunity recognition, opportunity assessment, creative problem-solving, self-efficacy, and building and using networks. The authors consequently advocated more practical rather than predominantly theory-oriented entrepreneurship programmes.

This position is particularly relevant because entrepreneurial competencies may be difficult to develop effectively through passive instructional approaches. Experiential teaching provides an alternative by allowing students to learn through action, reflection, problem-solving and application of knowledge to realistic situations. Motta and Galina (2023) conceptualized experiential entrepreneurship education essentially as learning by doing and concluded from their systematic review that experiential learning contributes positively to entrepreneurial skills and competency development.

Experiential teaching practices can involve simulations, role plays, field experiences, business laboratory activities, real-life cases, projects and practical problem-solving activities. Obi et al. (2022) established that Business Education students engaged in experiential activities including simulations, role plays, business laboratory practices, real-life cases, peer assessment, creative competitions and self-directed projects in developing 21st-century competencies. Their study provides important Nigerian Business Education evidence that competency development can be linked with learners' active participation in practical learning experiences.

The present study focuses on two experiential teaching practices: project-based teaching and problem-based teaching. Project-based teaching involves engaging learners in meaningful projects through which they investigate issues, apply knowledge and produce practical outcomes. In Business Education, such projects may involve business-plan preparation, product development, market surveys, simulated enterprises and development of promotional strategies. These activities can create opportunities for students to integrate entrepreneurial knowledge with creativity, planning, collaboration and decision-making.

Project-based learning is consistent with entrepreneurship education because entrepreneurship itself involves converting ideas into practical outcomes**.** Chen et al. (2026) demonstrated that industry project-based learning can contribute to the development of entrepreneurial mindset, while Malik-Kozłowska and Kozłowski (2025) linked project-based learning environments with entrepreneurial competencies such as autonomy, collaborative learning, self-efficacy, engagement and iterative learning.

Evidence within Rivers State further supports practical approaches. Abdulkarim (2019) investigated an action-based experiential approach among Business Education students and found that the approach enhanced entrepreneurial skills acquisition for business operations. This finding is particularly important to the present study because it demonstrates within the same geographical context that exposing Business Education students to active experiences can contribute to entrepreneurial skill development.

Problem-based teaching, on the other hand, involves organizing instruction around realistic and often complex problems that require learners to investigate, analyse alternatives and develop appropriate solutions. The learner consequently becomes an active problem solver rather than a passive recipient of information. This approach has particular relevance to entrepreneurial education because entrepreneurial activities routinely involve identifying customer needs, responding to market problems, making decisions under uncertainty and developing innovative solutions.

The importance of problem-solving competency has also been demonstrated directly within Nigerian Business Education. Nwaokokorom and Ikpeama (2023) found that problem-solving skills were highly required of Business Education students for job performance. Their study identified such capacities as relevant to graduates functioning effectively in contemporary organisations. Similarly, Okolie et al. (2021) found creative problem-solving among the entrepreneurial competencies positively associated with entrepreneurship education among Nigerian university students.

Problem-based learning can therefore provide an appropriate instructional environment for developing entrepreneurial competencies. Okolie et al. (2021) also argued from Nigerian higher-education evidence that innovative teaching techniques could improve students' development of entrepreneurial competencies. This position complements the broader findings of Motta and Galina (2023), whose review demonstrated that different experiential learning activities produce distinct benefits for entrepreneurship teaching and learning.

The need to develop entrepreneurial competencies is equally consistent with Nwaokokorom et al. (2025), who examined entrepreneurship development and sustainable employment of Business Education graduates in Rivers State. Their work emphasized entrepreneurial development as important to graduate self-reliance and sustainable employment. Thus, strengthening entrepreneurial competency is not merely an instructional concern but also relates to the broader objective of preparing Business Education graduates for employment creation and economic participation.

Despite the growing evidence on experiential learning and entrepreneurship education, an empirical gap remains. Previous studies have considered experiential activities, entrepreneurial skills, problem-

solving competencies and action-based learning. However, limited evidence has established the specific relationships between project-based teaching practices, problem-based teaching practices and entrepreneurial competency development across Business Education programmes in tertiary institutions in Rivers State. This study was therefore undertaken to address this gap.

Statement of the Problem

Business Education programmes are expected to develop graduates capable of translating entrepreneurial knowledge into practical competencies for employment and enterprise creation. Nwaokokorom and Ikpeama (2023) established that problem-solving skills are highly required of Business Education students for effective job performance, while Okolie et al. (2021) demonstrated that entrepreneurship education is associated with competencies including opportunity recognition and creative problem-solving among Nigerian undergraduates.

Although experiential approaches provide opportunities for practical competency development, their use does not automatically establish how particular teaching practices relate to entrepreneurial competency development. Abdulkarim (2019) demonstrated the effectiveness of action-based experiential learning among Business Education students in Rivers State, but limited evidence specifically establishes the relationships of project-based and problem-based teaching practices with entrepreneurial competency development across Business Education programmes in the State. This empirical gap constituted the problem of the study.

Purpose of the Study

The study determined the relationship between experiential teaching practices and entrepreneurial competency development in Business Education programmes in tertiary institutions in Rivers State. Specifically, the study sought to:

1. determine the relationship between project-based teaching practices and entrepreneurial competency development; and
2. determine the relationship between problem-based teaching practices and entrepreneurial competency development.

Research Questions

1. What relationship exists between project-based teaching practices and entrepreneurial competency development?
2. What relationship exists between problem-based teaching practices and entrepreneurial competency development?

Hypotheses

H_{01}: There is no significant relationship between project-based teaching practices and entrepreneurial competency development.

H_{02}: There is no significant relationship between problem-based teaching practices and entrepreneurial competency development.

Methodology

The study adopted a correlational research design. The design was appropriate because the study determined the relationships between experiential teaching practices and entrepreneurial competency development without manipulating the variables. The study was conducted in four tertiary institutions offering Business Education in Rivers State. The population comprised 142 Business Education lecturers**,** consisting of 6 lecturers from the University of Port Harcourt, 32 from Rivers State University, 25 from Ignatius Ajuru University of Education and 79 from Federal College of Education (Technical), Omoku. Since the population was manageable, a census approach was adopted; therefore, all 142 lecturers constituted the respondents. Data were collected using a researcher-developed instrument titled Experiential Teaching Practices and Entrepreneurial Competency Development Questionnaire (ETPECDQ). The instrument contained items measuring project-based teaching practices, problem-based teaching practices and entrepreneurial competency development and was structured on a four-point response scale. The instrument was subjected to face and content validation by three experts; two in Business Education and one in Measurement and Evaluation. A trial test was conducted among Business Education lecturers at Federal University Otuoke, Bayelsa State**,** who were outside the study population. Cronbach's alpha yielded an overall reliability coefficient of .79**,** indicating acceptable internal consistency. Pearson Product Moment Correlation (PPMC) was used to answer the research questions and test the null hypotheses at the .05 level of significance. A null hypothesis was rejected where $p < .05$ and retained where $p \geq .05$.

Results

Research Question 1

What relationship exists between project-based teaching practices and entrepreneurial competency development?

Table 1: Pearson Correlation between Project-Based Teaching Practices and Entrepreneurial Competency Development

Variables	N	Pearson *r*	Relationship
Project-based teaching practices and entrepreneurial competency development	142	.576	Moderate Positive

Table 1 shows a Pearson correlation coefficient of .576 between project-based teaching practices and entrepreneurial competency development. The coefficient indicates a moderate positive relationship, implying that greater use of project-based teaching practices is associated with greater entrepreneurial competency development in Business Education programmes.

Research Question 2

What relationship exists between problem-based teaching practices and entrepreneurial competency development?

Table 2: Pearson Correlation between Problem-Based Teaching Practices and Entrepreneurial Competency Development

Variables	N	Pearson *r*	Relationship
Problem-based teaching practices and entrepreneurial competency development	142	.720	Strong Positive

Table 2 reveals a Pearson correlation coefficient of .720, indicating a strong positive relationship between problem-based teaching practices and entrepreneurial competency development. Thus, greater application of problem-based teaching practices is associated with higher entrepreneurial competency development.

Test of Hypotheses

H_{01}: There is no significant relationship between project-based teaching practices and entrepreneurial competency development.

Table 3: Test of Relationship between Project-Based Teaching Practices and Entrepreneurial Competency Development

Variables	N	Pearson *r*	Sig. (2-tailed)	Alpha	Decision
Project-based teaching practices and entrepreneurial competency development	142	.576	.000	.05	Reject H_{01}

Table 3 shows a Pearson correlation coefficient of $r = .576$ with $p < .001$. Since the probability value is less than the .05 level of significance, the null hypothesis was rejected. Therefore, there is a significant moderate positive relationship between project-based teaching practices and entrepreneurial competency development.

H_{02}: There is no significant relationship between problem-based teaching practices and entrepreneurial competency development.

Table 4: Test of Relationship between Problem-Based Teaching Practices and Entrepreneurial Competency Development

Variables	N	Pearson *r*	Sig. (2-tailed)	Alpha	Decision
Problem-based teaching practices and entrepreneurial competency development	142	.720	.000	.05	Reject H_{02}

Table 4 reveals a Pearson correlation coefficient of $r = .720$ with $p < .001$. Since the probability value is less than .05, level of significance, the null hypothesis was rejected. Therefore, there is a significant strong positive relationship between problem-based teaching practices and entrepreneurial competency development.

Discussion of Findings

The first finding revealed a significant moderate positive relationship between project-based teaching practices and entrepreneurial competency development. This indicates that greater engagement of students in practical projects is associated with greater entrepreneurial competency development. The finding supports Abdulkarim (2019), who established that action-based experiential instruction enhanced entrepreneurial skills acquisition among Business Education students in Rivers State. It also agrees with Obi et al. (2022), who identified self-directed projects, simulations, real-life cases and other experiential activities as relevant to competency development among Business Education students. The result further corroborates Chen et al. (2026)**,** who demonstrated the relevance of industry project-based learning to entrepreneurial mindset development.

The second finding established a significant strong positive relationship between problem-based teaching practices and entrepreneurial competency development. This finding supports Nwaokokorom and Ikpeama (2023), who established that problem-solving skills are highly required of Business Education students for effective job performance. It also agrees with Okolie et al. (2021), who found creative problem-solving among entrepreneurial competencies associated with entrepreneurship education and recommended practical and innovative teaching approaches. Furthermore, the finding corroborates Motta and Galina (2023), whose systematic review concluded that experiential entrepreneurship education contributes to entrepreneurial skills and competency development.

Conclusion

The study concluded that experiential teaching practices are significantly associated with entrepreneurial competency development in Business Education programmes in tertiary institutions in Rivers State. Project-based teaching practices had a significant moderate positive relationship with entrepreneurial competency development, while problem-based teaching practices had a significant strong positive relationship. Thus, practical and problem-oriented instructional experiences are important components of competency-focused Business Education.

Recommendations

Based on the findings:

1. Business Education lecturers should intensify project-based activities involving business planning, market investigation, product development and other practical entrepreneurial tasks.
2. Business Education departments should strengthen problem-based instruction by exposing students to authentic business challenges requiring investigation, critical thinking, collaboration, decision-making and development of workable entrepreneurial solutions.

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EXPERIMENTAL LEARNING MODELS INSTRUCTIONAL EFFECTIVENESS IN COMPETENCY-BASED BUSINESS EDUCATION IN RIVERS AND BAYELSA STATES UNIVERSITIES

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Abstract

This study examined Experimental Learning Models Instructional Effectiveness in Competency-Based Business Education in Rivers and Bayelsa States Universities. Two specific objectives, research questions and hypotheses guided the study. A correlational research design was adopted, and the population consisted of 219 Business Education lecturers across universities: Rivers State University, Ignatius Ajuru University of Education, University of Port Harcourt, Niger Delta University, and University of Africa, Toru Oruna. The entire population was used as the sample. Data were collected using a researchers-structured questionnaire titled "Experimental Learning Models Questionnaire (ELMQ) and "Instructional Effectiveness in Competency-Based Business Education Questionnaire" (IECBEQ). The instrument was validated by three experts, and the reliability of the instrument was ascertained using Cronbach Alpha which yielded co-efficient of 0.89. Data were analysed with Pearson Product Moment Correlation Coefficient (PPMCC). Research questions were answered based on correlation values, while hypotheses were tested at 0.05 significance level using t-transformation. Findings revealed high positive relationships between each of the two experimental learning models and effective teaching and learning, indicating that lecturers' application of experiential strategies significantly enhances students' engagement, critical thinking, practical skills, and professional competence. The study concluded that experimental learning models are essential for improving teaching quality and learning outcomes in Business Education programmes. The researchers recommended among others the consistent integration of these strategies in curriculum delivery. Lecturers should consistently integrate experimental learning models into Business Education curricula to enhance students' understanding, engagement, and practical competence.

Keywords: Experimental Learning Models, Instructional Effectiveness, Competency-Based Business Education Problem-Based Learning, Role-Playing Activities

Introduction

Teaching and learning are interconnected processes that drive the effectiveness of academic programme. Teaching involves the deliberate facilitation of student learning through pedagogical strategies and instructional tools designed to meet educational objectives, while learning is the internal process of acquiring, retaining, and applying knowledge, skills, and attitudes (Surabaya State University Education Unit et al, 2025; El Bedawy, 2025). Effective teaching and learning require moving beyond passive lectures to active engagement, where students analyse, synthesize, and evaluate business problems. This ensures that knowledge is not only received but applied meaningfully to enhance comprehension and long-term retention (El Bedawy, 2025; Simulation and Experiential Learning Studies, 2025). Consequently, higher education programme must focus on experiential and active learning approaches that bridge theory and practice, and form parts of experimental learning models.

Experimental learning model is an educational approach where students learn by doing and reflecting on the experience, instead of just listening to lecturers or memorizing theories. It is a process where knowledge is created through the transformation of experience.

Experimental learning models integration refers to the deliberate incorporation of experiential strategies into the curriculum to actively engage students in problem-solving, reflection, and application of knowledge in authentic contexts (Kolb. 2015; Chukwuedo et al., 2024). These model transform traditional learning by emphasizing experience and reflection as key mechanism for knowledge construction. Amaewhule (2018) defined experiential learning as the process whereby knowledge is created through the transformation of experience. For the purpose of this study, the researchers considered problem- based learning and role playing activities. Experimental learning models are therefore central to creating active, participatory, and student-centered learning environments that enhance competence and readiness for professional practice (Kolb, 2015; Chukwuedo et at., 2024).Amesi (2025) viewed experiential learning model integration as the incorporation of learner-centred instructional approaches into Business Education programmes to enable students to acquire practical skills, entrepreneurial competencies, creativity, and professional knowledge through active participation and meaningful learning experiences. This approach prepares students for employment and self-reliance by connecting classroom instruction with real-life business practice.

Experimental learning models integration refers to the deliberate incorporation of experiential teaching strategies into the curriculum to enhance students' active engagement, critical thinking, and practical application of knowledge Kolb (2015). It involves the systematic use of approaches such as problem-based learning project-based learning, role-playing activities, and case study analysis to create learning environments where students can explore, reflect, and apply concepts to real-world situations (Amesi, 2024; Savery, 2015). In the context of Business Education, integrating these models allows lecturers to move beyond traditional lecture-based methods, providing opportunities for students to collaborate, solve complex business problems, and develop professional competence. This integration fosters a hands-on, learner-centered approach, bridging the gap between theoretical instruction and practical business applications, and preparing students to be adaptive, reflective, and 'competent professionals in their field (Kolb, 2015: Thomas. 2019).

Project-based learning is an experiential strategy where students engage in extended, real- world business projects that require investigation, planning, execution, and presentation (Project-Based Learning Institute, 2025). This approach develops practical problem-solving skills, critical thinking, collaboration, and creativity. Research indicates that students involved in project-based learning demonstrate higher motivation and improved academic outcomes compared to traditional lecture-based instruction (El Bedawy, 2025). Similarly, problem-based learning situates learning within real business problems, encouraging learners to actively organize and apply knowledge while enhancing self-directed learning and analytical thinking (Challenge-Based Learning, 2025).

For instance, project-based assignments in partnership with local businesses allow students to apply theoretical concepts, plan, and execute real business solutions, while reflective sessions guided by lecturers reinforce learning and professional growth (Kolb, 2015; Chukwuedo et al. 2024). Through experimental learning integration, students develop competencies in research, decision-making, teamwork. and communication, which are often inadequately addressed in traditional lecture-based settings. Consequently, this approach contributes to more competent and job-ready graduates in the Rivers and Bayelsa State University context. Despite the established benefits of experimental learning, gaps remain in empirical studies within Nigerian universities. Most research originates from Western contexts, leaving limited insights into how cultural, institutional, and infrastructural factors affect implementation and outcomes in Rivers and Bayelsa State Universities. Furthermore, while prior studies demonstrate positive impacts of experiential strategies, few compare the relative effectiveness of specific models such as project-based versus problem-based learning, or examine how these models interact with student demographics, resources, and institutional support Chukwuedo et al., 2024: El Beday, 2025). Addressing these gaps is critical for developing contextually relevant, evidence-based strategies that enhance the effectiveness of Business Education programs in Nigeria.

Project-based learning has been recognized as a highly effective strategy for enhancing students' practical skills, collaboration, and knowledge application. According to Thomas (2019), project-based learning engages students in extended tasks that mirror real-world business challenges, allowing them

to integrate theoretical knowledge with practical implementation. In Business Education, this method enables learners to develop project management, analytical, and decision-making skills while fostering teamwork and self- directed learning. Bell (2017) further asserts that students involved in projects gain greater motivation and a deeper understanding of course content because they are actively involved in producing tangible outcomes.

In the context of Rivers and Bayelsa State universities, project-based learning has been shown to significantly improve teaching and learning outcomes in Business Education programmes. Amesi (2024) emphasises that lecturers who incorporate project-based tasks enable students to develop competencies relevant to professional practice, such as planning, research, and presentation skills. Similarly, Kolb (205) highlights that experiential approaches like project-based 1earnin allow students to reflect on activities and derive knowledge applicable to real-world scenarios. This suggests that project-based learning not only promotes engagement but also strengthens students' critical thinking, problem-solving, and professional competence.

Role-playing activities and simulations provide students with opportunities to assume business roles and make decisions in controlled, realistic scenarios, promoting experiential engagement, interpersonal skills, and decision-making competence (Role-Playing mid Simulation in Education Research Group, 2024). Case study analysis immerses students in authentic business situations, requiring them to interpret, evaluate, and devise strategic solutions based on theoretical knowledge (Experiential Learning Research, 2024). Together, these independent variables project-based learning, problem-based learning, role-playing, and case study analysis represent core components of experimental learning models integration that directly influence effective teaching and learning.

Effective teaching and learning in Business Education result in enhanced engagement, understanding, skill development, and preparedness for professional environments. Experiential approaches, such as simulations, projects, and case studies, make learning relevant and applicable, significantly improving student outcomes (El Bedawy, 2025; Surabaya State University Education Unit et al., 2025). Students perceive the relevance of these experiences to their future careers, which enhances motivation, persistence, and creativity. Additionally, active engagement promotes the development of interpersonal competencies such as teamwork and communication, essential for business practice.

Another dimension of effective teaching and learning is the cultivation of higher-order thinking stills, including analysis, synthesis. and evaluation (Surabaya State University Unit et al., 2025; El Bedawy, 2025). By confronting open-ended problems, engagement in projects, and analyzing case studies, students develop critical thinking and decision-making, abilities that can be applied in new and complex situations. Experiential methods, therefore, align academic outcomes with the practical demands of the business enhancing graduate employability and readiness.

Students satisfaction and academic engagement are closely linked to experiential learning and teaching outcomes. When students participate actively, see clear connections between classroom tasks and professional practice, and take ownership of their learning, engagement increases, resulting in deeper processing of information, higher retention, and improved academic performance (El Bedawv, 2025). Business simulations and experiential projects have been shown to enhance students' confidence, problem-solving abilities, and readiness for workplace challenges.

Akpomi (2017) defined Business Education as an educational programme that prepares individuals with business knowledge, vocational competencies, managerial abilities, and entrepreneurial skills for employment. self-employment, and effective participation in the business environment. The integration of experimental learning models into Business Education programme in Rivers and Bavelsa State Universities provides a practical pathway to bridge the gap between theoretical knowledge and professional competence. Embedding structured activities such as project-based assignments, simulations, case analyses, and role, into the curriculum enables students to experience authentic business challenges while development critical skills (Chukwuedo et al. 2024: El Bedawy, 2025). This integration improves learning outcomes but also fosters professional identities that prepare for meaningful contributions to the workforce.

Role-playing activities serve as an experiential learning strategy that allows students to simulate real-life business scenarios and assume professional roles. According to Prince and Felder (2020), role-

playing enhances students' communication, decision-making, and interpersonal skills by immersing them in interactive, practical exercises. In Business Education, role-playing helps students understand organizational behavior, managerial responsibilities, and operational challenges, providing a safe environment to practice professional skills. Savery (2015) adds that active engagement through role-playing encourages students to think critically, collaborate effectively, and apply theoretical knowledge in practical contexts.

In Nigerian universities, particularly in Rivers and Bayelsa State, role-playing has been observed to improve teaching and learning outcomes among Business Education students. Amesi (2024) noted that lecturers who implement role-playing activities foster higher engagement levels, experiential understanding, and readiness for the labor market. Similarly, Kolb (2015) explains that experiential learning strategies such as role-playing bridge the gap between theoretical instruction and practical application, enabling students to develop confidence and competence in handling real-world business tasks. These findings indicate that role-playing activities are essential for promoting effective teaching and learning, as they actively involve students in meaningful, practice-based learning.

Amaewhule (2005) defined Business Education as an integrated programme of study that derives its content from the major functional areas of business and is designed to equip individuals with the knowledge, practical skills, attitudes, and competencies needed for gainful employment, entrepreneurship, and effective participation in the business world. Problem-based learning has been widely recognized as an effective pedagogical strategy that enhances students' engagement, critical thinking, and problem-solving abilities iii higher education. According to Savery (2015), problem-based learning encourages learners to actively explore real-world challenges, identify knowledge gaps, and apply theoretical concepts to practical scenarios, which fosters deeper understanding and retention of subject matter. In the context of Business Education, implementing problem-based learning allows students to simulate business decision-making processes. develop analytical skills, and connect classroom instruction to professional practices. Similarly, Bell (2017) emphasizes that students exposed to structured problem-solving activities demonstrate improved comprehension and motivation, as they take ownership of their learning and collaborate with peers to develop practical solutions.

In the Nigerian context, especially within Rivers and Bayelsa State Universities, the adoption of problem-based learning has been shown to positively influence teaching and learning outcomes among Business Education students. Amesi (2024) argues that lecturers who integrate problem-based learning into their teaching not only enhance students' ability to tackle real business problems but also improve their professional competence and readiness for the labor market. This aligns with findings by Kolb (2015), who highlights that experiential approaches, such as problem-based learning, bridge the gap between theory and practice, enabling students to reflect on experiences and develop actionable knowledge. Therefore, the consistent application of problem-based learning within Business Education programmes contributes significantly to effective teaching and learning by fostering active participation, critical thinking, and practical skill acquisition.

Case study analysis is a well-established experiential approach that promotes critical thinking, problem-solving, and practical knowledge application. According to Yin (201 8), case studies provide students with detailed real-world scenarios, enabling them to analyze complex situations, evaluate alternatives, and recommend solutions. In Business Education, using case studies allows students to understand organizational processes, decision-making dynamics. and professional challenges, thereby enhancing their analytical and evaluative skills. Thomas (2019) notes that case study methods encourage reflective learning and help student bridge the gap between theory and practice.

In the context of Rivers and Bayelsa State universities, case study analysis has been shown to positively impact effective teaching and learning. Amesi (2024) emphasises that lecturers integrate case studies into their teaching enable students to develop practical insights, proem-solving capabilities, and professional competence. Kolb (2015) also supports this by highlighting that experiential learning strategies. including case studies, facilitate knowledge retention critical reflection, and application in real-world contexts. Therefore, the use of case study anlysis within Business Education programmes enhances teaching effectiveness while equipping students with the practical skills required for professional success.

Statement to the Problem

In Business Education programmes in Rivers and Bayelsa State Universities, effective teaching and learning are critical for developing students' professional competence and readiness for the workforce. ideally, students should engage actively with the curriculum, applying theoretical knowledge through experiential strategies such as problem-based learning. project-based learning, role-playing activities and case study analysis. In this ideal situation, students would demonstrate strong analytical, critical thinking, decision-making, and collaborative skills while lecturers effectively facilitate learning by integrating these experimental learning models into lessons. The ideal scenario ensures that theoretical concepts are consistently applied to practical business challenges, bridging the gap between classroom instruction and real-world professional demands.

The current situation, however, deviates significantly from this ideal. Many lecturers still rely predominantly on traditional lecture-based approaches, limiting the opportunities for students to engage in experiential activities. Problem-based learning is often underutilized, role-playing activities are rarely implemented. As a result, students' engagement, problem-solving skills, and ability to transfer knowledge to practical settings are compromised. The present situation is characterized by passive learning and low motivation.

To address these issues, the possible solutions include providing professional development workshops for lecturers on experimental teaching strategies, supplying adequate resources and materials for practical learning activities, and restructuring curricula to embed experimental learning models systematically. By implementing these solutions, lecturers can enhance the use of independent teaching problem-based learning, and role-playing activities for effective teaching and learning, and ultimately ensuring that students acquire the competencies required for professional success.

Purpose of the Study

The purpose of this study was to examine experimental learning models instructional effectiveness in competency-based Business Education in Rivers and Bayelsa States Universities. Specifically, the study sought to:

1. To examine the relationship between problem-based learning and instructional effectiveness in competency-based Business Education in Rivers and Bayelsa States Universities.

2. To assess the relationship between role-playing activities and instructional effectiveness in competency-based Business Education in Rivers and Bayelsa States Universities.

Research Questions

The following questions were posed for this study

1. What is the relationship between problem-based learning and instructional effectiveness in competency-based Business Education in Rivers and Bayelsa States Universities?

2. What is the relationship between role-playing activities and instructional effectiveness in competency-based Business Education in Rivers and Bayelsa States Universities?

Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significant

1. There is no significant relationship between problem-based learning and instructional effectiveness in competency-based Business Education in Rivers and Bayelsa States Universities.

2. There is no significant relationship between role-playing activities and instructional effectiveness in competency-based Business Education in Rivers and Bayelsa States Universities.

METHODS

The Study adopted a correlational research design to examine the relationship between experimental learning models integration and effective teaching and learning in Business Education programmes in Rivers and Bayelsa State Universities. This design was considered appropriate because it allows the investigation of the strength and direction of relationships between the independent variables and

dependable variables. Correlational research is particularly suitable for this study. The population of the study consisted of 52 and 57 lecturers respectively, giving a total population of 219 lecturers across the five universities, Given the manageable size of the population, the entire population was used as the sample, allowing for comprehensive coverage of all relevant respondents. The items were designed using a four-point Likert scale ranging from "Strongly Agree" to "Strongly Disagree," to capture respondents' perceptions and practices regarding experimental learning models integration. To ensure validity, the instrument was subjected to expert review. Two senior lecturers from the Department of Business Education at Rivers State University and one lecturer from Ignatius Ajuru University of Education examined the questionnaire for content relevance, clarity, and alignment with the research objectives. The reliability of the instrument was established through a pilot test conducted with 15 Business Education lecturers from a nearby university not included in the main study. Using the Cronbach's alpha coefficient, a reliability index of 0.87 was obtained. Data collected were analyzed using the Pearson Product Moment Correlation Coefficient (PPMQC). Research questions were answered based on the value and direction of the correlation coefficient, where values of 0.10-0.40 were regarded as low correlation, 0.50 as moderate, and 0.60 1.00 as high correlation. Hypotheses were tested at the 0.05 level of significance by transforming the correlation coefficient (r) to t-values. The null hypotheses were rejected where the calculated t-value exceeded the critical t-value; otherwise, it was accepted. This approach allowed the study to determine the strength and direction of the relationship between the independent variable problem-based learning, project-based learning, role-playing activities, and case study analysis and the dependent variable, effective teaching and learning.

RESULTS

Research Questions 1: What is the relationship between problem-based learning and instructional effectiveness in competency-based Business Education in Rivers and Bayelsa States Universities?

Table 1: Pearson Product Moment Correlation (PPMC) Analysis on the Relationship between Problem-Based Learning and Instructional Effectiveness

Correlation	Problem-Based Learning	Instructional Effectiveness	Level of Correlation
Problem-Based Learning	Pearson Correlation	1	.68
	Sig. (2-tailed)		.000
	N	219	219
Instructional Effectiveness	Pearson Correlation	.68	1
	Sig. (2-tailed)	.000	
	N	219	219

Source: Researcher SPSS Statistical Output (2026)

Table 1 presents the summary of the Pearson Product Moment Correlation analysis on the relationship between problem-based learning and instructional effectiveness in competency-based Business Education in Rivers and Bayelsa States Universities. The result shows a correlation value of 68, which indicates a high positive relationship between the use of problem-based learning strategies and the effectiveness of teaching and learning.

This finding implies that when lecturers integrate problem-based learning into their teaching, students engage actively with real-world business problems, analyze and solve issues critically, and apply theoretical knowledge practically. Consequently, the use of problem- based learning significantly enhances students' comprehension, retention, problem-solving abilities, and professional competence in Business Education. Lecturers' application of structured problem-solving activities fosters interactive learning, bridges the gap between theory and practice, and improves overall teaching effectiveness.

Research Questions 2: What is the relationship between role-playing activities and instructional effectiveness in competency-based Business Education in Rivers and Bayelsa States Universities?

Table 2: Pearson Product Moment Correlation (PPMC) Analysis on the Relationship between Role-Playing Activities and Effective Teaching and Learning

Correlation	Problem-Based Learning	Instructional Effectiveness	Level of Correlation
Role-Playing Activities	Pearson Correlation	1	.65
	Sig. (2-tailed)		.000

	N	219	219
Instructional Effectiveness	Pearson Correlation	.65	1
	Sig. (2-tailed)	.000	
	N	219	219

Source: Researcher SPSS Statistical Output (2026)

The correlation value of .65 demonstrates a high positive relationship between role-playing activities and effective teaching and learning. This indicates that role-playing enables students to assume business roles, make decisions, and engage in realistic simulations, which enhances learning outcomes, communication skills, and problem-solving abilities.

Hypotheses

Hypotheses 1: There is no significant relationship between problem-based learning and instructional effectiveness in competency-based Business Education in Rivers and Bayelsa States Universities.

Table 3: Summary of t-Transformation on the Relationship between Problem-Based Learning and Instructional Effectiveness

Variables	N	Df	t-Trans	t-crit	Sig	Decision at p < 0.05
Problem-Based Learning	219	217	16.84	1.96	0.000	Ho1 is Rejected; significant Relationship exists
Instructional Effectiveness	219					

Source: Field Data (2026)

The calculated t-value (16.84) is greater than the critical t-value of 1.96 at 0.05 alpha level with 217 degrees of freedom. Therefore, the null hypothesis is rejected. Indicating a significant relationship exists between problem-based learning and effective teaching and learning. This suggests that implementing problem-based learning significantly improves students' engagement, critical thinking, and learning outcomes.

Hypotheses 2: There is no significant relationship between role-playing activities and instructional effectiveness in competency-based Business Education in Rivers and Bayelsa States Universities.

Table 4: Summary of t-Transformation on the Relationship between Role-Playing Activities and Instructional Effectiveness

Variables	N	Df	t-Trans	t-crit	Sig	Decision at p < 0.05
Role-Playing Activities	219	217	15.8924	1.96	0.000	Ho2 is Rejected; significant Relationship exists
Instructional Effectiveness	219					

Source: Field Data (2026)

With a calculated t-value of 15.92 greater than the critical t-value of 1.96, the null hypothesis is rejected. This indicates a significant relationship between role-playing activities and effective teaching and learning, demonstrating that simulated scenarios and role-playing enhance students' engagement, decision-making skills, and learning outcomes.

Discussion of Findings

The findings of this study revealed that there is a high positive and significant relationship between problem-based learning and effective teaching and learning among Business Education students in Rivers State and Bayelsa Universities ($r = .68$; $t = 16.84$; $p < .05$). This implies that increase adoption of problem-based learning enhances effective teaching and learning by promoting students' critical thinking, analytical reasoning, problem-solving ability, and application ol business concepts to real-life

situations. The finding suggests that exposing students to authentic business problems encourages active participation in the learning process, resulting in improved understanding, knowledge retention, and acquisition of professional competencies required in the business environment.

The finding is in agreement with Kolb (2015), whose Experiential Learning Theory emphasizes that meaningful learning occurs when learners actively engage in concrete experiences, reflect on those experiences, develop conceptual understanding, and apply the acquired knowledge in new situations. The finding who agrees with Savery (2015), who maintained that problem-based learning promotes self-directed learning, critical thinking, and collaborative problem-solving, leading to improved academic performance and professional readiness. Similarly, the finding is in agreement with Amesi (2024), who reported that lecturers who integrate problem-based learning create opportunities for students to analyse, evaluate, and develop appropriate solutions to real-life business challenges, thereby improving students comprehension engagement and professional competence.

The findings of research question two revealed that role-playing activities have a high positive and significant relationship with effective teaching and learning among Business Education students in Rivers and Bayelsa State Universities (r .65; $t = 15.92$; $p < .05$). This finding indicates that the use of role-playing activities enhances students' learning experiences by providing opportunities to simulate real-life business situations, apply theoretical knowledge in practical contexts, and actively participate in classroom activities. The result further suggests that role-playing promotes effective teaching and learning by improving students' communication, interpersonal, decision-making, and problem-solving skills. The finding is in agreement with Kolb (2015), whose Experiential Learning Theory emphasizes that meaningful learning occurs through concrete experience, reflective observation, abstract conceptualization, and active experimentation. The finding is also in agreement with Amesi (2024), who found that experiential instructional strategies such as role-playing promote active participation, practical skill acquisition, and meaningful learning among Business Education students. Similarly, the finding agrees with El Bedawy (2025), who reported that role-playing enables students to simulate business situations, assume professional roles, and participate in interactive learning experiences that improve communication skills, decision-making abilities, and self-confidence.

Conclusion

The study concludes that the effective integration of experimental learning models is essential for improving teaching quality and learning outcomes in Business Education. Lecturers who apply problem-solving, protect-based tasks, role-playing simulations, and case study analyses equip students with both theoretical knowledge and practical skills, thereby bridging the gap between classroom learning and professional practice. The study highlights the critical role of experiential learning in fostering professional competence and readiness for the labor market among business Education students.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Lecturers should consistently integrate experimental learning models into Business Education curricula to enhance students' understanding, engagement. and practical competence.

2. Curriculum planners should emphasize experiential learning outcomes in Business Education programmes. Learning objectives should explicitly incorporate skills acquisition, critical thinking, and problem-solving to ensure students develop competencies relevant to professional practice.

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WORK INTEGRATED LEARNING AND ENTREPRENEURIAL SKILLS ACQUISITION AMONG BUSINESS EDUCATION UNDERGRADUATE STUDENTS OF PUBLIC UNIVERSITIES IN CROSS RIVER STATE

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Abstract

This study ascertained the predictive relationship between work integrated learning and entrepreneurial skills acquisition among undergraduate students of business education in public universities in Cross River State. To achieve the purpose of the study, two research questions were posed, and two null hypotheses were formulated. The study adopted a predictive correlational research design. The population for this study comprised 2,187 business education students across the three public Universities in Cross River State A multi-stage sampling technique involving stratified, purposive, and proportionate sampling techniques were used to select 133 final year students of business education from the three public Universities as sample. A well-structured questionnaire titled "Work Integrated Learning and Entrepreneurial Skills Acquisition Questionnaire" (WILESAQ) was the instrument used for data collection. The questionnaire was validated by three experts, two business educators and one measurement and evaluation expert from the departments of Business Education and Educational Foundations of the University of Calabar. A reliability index of 0.83 was obtained for the questionnaire, determined using Cronbach Alpha reliability coefficient after a pilot test on 30 business education students in the University of Calabar. Research questions were answered and hypotheses tested using simple linear regression statistics. Test of hypotheses revealed that teaching practice and industrial training significantly predict entrepreneurial skills acquisition among undergraduate students of business education in public universities in Cross River State. Based on the findings, it was recommended among others that Business Education departments and curriculum planners should strengthen the implementation of teaching practice and industrial training programmes by extending their duration, improving supervision, and ensuring that students are exposed to entrepreneurial and business-related activities that promote practical acquisition and workplace competence.

Key Words: Work integrated learning, entrepreneurial skills acquisition

Introduction

Entrepreneurial skills acquisition has become an increasingly important focus of higher education globally, particularly in developing countries such as Nigeria where unemployment among university graduates continues to rise. Universities are no longer expected to function solely as centers for the transmission of theoretical knowledge, but also as institutions that prepare students for self-reliance through practical and employable skills. In Nigeria, this shift is driven by the need to reduce over dependence on government jobs and to promote innovation-driven economic development. In Cross River State, where public sector employment opportunities are limited, entrepreneurial skills

acquisition among undergraduates has become a critical pathway for addressing youth unemployment and promoting sustainable livelihoods (Ushie & Adie, 2023).

Entrepreneurial skills acquisition refers to the process through which students develop competencies such as creativity, innovation, risk management, opportunity recognition, financial literacy, and business planning that enable them to establish and manage successful enterprises. In public universities, entrepreneurship education is introduced to expose students to these skills through both theoretical and practical learning experiences. However, despite the inclusion of entrepreneurship as a compulsory general studies course in Nigerian universities, many graduates still lack the ability to translate classroom knowledge into practical business ventures. This suggests that the process of skill acquisition may not be effectively implemented, particularly in terms of experiential learning and practical engagement (Mfam *et al*., 2025).

In Cross River State, public universities such as the University of Calabar and Cross River University of Technology have integrated entrepreneurship education into their academic programs as part of national educational reforms aimed at fostering self-reliance. These institutions are expected to equip students with relevant entrepreneurial competencies that will enable them to become job creators rather than job seekers. However, empirical observations indicate that the level of entrepreneurial skill acquisition among undergraduates remains low or uneven across disciplines. This inconsistency is often attributed to inadequate teaching methods, limited access to practical training facilities, and insufficient collaboration between universities and industry practitioners (Shiyam & Otu, 2026).

The importance of entrepreneurial skills acquisition is further emphasized by Nigeria's persistent unemployment crisis, which has left many university graduates without meaningful employment opportunities. The labor market is increasingly unable to absorb the growing number of graduates each year, thereby necessitating alternative pathways such as self-employment and entrepreneurship. Unfortunately, many graduates still exhibit low entrepreneurial intention and limited readiness to establish their own businesses, even after completing entrepreneurship courses. This gap between policy expectations and actual outcomes highlights the need to critically examine how entrepreneurial skills are being acquired and developed within university systems (Akpam *et al*., 2025).

Moreover, entrepreneurial skills in contemporary society extend beyond traditional business knowledge to include digital literacy, adaptability, problem-solving, innovation, and resilience. These competencies are essential for success in an increasingly competitive and technology-driven global economy. However, in many Nigerian public universities, entrepreneurship education remains largely theoretical, with minimal exposure to real-life business environments, teaching practice, or practical enterprise development opportunities. This lack of hands-on experience limits students' ability to develop confidence and competence in initiating and managing businesses after graduation (Okon *et al*., 2025).

Government interventions such as the introduction of entrepreneurship education policies through the National Universities Commission (NUC) have aimed to strengthen skill acquisition among undergraduates. These reforms were intended to make entrepreneurship a core component of university curricula and to encourage experiential learning approaches. However, the effectiveness of these policies has been constrained by several implementation challenges, including inadequate funding, insufficiently trained lecturers in entrepreneurship education, and poor infrastructural support such as laboratories, incubation centers, and startup support systems. These challenges continue to weaken the impact of entrepreneurship education in many public universities (Umo & Okon, 2024).

In Cross River State specifically, the situation is further compounded by weak linkages between universities and the business environment. Many students graduate without adequate exposure to industry practices, mentorship opportunities, or entrepreneurial incubation programs that could enhance their practical experience. As a result, there is a growing concern that entrepreneurship education is not fully achieving its intended objectives of fostering innovation and self-employment among graduates. This situation contributes to the increasing rate of graduate unemployment and under-utilization of human capital in the State (Ebri *et al*., 2025).

Against this backdrop, it becomes necessary to critically investigate the extent to which undergraduates in public universities in Cross River State acquire entrepreneurial skills and how such acquisition influences their readiness for self-employment and job creation. A clear understanding of the challenges and gaps in entrepreneurial skills acquisition will provide valuable insights for educators, policymakers, and curriculum developers in improving entrepreneurship education. Ultimately, strengthening entrepreneurial competencies among undergraduates is essential for promoting economic development, reducing unemployment, and fostering a culture of innovation and self-reliance in Nigeria.

Work Integrated Learning (WIL) is a process by which learners are taught by exposing them to practical activities related to the theory being taught to them. It is a process of martching the skill with knowledge by demonstrating the actual work practice in a real work situation to enable learners gain practical abilities to match their cognitive perception of the work environment. Work Integrated Learning (WIL) could be a major factor influencing entrepreneurial skills acquisition among business education undergraduates because it provides students with the opportunity to combine classroom learning with practical workplace experiences. Through teaching practice, industrial training, fieldwork, apprenticeships, and other experiential learning activities, students are exposed to real business environments where they develop practical competencies such as problem-solving, communication, teamwork, innovation, and managerial skills. In many public universities in Nigeria, inadequate implementation of Work Integrated Learning programmes has limited students' exposure to practical entrepreneurial experiences, thereby contributing to poor entrepreneurial competence and low self-employment readiness among graduates. Where students are not adequately engaged in practical learning activities, they may graduate with theoretical knowledge but lack the confidence and technical abilities required to establish and manage businesses effectively. Therefore, effective Work Integrated Learning can significantly enhance entrepreneurial skills acquisition and improve graduates' employability and self-reliance (Jackson, 2015).

Okoro and Eze (2022) conducted a study in public universities in South-East Nigeria to examine the influence of teaching practice on entrepreneurial skills acquisition among undergraduate students of Business Education. The study adopted a descriptive survey research design. The population consisted of 1,250 final-year Business Education students from five public universities, while a sample of 375 students was selected using a stratified random sampling technique. Data were collected using a structured questionnaire titled Teaching Practice and Entrepreneurial Skills Acquisition Questionnaire (TPESAQ). Mean, standard deviation, and Pearson Product Moment Correlation were used for data analysis. The findings revealed that teaching practice significantly enhanced students' entrepreneurial skills, including communication, leadership, problem-solving, decision-making, and business planning. The study concluded that teaching practice provides practical experiences that contribute positively to the development of entrepreneurial competencies among Business Education undergraduates.

Adebayo and Yusuf (2021) investigated the relationship between teaching practice experiences and entrepreneurial skills acquisition among Business Education students in colleges of education and universities in South-West Nigeria. The study adopted a correlational research design and involved a population of 1,860 students who had completed their teaching practice exercise. Through a multi-stage sampling technique comprising purposive and simple random sampling, a sample of 420 students was selected. Data were collected using a researcher-developed instrument known as the Entrepreneurial Skills Acquisition and Teaching Practice Scale (ESATPS). The data were analyzed using mean, standard deviation, and multiple regression analysis. The findings indicated a significant positive relationship between teaching practice and entrepreneurial skills acquisition, as students developed competencies in resource management, teamwork, creativity, innovation, opportunity identification, and effective communication. The study concluded that teaching practice is an important avenue for fostering entrepreneurial skills among Business Education undergraduates and recommended improved supervision and incorporation of entrepreneurial activities into the teaching practice programme.

Okolocha and Okolocha (2012) carried out a study on students' entrepreneurial skill acquisition through the Students' Industrial Work Experience Scheme (SIWES) in Nigeria. The area of the study was Anambra State, Nigeria, focusing on undergraduate students participating in SIWES programmes in tertiary institutions. The study adopted a descriptive survey research design to examine the extent to which industrial training contributed to entrepreneurial skills acquisition among students. The population of the study consisted of undergraduate students undergoing SIWES in selected tertiary institutions in Anambra State. A random sampling technique was used to select respondents for the study, while a sample size of 250 students was drawn from the population. A structured questionnaire titled "Students' Entrepreneurial Skill Acquisition Questionnaire (SESAQ)" was used as the instrument for data collection. The instrument was validated by experts in vocational and entrepreneurship education, while reliability was established using test-retest reliability method. Mean scores and standard deviation were used to answer the research questions, while Analysis of Variance (ANOVA) was used to test the hypotheses at 0.05 level of significance. The findings of the study revealed that industrial training through SIWES positively influenced students' entrepreneurial competencies, practical exposure, communication skills, and self-reliance. However, students identified challenges such as difficulty in securing placement and inadequate supervision during industrial training. The study concluded that industrial training is an effective means of enhancing entrepreneurial skills acquisition among

undergraduates because it exposes students to practical workplace experiences that bridge the gap between theoretical knowledge and real-life application.

Coker, Sule, Mohammed, and Jirgi (2021) conducted a study on entrepreneurial skills and job preference among undergraduate students of agriculture at the Federal University of Technology, Minna, Niger State, Nigeria. The area of the study was the Federal University of Technology, Minna. The study adopted a mixed-method research design involving descriptive and inferential approaches to investigate the influence of Students' Industrial Work Experience Scheme (SIWES) on entrepreneurial skills acquisition among undergraduates. The population of the study consisted of agriculture undergraduate students in the institution. A simple random sampling technique was used to select respondents, while a sample size of 122 students participated in the study. Data were collected using structured questionnaires and interview schedules designed by the researchers. The instruments were validated by experts in agricultural education and entrepreneurship studies. Data collected were analyzed using descriptive statistics, Likert rating scale, and Probit regression model. The findings revealed that industrial training through SIWES was useful and relevant in improving students' practical entrepreneurial skills, employability, and job readiness. The study also found that students who participated actively in SIWES acquired technical and agribusiness skills that enhanced their interest in self-employment. However, inadequate funding and difficulty in obtaining placement were identified as major constraints affecting the effectiveness of the programme. The study concluded that industrial training significantly contributes to entrepreneurial skills acquisition among undergraduates and should be strengthened through better collaboration between universities and industries.

Statement of the problem

The poor state of entrepreneurial skills acquisition among undergraduates of public universities in Cross River State, Nigeria has become a major concern due to the increasing rate of graduate unemployment and low self-reliance among university graduates. Despite the introduction of entrepreneurship education and related practical programmes in public universities, many undergraduates still graduate without adequate entrepreneurial competencies needed for business creation and effective self-employment. This poor condition is often associated with inadequate funding of entrepreneurship programmes, insufficient practical training facilities, poor implementation of industrial training and teaching practice programmes, lack of modern equipment, overcrowded classrooms, and inadequate exposure to real business environments. In many cases, entrepreneurship education is taught more theoretically than practically, thereby limiting students' ability to develop creativity, innovation, managerial competence, and problem-solving skills. Furthermore, weak collaboration between universities and industries has reduced opportunities for students to gain practical workplace experiences that could enhance entrepreneurial development. As a result, many graduates remain dependent on scarce white-collar jobs instead of becoming job creators, thereby contributing to the growing unemployment problem and economic challenges in the state.

However, several efforts have been made by the government, university administrators, and educational agencies to improve entrepreneurial skills acquisition among undergraduates of public universities in Cross River State, Nigeria, yet the problem still persists. One of the major efforts was the introduction of entrepreneurship education as a compulsory course in Nigerian universities by the National Universities Commission (NUC) to equip students with practical and self-reliant skills. Public universities also established entrepreneurship development centres aimed at providing vocational and business training for students. In addition, programmes such as Students' Industrial Work Experience Scheme (SIWES), teaching practice, seminars, workshops, and skill acquisition programmes were introduced to expose students to practical workplace experiences and entrepreneurial activities. Government and non-governmental organizations have equally organized youth empowerment programmes, business competitions, and startup support initiatives to encourage entrepreneurship among graduates. Despite these efforts, the desired improvement has not been fully achieved. Consequently, many undergraduates continue to graduate with limited entrepreneurial competencies and low readiness for self-employment, thereby sustaining the problem of graduate unemployment and dependence on white-collar jobs.

Entrepreneurial skills acquisition among undergraduates of public universities in Cross River State, Nigeria could be improved through effective implementation of Work Integrated Learning (WIL) by linking classroom instruction with structured practical workplace experiences such as teaching practice, industrial attachment, apprenticeships, and field-based entrepreneurial training. Through WIL, students are placed in real business and industrial environments where they actively participate in activities like production, marketing, financial management, customer relations, and business operations, thereby gaining hands-on experience that could strengthen their entrepreneurial competence. The big question now is, if these Work Integrated Learning opportunities are effectively

implemented and sustained, can universities graduates become self-reliant and entrepreneurial? Hence the reason for this study.

Experiential Learning Theory by Kolb, (1984) explains that learning is a continuous process through which knowledge is created by transforming experience. In the theory, David Kolb proposed a four-stage cycle consisting of concrete experience, reflective observation, abstract conceptualization, and active experimentation. According to the theory, learners do not only acquire knowledge by listening or reading, but by actively engaging in real-life experiences, reflecting on those experiences, forming concepts from them, and then applying the new understanding in practical situations. This cyclical process allows learners to develop deeper understanding and long-lasting skills because learning is grounded in experience rather than memorization.

The relevance of Experiential Learning Theory to this study lies in its emphasis on practical engagement as a key driver of skill acquisition. Entrepreneurial skills cannot be effectively developed through theory alone; they require exposure to real business environments where students can practice decision-making, problem-solving, risk-taking, and innovation. In the context of undergraduates in public universities in Cross River State, Work Integrated Learning through teaching practice and industrial work experience scheme represent concrete experiences that enable students to connect classroom knowledge with real entrepreneurial practice. When students actively participate in business-related activities and reflect on their experiences, they are more likely to develop strong entrepreneurial competencies and self-reliant skills.

The implications of the theory to this study suggest that entrepreneurial skills acquisition among undergraduates will only be effective if universities provide adequate opportunities for experiential learning. It implies that public universities in Cross River State must strengthen Work Integrated Learning programmes by ensuring that students are exposed to meaningful practical experiences rather than purely theoretical instruction. It also suggests that lecturers should adopt teaching strategies that encourage reflection, problem-solving, and active participation in entrepreneurial activities. Furthermore, industries and business organizations should be integrated into the learning process to provide real-world environments for skill development. Ultimately, the theory implies that improving experiential learning opportunities will significantly enhance students' entrepreneurial abilities and prepare them for self-employment and job creation after graduation.

Human Capital Theory by Becker (1964) explains that education, training, and skills acquisition are forms of investment in individuals that increase their productivity, efficiency, and economic value. According to the theory, Garry Becker, stressed that individuals who acquire more education and specialized training tend to have higher chances of employment, better income prospects, and improved capacity to contribute to economic development. The theory emphasizes that knowledge and skills are not just academic achievements but valuable assets that enhance human productivity and can be developed through formal education, vocational training, and practical experience. In this sense, education is viewed as an investment that yields both personal and societal benefits over time.

The relevance of Human Capital Theory to this study lies in its explanation of how entrepreneurial skills acquisition among undergraduates can enhance their productivity and self-reliance. In public universities in Cross River State, entrepreneurship education and Work Integrated Learning are intended to serve as investments in students' human capital by equipping them with practical business skills such as innovation, financial management, marketing, and problem-solving. These skills are expected to improve graduates' ability to create jobs rather than depend solely on white-collar employment. However, when universities fail to provide adequate practical training and entrepreneurial exposure, the quality of human capital formation is weakened, resulting in graduates who are less prepared for self-employment.

The implication of Human Capital Theory to this study is that improving the quality of entrepreneurial education and Work Integrated Learning will directly enhance the human capital of undergraduates in public universities in Cross River State. It suggests that universities, government, and other stakeholders must invest more in entrepreneurship infrastructure, skilled instructors, industrial attachments, and practical training opportunities to strengthen students' competencies. It also implies that students who actively engage in entrepreneurial learning opportunities are more likely to become economically productive and self-reliant after graduation. Therefore, strengthening human capital formation through effective entrepreneurial training is essential for reducing unemployment and promoting sustainable economic development.

Objective of the study

The main objective of the study is to determine the relation between work integrated learning and entrepreneurial skills acquisition among undergraduates of business education in Public

Universities in Cross River State, Nigeria. Specifically, the study sought to determine the relationship between;

1. Teaching practice and entrepreneurial skills acquisition among undergraduate students of business education.
2. Industrial Training (IT) and entrepreneurial skills acquisition among undergraduate students of business education.

Research questions

The study is guided by the following research questions;

1. How does teaching practice relate to entrepreneurial skills acquisition among undergraduate students of business education?
2. How does industrial training (IT) relate to entrepreneurial skills acquisition among undergraduate students of business education?

Research hypotheses

The following null hypotheses are formulated to guide the study.

1. There is no significant relationship between teaching practice and entrepreneurial skills acquisition among undergraduate students of business education.
2. Industrial Training (IT) does not significantly relate to entrepreneurial skills acquisition among undergraduate students of business education.

Method

Predictive correlational research design was adopted for this study. Predictive correlational design is a non-experimental research approach used to determine whether one or more independent (predictor) variables can predict an outcome (dependent variable). Predictive correlational design was considered suitable for this study because it availed the researchers the opportunity to predict the relationship between work integrated learning and entrepreneurial skills acquisition among undergraduates of Business Education in Public Universities in Cross River State. This study was conducted in Cross River State, located in the South-South Nigeria. The population for this study comprised 2,187 Business education students across the three public Universities in Cross River State, with a sample of 133 selected through multi-stage sampling technique involving stratified, purposive, and proportionate sampling techniques. Data was collected using a structured questionnaire of 24 items, titled; Work Integrated Learning and Entrepreneurial Skills Acquisition among Undergraduates Students of Business Education Questionnaire (WILESAUSBEQ). The 24-item questionnaire covered the two independent variables and the dependent variable of the study. The instrument was designed using a four-point response scale of Strongly Agree (SA) = 4; Agree (A) =3; Disagree (D) =2 and strongly disagreed (SD) =1. The instrument was validated by two experts in the Department of Business Education and one expert in measurement and evaluation Department. The internal consistency of the instrument was determined using Cronbach Alpha Technique which yielded an overall reliability index of 0.83. The research questions were answered and hypotheses tested using simple linear regression analysis.

Results

The data were analyzed, interpreted and discussed according to the trends of each research question and hypothesis.

Research question one

How does teaching practice relate to entrepreneurial skills acquisition among undergraduate students of business education? To provide answers to this research question, the model summary from the regression Table was used and the result is presented in Table 1.

TABLE 1

Model summary of the predictive relationship between teaching practice and entrepreneurial skills acquisition among undergraduate students of business education.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.266[a]	.070	.063	1.07990

Source: Field Survey, 2025

Table 1 shows the predictive relationship between teaching practice and entrepreneurial skills acquisition among undergraduate students of business education. The R correlation coefficient of the variable is .266 which implied that teaching practice relates to entrepreneurial skills acquisition among undergraduate students of business education. In addition, the relationship is a positive one, this indicates that as students are engaging in teaching practice programmes, there is likelihood that their entrepreneurial skills would also improve, particularly in the educational enterprise where mastery can only be acquired through constant practice and demonstration of the knowledge of the subject matter. Table 1 also shows the coefficient of determination (Adjusted R-Square value) of .063. This indicated that overall, 63 percent of the variance in entrepreneurial skills acquisition among undergraduate students of business education is accounted for by teaching practice experience.

Research question two

How does industrial training (IT) relate to entrepreneurial skills acquisition among undergraduates of business education? To provide answers to this research question, the model summary from the regression Table was used and the result is presented in Table 2.

TABLE 2

Model summary of the predictive relationship between industrial training (IT) and entrepreneurial skills acquisition among undergraduates of business education.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.225[a]	.051	.043	1.09126

Source: Field Survey, 2025

Table 2 shows the predictive relationship between industrial training (IT) and entrepreneurial skills acquisition among undergraduates of business education. The R correlation coefficient of the variable is .225[a] which implies that industrial training (IT) relates to entrepreneurial skills acquisition among undergraduate students of business education. In addition, the relationship is a positive one, indicating that as students are exposed to industrial training (IT), there is likelihood that their entrepreneurial skills would also increase. Table 2 also shows the coefficient of determination (Adjusted R-Square value) of .043. This indicates that overall, 43 percent of the variance in students' entrepreneurial skills is accounted for by industrial training (IT).

Hypothesis one

There is no significant relationship between teaching practice and entrepreneurial skills acquisition among undergraduates of business education. The independent variable in this hypothesis is teaching practice, while the dependent variable is entrepreneurial skills acquisition. The test statistic used in testing the hypothesis is Simple Linear Regression. The results of the analysis are presented in Table 3.

TABLE 3

Summary of Simple Linear Regression Analysis for the predictive validity of teaching practice and entrepreneurial skills acquisition among undergraduates of business education n = 133

Source of Variation	Sum of Squares	Df	Mean Square	F	Sig.
Regression	9.989	1	9.989	8.486*	.004[b]
Residual	151.858	131	1.177		
Total	161.847	132			

Source: Field Survey, 2026

Results of the analysis in Table 3 show that the calculated F-ratio of 8.486* is significant since the p-value of .004[b] is less than .05. This shows that the predictor variable (teaching practice) significantly relates to the criterion variable (entrepreneurial skills acquisition among undergraduates of

business education). Results also show a correlation coefficient, measuring the strength of association between the two variables (R) of .266[a], and coefficient of determination (Adjusted R2) of .063. This shows the extent to which the variation of the dependent variable about its mean is explained by the independent variable. It means that 63 percent of the variation in entrepreneurial skills among business education undergraduates students was as a result of variation in teaching practice skills, while the other 37 percent (1-R2) was as a result of variables extraneous to the study.

Hypothesis two

Industrial Training (IT) does not significantly relate to entrepreneurial skills acquisition among undergraduate students of business education. The independent variable in this hypothesis is industrial training, while the dependent variable is entrepreneurial skills acquisition. The test statistic used in testing the hypothesis is Simple Linear Regression. The results of the analysis are presented in Table 4.

TABLE 4

Summary of Simple Linear Regression Analysis for the predictive validity of industrial training and entrepreneurial skills acquisition among undergraduate students of business education.

Source of Variation	Sum of Squares	Df	Mean Square	F	Sig.
Regression	11.410	1	11.410	9.784*	.002[b]
Residual	150.437	113	1.166		
Total	161.847	132			

Source: Field Survey, 2025

Results of the analysis in Table 4 show that the calculated F-ratio of 9.784* is significant since the p-value of .002[b] is less than .05. This shows that the predictor variable (industrial training) significantly relates to the criterion variable (entrepreneurial skills acquisition among undergraduate students of business education). Results also show a correlation coefficient, measuring the strength of association between the two variables (R) of .225[a], and coefficient of determination (Adjusted R2) of .043. This shows the extent to which the variation of the dependent variable about its mean is explained by the independent variable. It means that 43 percent of the variation in entrepreneurial skills among business education undergraduate students was as a result of variation in industrial training experience, while the other 57 percent (1-R2) was as a result of variables extraneous to the study.

Discussion of Findings

The finding of the study in hypothesis one revealed that teaching practice significantly relates to entrepreneurial skills among business education undergraduate students. The implication of this finding is that business education students who are engage in teaching practice exercise would have move entrepreneurial skills than others. The result of this finding is in line with Okoro and Eze (2022) who revealed that teaching practice significantly enhanced students' entrepreneurial skills, including communication, leadership, problem-solving, decision-making, and business planning. adding that teaching practice provides practical experiences that contribute positively to the development of entrepreneurial competencies among Business Education undergraduates. The result of the findings also conforms with the findings of Adebayo and Yusuf (2021) whose findings indicated a significant positive relationship between teaching practice and entrepreneurial skills acquisition as students developed competencies in resource management, teamwork, creativity, innovation, opportunity identification, and effective communication.

The finding of the study in hypothesis two revealed that industrial training significantly relates to entrepreneurial skills among business education undergraduate students. The implication of this finding is that business education students who are engage in industrial training exercise develop move entrepreneurial skills than others. The result of this finding is in agreement with Okolocha and Okolocha (2012) whose findings revealed that industrial training through SIWES positively influenced students' entrepreneurial competencies, practical exposure, communication skills, and self-reliance. Adding that industrial training is an effective means of enhancing entrepreneurial skills acquisition among undergraduates because it exposes students to practical workplace experiences that bridge the gap between theoretical knowledge and real-life application. In line with the finding of the study, Coker, *et al.* (2021) also found that students who participated actively in SIWES acquired technical and agribusiness skills that enhanced their interest in self-employment. However, inadequate funding and

difficulty in obtaining placement were identified as major constraints affecting the effectiveness of the programme.

Conclusion

Based on the findings from the study, it was concluded that teaching practice and industrial training play significant roles in enhancing the entrepreneurial skills of Business Education students. These practical experiences provide students with opportunities to apply theoretical knowledge in real-world settings, thereby developing essential entrepreneurial competencies such as communication, leadership, problem-solving, decision-making, creativity, teamwork, and resource management. The study further concludes that increased exposure to teaching practice and industrial training equips Business Education students with the skills, confidence, and experience needed for self-employment and success in the dynamic world of work. Therefore, teaching practice and industrial training remain indispensable components of Business Education programmes for fostering entrepreneurial development among undergraduates.

Recommendations

The study recommended as follows;

1. Business Education departments and curriculum planners should strengthen the implementation of teaching practice and industrial training programmes by extending their duration, improving supervision, and ensuring that students are exposed to entrepreneurial and business-related activities that promote practical skill acquisition and workplace competence.
2. Universities should establish stronger partnerships with schools, industries, and business organizations to provide Business Education students with quality placement opportunities, mentorship, and hands-on entrepreneurial experiences that will enhance their capacity for self-employment, innovation, and job creation after graduation.

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APPLICATION OF EXPERIENTIAL LEARNING ACTIVITIES IN COMPETENCY BASED BUSINESS EDUCATION IN UNIVERSITIES IN DELTA STATE, NIGERIA.

BY

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Abstract

This study investigated Application of Experiential Learning Activities in Competency Based Business Education in Delta State Universities. It adopted the descriptive survey design and was guided with 3 research questions and 3 hypotheses. The entire population of 131 final year business education students was used for the study (Census sampling). A 41-item questionnaire was used for data collection. The questionnaire was structured on a 4-point scale: Very High Extent (VHE) – 4 points, High Extent (HE) – 3 points, Low Extent (LE) – 2 points, Very Low Extent (VLE) – 1 point. The face and content validity of the instrument was ascertained and to ensure internal consistency, 30 copies of the questionnaire were administered to 30 final year students of Niger Delta University which was not part of the study. The data collected were subjected to Cronbach Alpha which yielded the following reliability coefficient results for the 3 research questions: 1. r = 0.91, 2. r = 0.87, 3. r = 0.89. A total of 131 copies of the questionnaire were administered to final year students during their examinations and a total of 121 were fully completed and returned within a period of one month with the help of four research assistants in each institution, indicating 93.13% return rate. Data were analyzed using mean and standard deviations. T-test was used to test the hypothesis at 0.05 level of significance. The findings revealed the extent of experiential learning integrated into competency-based business education in universities, the level of effectiveness of experiential learning in competency-based business education in universities and strategies to be adopted for enhancing the integration of experiential learning in competency-based business education in universities. It was recommended that Business education lecturers should assess students through presentations using projectors, assignments and charts.

Keywords: Application, Experiential learning, Competency-based, Business education, Universities.

Introduction

Education as a continuous process is geared towards the needs and demands of every learner, especially in the university system. Training is viewed as a process of developing skills, attitudes, and qualities required for citizenship and dynamic support in society. David (2024) says that learners view training and education as a product to be used in the marketplace and to be bought and sold by academic institutions wherein the mark is quality which is equivalent to the mark for worldwide competitiveness. Curriculum changes have led to the change from a teacher-centered environment into a learner-centered environment. The 21st century curriculum concentrates on the development of skills and competencies through student-centred initiatives. It is concentrated on written tests, practical tests, and hands-on activities (Okoro, 2024a). The acquisition of relevant skills in competency-based courses is a pre-requisite for successful employment in Nigeria. Business education which is introduced in Nigerian universities is a competency-based course that is relevant in this 21st century.

Business education is education for and about business or training in business skills. It is education that helps to impart the necessary skills to the students to enable them to be self-employed after graduation from the higher institution. This type of education involves impartation of hand-on skills to the students by the lecturers. The task of providing this form education is enormous where the need for practical, hands-on learning experiences that extend beyond traditional classroom instruction is increasingly evident. Business education refers to the teaching of skills and knowledge related to business operations, management, finance, marketing, and entrepreneurship (Ezeani & Ogundola, 2018). It helps to prepare students for careers in various business fields and to develop their understanding of economic systems and organisational dynamics. Effective business education has the potential to stimulate economic growth, reduce unemployment and foster innovation in both the

public and private sectors. It aims to equip students with fundamental business knowledge and skills. The rapidly changing global economy and local economic challenges have highlighted the need for more dynamic and practical approaches to business education.

Business education is a specialised curriculum aimed at cultivating the skills, expertise, and mindset necessary for achieving success in the professional realm. It is a course that provides individuals with attitudes, practical skills, and values essential for successful operation in a commercial setting. Okoro (2024b) points out that business education refers to the educational process that focuses on the study and understanding of business principles and practices. Education training equips individuals with the necessary knowledge, abilities, and proficiency to achieve success in their work endeavours. It could also be described as education for entrepreneurship i.e. to own and manage business effectively without failure (Okoro, 2021). Business education also provides the needed training for recipients to become competent consumers and wise spenders of resources as well as develop functional skills for the management of one's own business (Ogbu & Amahi, 2022). Business education involves acquisition of relevant skills in order to function effectively in the business world through the application of experiential learning activities.

Experiential learning, according to Uzuagu, Ekanem & Adeleye (2025), emerged as a vital approach to bridge the gap between theoretical knowledge and practical application, hence preparing students for the complexities of the modern economy. Experiential learning theory is based on David Kolb (1984), whichemphasises the importance of direct experience and reflective observation in the learning process. Kolb (1984) notesthat the process whereby knowledge is created through the transformation of experience. It is the process of individuals learning by experience ('learning by doing') and the act of reflecting on authentic hands-on experiences to maximise and deepen the learning from that experience (Uzuagu, Ekanem & Adeleye, 2025). The experiential learning approach posits that individuals learn best by engaging in concrete experiences, reflecting on these experiences, getting new ideas based on their reflections.

Business education and experiential learning activities can take various forms, including internships, case studies, field projects, simulations, project-based learning, collaborative projects, mentorship programmes, and service-learning opportunities. Internships are a cornerstone of experiential learning in business education, offering students the opportunity to gain hands-on experience in a professional environment (Uzuagu, Ekanem & Adeleye, 2025). By working directly with businesses, students are exposed to the realities of the workplace, where they can apply theoretical knowledge, develop practical skills, and build professional networks. Internships and field projects help students understand market dynamics, adapt to changing conditions, and learn from experienced professionals. They provide an invaluable platform for learning and development, bridging the gap between academic study and employment.

The primary goal of the educational system is to impart knowledge, skills and attributes that will enable learners to recognize and reach their full potential in order to become functional members of a society. Globalization, which has brought complexities in the workplace, demand that students possess certain competencies in order to keep up with the rapidly changing business environment. Okoro (2024b) Some organizations and agencies, such as the Organization for Economic Co-operation and Development (OECD), are increasingly requesting education systems to prepare students with 21st century competencies in order to enable them to sustain challenges that have now become numerous to handle.

The OECD has called on international governments to make an effort to properly identify, conceptualize and integrate the required set of skills and competencies into the educational standards such that every student should be able to acquire them before graduation. The requisite 21st century competencies according to Scott (2015) are the knowledge, skills and attitudes necessary to be competitive in the workforce, participate appropriately in an increasingly diverse society, use a series of new technologies, and cope with the rapidly changing workplace.

Experiential learning takes place when a person who is involved in an activity looks back and evaluates it, determines what was useful or important to remember, and then uses the information to perform another activity (Kolb, 1984). Experiential learning is essentially an active learning process through which the learner develops knowledge, transferable skills and attitudes from direct experiences within or outside a classroom setting. Andresen, Boud, and Cohen (2000) assert that experiential learning supports a more participative, learner-centered approach to learning and places much emphasis on direct engagement, rich learning activities and the construction of meaning by learners.

Elam and Spotts (2004) highlight some activities in experiential learning to include case discussions, group cases, simulation games, descriptive/analytic field projects, computer assisted instruction, internships, and live cases.

Empirical Studies

Ogonna&Emesoba (2025) carried out a study titled Utilization of Blended and Experiential Learning for Effective Teaching and Learning of Business Education in Universities in South East, Nigeria. Two research questions guided the study and two null hypotheses were formulated and tested at 0.05 level of significance. The study adopted descriptive survey design. The population of the study comprised of all 85 Business Educators (57 Federal and 28 states Business Educators) in the 4 federal and 4 state universities offering Business Education in south east Nigeria. The entire population was used because the population was manageable. Therefore census sampling was used. A 14-item statement questionnaire that was validated by three experts was used for data collection. The reliability of the instrument was determined using test-retest technique and data obtained was analyzed using Pearson Product Moment Correlation to determine the reliability of the instrument. A reliability coefficient level of 0.79 was obtained and it was deemed adequate for the study. Data collected from the research questions were analyzed using mean and standard deviations to test the closeness of their responses, while t-test was used to test the hypotheses at a significance level of 0.05. The findings of the study revealed that Business Educators agreed to a high extent that utilization of blended and experiential learning improves the teaching and learning of Business Education in Universities in South East, Nigeria and that the extent this programme achieves its noble objectives depends to a large extent on the quality and competencies possessed by the Business Educators and the innovative skills they apply to facilitate effective teaching and learning of Business Education. Based on the results, the study recommended among others that Business Educators should adopt compulsory use of blended and experiential learning in the teaching and learning of Business Education; this will help the students in problem-solving, critical thinking, collaboration, and the application of knowledge in authentic contexts and in the learning of Business Education courses.

A study carried out by Uzuagu, Ekanem & Adeleye (2025) investigated the integration and effectiveness of experiential learning in preparing business education students in universities in Enugu State for uncertain economic futures. The study adopted a descriptive survey research design and was guided by three research questions and three null hypotheses. A population of 79 students was used for the study. There was no sampling because the population was manageable. A 30-item questionnaire titled “Enhancing Experiential Learning Questionnaire” (EELQ) was used as instrument for data collection. Cronbach Alpha reliability test was used to determine the internal consistency of the instrument, which yielded reliability coefficients of 0.92, 0.93, and 0.87 for clusters A, B, and C, respectively. To address the research questions, the obtained data were analysed using descriptive statistics of mean and standard deviations, and t-test was used to test the null hypotheses at the 0.05 level of significance. The findings revealed that experiential learning is moderately integrated and effective in developing critical skills such as problem-solving, decision-making, and risk management. The study also identified several strategies for enhancing experiential learning, including increasing collaborations with local businesses, incorporating more real-world projects into coursework, and regularly updating the curriculum to reflect current industry practices. The implication of these findings is that targeted efforts to enhance experiential learning could significantly improve the preparedness of business education students for the challenges of an unpredictable economic environment. The study concluded with recommendations for educational institutions and policymakers to prioritise experiential learning methods to foster a more adaptable and skilled workforce.

Statement of Problem

Experiential learning activities in business education are very relevant to enable the students to have necessary skills after graduation to be self-sufficient and reliant. Experiential learning is hands-on activity, assessment activity, among others, which eventually assist learners in constructing knowledge that results in meaningful learning. Experiential learning has become even more important especially in business education due to changing times and the increasing pressure to produce graduates who has the necessary skills and dexterity to perform optimally in the world of work. Uzuagu, Ekanem & Adeleye, (2025) note that quality university business education programs must include experiential learning components which can take many forms. The problem of the study therefore is to what extent are experiential learning activities applied in competency-based business education programme?

Purpose of the Study

The purpose of the study is to assess application of experiential learning activities in competency based business education in universities in Delta State, Nigeria. Specifically, the objectives are:

1. To identify extent experiential learning is integrated into competency-based business education in universities,
2. To determine the level of effectiveness of experiential learning in competency-based business education in universities.
3. To identify the strategies to be implemented for enhancing the integration of experiential learning in competency-based business education in universities.

Research Questions

The following research questions guided the study:

1. To what extent is experiential learning integrated into competency-based business education in universities?
2. What is the extent of effectiveness of experiential learning in competency-based business education in universities?
3. What are the strategies to be adopted for enhancing the integration of experiential learning in competency-based business education in universities?

Hypotheses

The following hypotheses are tested at 0.05 level of significance:

1. There is no significant difference in the mean rating between male and female on experiential learning integrated into competency-based business education in universities.
2. There is no significant difference in the mean rating between male and female on the effectiveness of experiential learning in competency-based business education in universities.
3. There is no significant difference in the mean rating between male and female on the strategies to be adopted for enhancing the integration of experiential learning in competency-based business education in universities.

Method

The study adopted descriptive survey design. The descriptive survey is suitable because there is no manipulation of data (Okoro, 2024a). The study was guided with 3 research questions and 3 hypotheses. The target population comprises 131 final year business education students: 117 from Delta State University, Abraka and 16 from University of Delta, Agbor, the two Delta state universities that offer the business education programme. The population serves as sample and the breakdown is 68 male and 63 female.

A 41-item questionnaire was the instrument used for data collection. The questionnaire was divided into two parts: Part A contained two (2) items of demographic variables of the respondents – Name of university, Sex. Part B contained 39 items based on the three (3) research questions. Research question one (1): To what extent is experiential learning integrated into competency-based business education in universities? contained 13 items. Research question two (2): What is the extent of effectiveness of experiential learning in competency-based business education in universities? contained 11 items. Research question three (3): What are the strategies to be adopted for enhancing the integration of experiential learning in competency-based business education in universities? contained 15 items. The questionnaire was structured on a 4-point scale of responses: Very High Extent (VHE), High Extent (HE), Low Extent (LE), Very Low Extent (VLE). There was face and content validity of the questionnaire. The questionnaire was given to two experts in computer science, three experts in measurement and evaluation and two experts in business education at the Delta State University, Abraka. The experts made necessary corrections and suggestions which were effected before the final copy was written. To ensure the internal consistency of the instrument, a total of 30 copies of the questionnaire were administered to final year students at the Niger Delta University, Bayelsa, which was not part of the study. The data collected were subjected to Cronbach Alpha which yielded the reliability co-efficient of 0.91, 0.87 and 0.89 on research questions 1, 2 and 3 respectively. A total of 131 copies of the questionnaire were administered to 131 final year students and a total of 121 were fully completed and returned within a period of one month with the help of four research assistant in each in institution. There was return rate of 93.13%. The data collected were weighted and analyzed as follows: Very High Extent (VHE) – 4 points, High Extent (HE) – 3 points, Low Extent (LE) – 2 points,

Very Low Extent (VLE) - 1 point. Any item with a mean of 2.5 and above is regarded as High Extent while any item below 2.5 is regarded as Low Extent. T-test was used to test the hypotheses at 0.05 level of significance. If t-calculated value is less than t-critical, hypothesis is accepted, while if the t-calculated value is greater than t-critical, hypotheses is rejected.

RESULT

Research Question 1: To what extent is experiential learning integrated into competency-based business education in universities?

Table 1: Mean responses of male and female on experiential learning integrated into competency-based business education in universities. N =121.

S/N	Extent of integration of Experiential learning activities in competency-based business education are:	$\bar{x}$	Std. Dev	Decision
1	Students assessed through practical work	3.10	0.82	HE
2	Students assessed through projects	2.98	0.85	HE
3	Students assessed through presentations	2.72	0.84	HE
4	Mentorship programmes available	3.11	0.91	HE
5	Business simulation software are utilized	3.06	0.88	HE
6	Internship opportunities are available	2.93	0.78	HE
7	Field trips are incorporated into the curriculum	2.77	0.87	HE
8	Simulations methods are utilized	2.82	0.83	HE
9	Role-playing exercises utilized	3.01	0.92	HE
10	Guest lectures and industry experts are invited to deliver workshop	2.85	0.82	HE
11	Case studies used as a teaching method	3.21	0.95	HE
12	Collaborative projects with local businesses are included	3.16	0.83	HE
13	Real-world business problems are used in assignments and projects	3.12	0.85	HE
	Aggregate Mean	39.1	11.05	
	Criterion Mean	3.01	0.85	

Research Question 2:What is the extent of effectiveness of experiential learning in competency-based business education in universities?

Table 2: Mean responses of male and female on the effectiveness of experiential learning in competency-based business education in universities. N =121.

S/N	Extent of effectiveness of experiential learning in competency-based business education are:	$\bar{x}$	Std. Dev	Decision
1	Developing problem-solving skills	3.35	0.82	HE
2	Fostering adaptability	3.16	0.84	HE
3	Enhancing students' critical thinking abilities	3.22	0.79	HE
4	Improving decision-making skills	3.28	0.89	HE
5	Applying theoretical knowledge to real-world situations	3.14	0.74	HE
6	Building students' confidence to face challenges	3.34	0.83	HE
7	Developing entrepreneurial skills	3.32	0.94	HE
8	Enhancing teamwork	3.15	0.85	HE
9	Enhancing collaboration skills	3.16	0.90	HE
10	Teaching risk management strategies	3.23	0.92	HE
11	Promoting innovative thinking	3.24	0.91	HE

	Aggregate Mean	35.59	9.43
	Criterion Mean	3.24	0.86

Research Question 3: What are the strategies to be adopted for enhancing the integration of experiential learning in competency-based business education in universities?

Table 3: Mean responses of male and female on strategies adopted for enhancing the integration of experiential learning in competency-based business education in universities. N =121.

S/N	Extent of strategies adopted for enhancing the integration of experiential learning in competency-based business education are:	$\bar{x}$	Std. Dev	Decision
1	Collaborating with local businesses	2.96	0.52	HE
2	Collaborating with industries	2.78	0.55	HE
3	Increasing the availability of internships for students	2.92	0.62	HE
4	Implementing business simulation software in the curriculum	2.81	0.71	HE
5	Regular involvement of guest lecturers	2.86	0.80	HE
6	Regular involvement of industry experts	3.18	0.85	HE
7	Assigning real-world projects as part of the coursework	2.88	0.83	HE
8	Organizing more field trips to businesses	2.97	0.76	HE
9	Organizing more site visits to industries	2.85	0.75	HE
10	Establishing mentorship programmes with industry professionals	2.93	0.79	HE
11	Incorporating problem-based learning strategies	2.74	0.82	HE
12	Providing more workshops focused on current industry practices	2.81	0.81	HE
13	Providing more seminars focused on current industry practices	2.91	0.84	HE
14	Regular review of curriculum to include the latest trends in experiential learning	2.96	0.79	HE
15	Regular review of curriculum to include the practices in experiential learning	2.80	0.77	HE
	Aggregate Mean	43.36	11.21	
	Criterion Mean	2.89	0.75	HE

Testing of the Hypotheses

The data presented in table 1 shows that the mean rating of the responses of the respondents on all the items are highly needed (Mean = 2.5 and above).

1. There is no significant difference in the mean rating between male and female on experiential learning integrated into competency-based business education in universities.

Table 3: Mean ratings between male and female on experiential learning integrated into competency-based business education in universities.

Variables	N	Mean	SD	t-cal.	df	t. value	Decision
Male	63	3.07	0.84	1.03	120	1.96	Accepted
Female	59	3.01	0.91				

Since the t-cal (1.03) is less than t. value 1.96 at significance level of 0.05, the null hypothesis is accepted.

2. There is no significant difference in the mean rating between male and female on the effectiveness of experiential learning in competency-based business education in universities.

Table 4: Mean ratings between male and female on the effectiveness of experiential learning in competency-based business education in universities

Variables	N	Mean	SD	t-cal.	df	t. value	Decision
Male	63	3.15	0.81	1.15	120	1.96	Accepted
Female	59	3.03	0.79				

Since the t-cal (1.15) is less than t. value 1.96 at significance level of 0.05, the null hypothesis is accepted.

3. There is no significant difference in the mean rating between male and female on the strategies to be adopted for enhancing the integration of experiential learning in competency-based business education in universities.

Table 5: Mean ratings between male and female on the strategies to be adopted for enhancing the integration of experiential learning in competency-based business education in universities

Variables	N	Mean	SD	t-cal.	df	t. value	Decision
Male	63	3.16	0.86	1.06	120	1.96	Accepted
Female	59	3.11	0.87				

Since the t-cal (1.06) is less than t. value 1.96 at significance level of 0.05, the null hypothesis is accepted.

Discussion of Findings

The findings on research question one revealthe extent of experiential learning integrated into competency-based business education in universities. Some of these are:Students assessed through practical work, students assessed through projects, students assessed through presentations, mentorship programmes available, business simulation software are utilized, internship opportunities are available, field trips are incorporated into the curriculum, simulations methods are utilized, role-playing exercises utilized , guest lectures and industry experts are invited to deliver workshop, case studies used as a teaching method, collaborative projects with local businesses are included and real-world business problems are used in assignments and projects. The findings are consistent with earlier studies Uzuagu, Ekanem & Adeleye, (2025) and Ogonna & Emeasoba (2025) who earlier identified experiential learning integrated into competency-based business education.

The findings of the hypotheses on research question 1 is that there is no significant difference in the mean rating between male and female on experiential learning integrated into competency-based business education in universities

The findings on research question two reveal that the extent of effectiveness of experiential learning in competency-based business education in universitiesare: Developing problem-solving skills, fostering adaptability, enhancing students' critical thinking abilities, improving decision-making skills, enhance theoretical knowledge to real-world situations, building students' confidence to face challenges, developing entrepreneurial skills enhancing teamwork, enhancing collaboration skills, teaching risk management strategies and promoting innovative thinking. The findings are consistent with earlier studies of Uzuagu, Ekanem & Adeleye, (2025) and Ogonna&Emeasoba (2025) who earlier identified the extent of effectiveness of experiential learning in competency-based business education.

The findings of the hypotheses on research question 2 is that there is no significant difference in the mean rating between male and female on the effectiveness of experiential learning in competency-based business education in universities.

The findings on research question three reveal that the strategies to be adopted for enhancing the integration of experiential learning in competency-based business education in universitiesare: Collaborating with local businesses, collaborating with industries, increasing the availability of internships for students, implementing business simulation software in the curriculum, regular involvement of guest lecturers, regular involvement of industry experts, assigning real-world projects as part of the coursework, organizing more field trips to businesses, organizing more site visits to industries, establishing mentorship programmes with industry professionals, incorporating problem-based learning strategies, providing more workshops focused on current industry practices, providing more seminars focused on current industry practices, regular review of curriculum to include the latest trends in experiential learning and regular review of curriculum to include the practices in experiential learning. The findings are consistent with earlier studies of Uzuagu, Ekanem & Adeleye, (2025) and Ogonna&Emeasoba (2025) who earlier identified the strategies to be adopted for enhancing the integration of experiential learning in competency-based business education education.

The findings of the hypotheses on research question 3 is that thereis no significant difference in the mean rating between male and female on the strategies to be adopted for enhancing the integration of experiential learning in competency-based business education in universities.

Conclusion

Experiential learning integration in business education in universities is very important since it brings effectivenessin preparing students for economic activities to enable them to face the reality of the world in establishing their own businesses after the completion of their programme, thereby reducing rate of unemployment. Experiential learning helps the graduates to have skills which will lead to experience in operating their own businesses. It is learning by doing which emphasizes mostly on practical. Integration of Experiential learning activities in business education should not be overemphasized sinceit enables the student to be self-employed in the 21st century. The implication of this study is that enhancing experiential learning can better prepare business education students for the complexities of an uncertain economic future by equipping them with critical skills such as problem-solving, decision-making, and adaptability, which are essential for stability in business environments.

Recommendations

The following recommendations are made for the study:

1. Business education lecturers should assess students through presentations using projectors, assignment and charts.
2. Business education lecturers should encourage field trips for business education students in order to have hands-on experience.
3. Business education lecturers should adopt simulations methods in teaching the students to enable them have knowledge of what they are learning.

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EXPERIENTIAL LEARNING PEDAGOGIES FOR DEVELOPING PROBLEM-SOLVING, BUSINESS ANALYTICAL AND CUSTOMER SERVICE SKILLS IN BUSINESS EDUCATION STUDENTS

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Abstract
The study of experiential learning pedagogies for developing problem-solving, business analytical and customer service skills in Business education students was motivated by the widening gap in the skill possessed by business education students and the skill expected by employers in the world of business. Descriptive survey design was adopted for the study. Three (3) research questions guided the study while three (3) null hypotheses were tested at 0.05 level of significance. The population of the study comprised 283 business education students at various levels of study in a University in the South East Nigeria. There was no sampling since the population was manageable. Measurement scale containing 26 items was developed by the researcher and used as instrument for data collection. Validity of the instrument was established using three (3) experts. The Scale was subjected to reliability test using Crobach Alpha statistic and alpha value of 0.88 was obtained. Descriptive statistics was used for data analysis while t-test statistic was used to test the null hypotheses. Findings of the study revealed that experiential learning pedagogies for developing problem-solving skill, business analytical skill and customer service skill in Business education students include use of problem-based learning, simulations and role playing, respectively. Test of null hypotheses using t-test revealed that respondents irrespective of rank, gender and area of specialization have similar opinion on the experiential learning pedagogies for developing problem-solving, business analytical and customer service skills in Business education students. The study concluded that the use of experiential pedagogies by teachers helps students to gain problem-solving abilities, business analytical skill and customer service skill which aligns with industry skill demands and promote employability. Thus, it was recommended that business educators should adopt experiential learning pedagogies such as case studies, simulations, role playing, project-based learning, etc. in engaging students with the curriculum contents.
Keywords: Experiential learning pedagogies, problem-solving skill, business analytical skill, customer service skills, Business education

Introduction
The essence of formal education is to enable students develop knowledge, skills and values necessary for employability, civility and contribution to the development of the society. The extent to which this objective can be realized is a function of the instructional pedagogies and materials used in engaging students with the curriculum content. While some instructional pedagogies could impede effective learning and skill development by the students, others have the potentials for making students to maximise their learning experience and skill development. Evidence shows that university education in Africa and in Nigeria particularly has been characterized with traditional learning approaches which support memorization and content reproduction rather than developing skill and intellectual curiosity (Al-Mahrooqi & Denman, 2020). This is attributed to the use of poor pedagogical approaches by teachers in higher institutions of learning. Although the traditional teaching methods like lecture method remains useful for disseminating information to large groups of learners, it often encourages passive participation and places students in the position of knowledge receivers rather than active contributors to the learning process. Consequently, students may graduate with theoretical knowledge and lack the critical thinking, customer service skill, collaboration, and problem-solving skills required in contemporary business environments (Okudaye & Edionwe, 2026).

While discussing the importance of innovative pedagogies in curriculum delivery, Mong, et. al. (2023) maintained that the use of effective teaching pedagogies is central to the achievement of intended learning outcomes in the classroom instruction. The authors further stated that the use of teacher-centered pedagogies in classroom instruction by business education teachers has failed in producing graduates who possess necessary skills required for workplace. Okolie et al., (2021) identified overdependence on the traditional teaching pedagogies, low feedback and assessment practices, overemphasis on theoretical knowledge, low curriculum implementation, etcetera as enormous challenges facing the development of skills by students in the Global South (Nigeria inclusive). The consequence of this poor leaning by students is their deficiency in skills required for employability in the global world of work. Agbo et al. (2026) identified this skill gap as a key contributor to high graduate unemployment rates in many developing countries, including Nigeria. According to National Bureau of Statistics (NBS, 2023), unemployment rate in Nigeria for third quarter (Q3) of the year 2023 was 5.0%, this was a significant increase from 4.2% recorded in second quarter (Q2) of the year 2023. The Bureau, further revealed that unemployment rate by sex among men was 4.0% and 6.0% among women. In terms of location, unemployment rate was 6.0% in urban areas and 4.0% in rural areas. Youth unemployment rate in the same was 8.6%. In terms of educational attainment, the unemployment rate was 7.8% among persons with post-secondary education, 6.3% for those with upper secondary education, 5.5% for those with lower secondary education, 4.8% for those with primary education, and 2.7% for those with no formal education. This data show that unemployment was highest among graduates with business education graduates inclusive and their drift to urban cities in search of jobs probably caused the increase in the unemployment rate in the urban areas. The consequence of lack of relevant skills by business education students is not limited to the rising unemployment among graduates, Mong (2024) noted that business education graduates who are in small and medium sized businesses often experience business failure due to their lack of relevant skills to meet customers' preferences and taste. Scholars (Mong & Okolocha, 2020; Aremu & Adeyemi, 2011; Regina and Onwumere, 2010) have reported these frequent cases of business failure associated with lack of skills on the part of business managers and expressed worry on the danger such business failures could have on the economy.

In a bid to proffer solution to these challenges and enhance skill development among students, higher institutions of learning, scholars (Musengimana, et al., 2025; Okolie et al., 2021, Rolleston et al., 2019; Grosser & Nel, 2013) and other stakeholders have for long engaged in the research of finding innovative pedagogical practices that enhance students' skill development. Experiential learning pedagogies are among such highly-advocated instructional pedagogies found to be effective in helping students to develop skills. However, some scholars in their studies found a negative correlation between experiential pedagogies and skill development. Maureen et. al. (2023) in their study found that concrete experience and reflective observation, experiential learning processes have weak negative relationship on business education student's skill development. Conversely, Adebanjo, et al. (2026) found that students taught using experiential learning methods showed significant higher skills in business studies than those taught through traditional methods. Despite these discrepancies on findings about the relationship between experiential pedagogies and skill development, a lot seems not to have been done to either support or refute existing findings. Additionally, there is a gap in literature in exploring those experiential learning pedagogies that could help Business education students develop problem-solving, business analytical and customer service skills. This study therefore aims at exploring these areas in order to enhance broad-based knowledge for its application by Business education teachers in instruction delivery.

Experiential Learning Pedagogies

Venture (2024) defined experiential learning as an educational approach where learners actively engage in real-world tasks rather than passively consume information through lectures or reading. The author further stated that these pedagogies give individuals greater opportunity to understand and apply theoretical concepts in practical scenarios, enhancing retention, comprehension, and problem-solving skills. Experiential learning is essentially an active learning process through which the learner develops knowledge, transferable skills and attitudes from direct experiences within or outside a classroom setting (Obi, Eze & Chibuzo, 2021). Experiential learning is also seen as a transformative approach to education that equips students with practical skills, industry knowledge, and entrepreneurial mindsets for success in the modern business environment. It fosters partnerships, sharing best practices, and leveraging emerging technologies (Prasada et al., 2024). Following from the above, it could be deduced that experiential learning pedagogies are those instructional strategies that enable students to take

active part in the learning process through engagement in practical sessions and reflection, thus, leading to the development of technical and soft. Experiential learning pedagogies are learner-centred and student-directed, emphasizeing problem-solving, discovery and inquiry. It focuses on practical applications of course content and holistic understanding of a discipline; it is also perception-based. According to Okoli, Arroteia and Barish (2019), experiential learning has received increased attention by business educators as it allows students to be equipped with a specific, employer relevant skillset and, most importantly, provides a more engaging experience for students. Similarly, Prasada et al. (2024) stated that experiential learning is increasingly recognized as vital for developing students' skills and knowledge relevant to the dynamic business landscape and for the complexities of the modern workplace. Business education students in Nigeria require skillset such as problem-solving skill, business analytical skill and customer service skill to understand, operate and remain afloat in a dynamic, competitive and a volatile business economy especially in Nigeria. Besides, intense competition for survival among entrepreneurs and corporate bodies make employers seek for candidates who can think outside the box to bring innovation in solving business problems and in enhancing customers' satisfaction for the overall good of the firm. This evolving demands of employers and the business world place a responsibility on business educators to use experiential learning pedagogies in engaging students with the curriculum contents in order to enhance skill development among them for optimum performance upon graduation.

Problem-Solving Skill

Problem solving skill is the ability to proffer solution to problems in the workplace or business. Ballester-Miquel, et al. (2026) referred to it as a technique to optimize decision-making in complex and changing environments. The authors noted that key dimensions of problem-solving skills include, creativity, critical thinking and data-driven decision-making, all of which are essential for addressing highly complex problems in modern organizations. It is an important soft skill required by business education graduates to navigate challenges associated with intense competition, dynamic economic policies, fluctuating inflationary trends, global economic shocks and exchange rate volatility in the business world. It is a much sought-after skill by employers of labour and captains of industries. This is so because increasing productivity in any field of human endeavour calls for ability to do things differently, query the status quo, thinker on better alternative, demonstration of creativity, innovation and exercise of good initiatives by graduates. These attributes are byproducts of problem-solving skill. According to Jose et al. (2026), practical problem-solving not only improve operational efficiency but it also acts as a catalyst for innovation in the workplace, strengthening the adaptability of organizations to new market demands and disruptive technological breakthroughs. Problem-solving skills improve individual and collective performance and promote organizational transformation and success in dynamic and competitive environments (Zhao et al. (2021).

Developing students' problem-solving skills is the cornerstone of preparing them to navigate the complexities of the modern world (Theophile, et al, 2025). Possession of this skill enables graduates to handle complexity arising from broader social change, and its acceleration requires that students have the competency for solving problems in order to make their way in the world. Unfortunately, evidence from observation and recent studies suggests that many Business education students still exhibit limited entrepreneurial initiative, weak problem-solving abilities, low innovative capacity, and a greater preference for paid employment rather than self-employment after graduation (Okudaye & Edionwe, 2026). Also, many Business education students show lack of interest and aversion for taking accounting courses, business mathematics, investments analysis and capital budgeting, research methods in Business education, etc. Their dislike for these courses stems from the fact that these courses require problem-solving skill for doing coursework assignments, data collection and analysis, projects and case studies. This shows ill preparedness of the students to survive the numerous thought-provoking real-life challenges awaiting them in the world of work, upon graduation. This situation raises questions about the effectiveness of the teaching pedagogies used in teaching Business Education students by their educators. Scholars (Theophile, et al, 2025; Adedayo, 2025; Akujieze, 2024; Bed, 2022; Abid, 2022) have consistently maintained that traditional teaching methods do not prepare students with the necessary skills for the twenty-first century and that through traditional methods of teaching, students are disconnected from real-world phenomena. Thus, making students to adopt a consistent routine throughout learning, incorporating similar procedures, resources, inquiries, and assessment methods in the classroom, and this uniformity tends to become monotonous for the students. Teachers must embrace pedagogical approaches that actively engage students in inquiry to support and encouraging them to grapple with complex problems, analyze data, and formulate solutions (Prahani, et al., 2018).

Business Analytical Skill

Business analytical skill is the ability to break down complex business data, processes, or problems into smaller parts and interpreting same with a view to finding causes, trends, relationship, solution and making informed decisions. It is a critical component of mental activity that enables business practitioners to solve problems quickly and effectively. Rasheva-Yordanova et al. (2018) noted that analytical skill includes a methodical approach that allows complex issues to be fragmented into simpler and more manageable components. The authors further noted that it is needed for performing tasks such as processing data, making forecasts, visualizing and designing data, extracting knowledge from accumulated data and making effective and efficient solutions. Doing a business profitably and without winding up in foreseeable future time requires that practitioners and would-be practitioners possess business analytical skill to enable them analyse business data, study business trends and make rationale investment decisions. According to Yulina et al. (2018), analytical thinking skill allows students to think logically, about the relationship between concepts and situations they face, categorize the problem into its parts and understand the passage, explain the function of a system, or how to solve a problem; compare and differentiate two or more phenomena, and evaluate the characteristics of phenomena. Analytical thinking is a powerful tool of thought for understanding the parts of the situation at hand. It helps students to examine, disentangle facts and thoughts; develop the capacity to think wisely, intelligently, solve problems, analyze data, remember, and use information (Chonkaew, et al., 2016). Possession of business analytical thinking skill is not only a competitive advantage for individuals and business organizations but also an indispensable competency that drives social progress and sustainable business development (Güner & Erbay, 2021). As the business world faces complex and ever-changing challenges, business analytical thinking skill helps in developing a deeper understanding of these problems and support the development of effective solutions to business challenges (Maani & Shanti, 2023). It aids decision-making by helping individuals make informed choices, and in problem-solving by breaking down complex issues (Almulla & Al-Rahmi, 2023, (Sofi et al., 2023)). Additionally, it drives innovation and creativity. Although business analytical skill is generally agreed to be a sought-after skill by employers globally, many business educators still use teaching pedagogies that do encourage its development. Some educational pedagogies used by educators often promote memorization by student over analytical thinking skill development (Dorji, 2023). This results in students excelling in knowledge but lacking critical thinking and analytical skills (Fischer et al., 2020). To reverse this ugly trend, scholars have researched widely and promote experiential learning pedagogies as an antidote but there exists a gap in identifying those experiential learning pedagogies that facilitate the development of business analytical skill by business education students. This gap therefore informed the study.

Customer Service Skills

Customer service is the assistance offered to customers by firms before, during and after the purchase of a product to enable them maximise their satisfaction from the consumption of products and services. Such assistance includes installation service, explanation on proper use of products or cautionary measures to be taken, prompt feedback to customers' inquiry, prompt response to customers' complaints, offer of quality products, assisting customers to make choices, etc. Mamoun, et al., (2010) defined customer service as the organistion's ability to perform all the processes and activities needed to enable customers to reach the right parties in the company, receive quick and satisfactory service, and solve their problems properly. Customer service can also be seen as the act of taking care of customer's needs by providing and delivering professional, helpful, high-quality service and assistance before, during and after customer's requirements are met (Gidado, Akaeze, Babakura, 2020). It entails being courteous, kind, listening carefully to customers' wants and concerns and doing everything in one's power efficiently and accurately to serve all customers, thereby providing solutions to each customer's problem and ensuring that they are satisfied (Doyle, 2017). Customer service skills include empathy, enthusiasm, detail-oriented, curiosity: diplomacy, patience: attentiveness, clear communication skill, possession of knowledge of the product, acting skill and ability to read customers psychologically (Gidado, Akaeze, Babakura, 2020). The authors further noted that high-quality customer service requires superior customer service skills and competencies on the individual level, and should be possessed by an organisation's employees to achieve customer satisfaction, loyalty and profitability in today's competitive business environment. Possession of good customer service skill is a goodwill that has the potentials for increasing customers' retention, competitive advantage, market share and profit maximization of the firm. Many businesses wind up within their few years of operation due to their poor customer service. For business education students to acquire proficiency in customer service skills, business education lecturers have the responsibility of employing experiential learning

pedagogies in delivering the curriculum contents. Although considerable effort has been made to conceptualise and measure customer service quality and in developing customer service guidelines, but little academic research has been devoted to exploring experiential learning pedagogies that promote the acquisition of customer service skills by business education students. Thus, the need for this study current study to identify those experiential learning pedagogies that could enhance customer skill development by students

Business education

Business Education is an educational programme which teaches knowledge, skill, values and attitude needed for entrepreneurship, employability in the world of business, office occupation and in the teaching profession. Its overall aim is to make students self-reliant upon graduation and contribute maximally to social and economic development of the society. National Universities Commission (2022) defines Business Education as a specialized profession designed to provide students with knowledge, skills and competence leading to employability and advancement in office occupations, pedagogical skills in teaching business subjects at different levels of educational system as well as self-employment or being an employer of labour. The inclination of Business education to self-reliance of its graduates qualifies it as a vocational education programme. The programme is designed in consonance with the needs of the business community to ensure that education and training offered to its students are consistent with the competencies required for the present and emerging job opportunities globally. The programme has areas of specialization such as accounting education, entrepreneurship education, marketing and distributive education and office management education. Technical skills in all the areas of specialization are very important in the world of work and business. Business education enables students to acquire entrepreneurial and employability skills such as leadership skills, communication skills, customer service skills, financial literacy skills, business analytical skills, problem-solving skills, teaching skills, adaptability skills, capacity building skills and research skills. Teaching pedagogies are used by Business education lecturers to deliver the curriculum contents to students in order to enable them acquire the needed skills. Different pedagogies abound and their applications depends on the type of skills being developed. This research focused on exploring experiential learning pedagogies for developing problem-solving skills, business analytical skills and business analytical skills.

Purpose of the Study

The purpose of the study was to determine experiential learning pedagogies for developing problem-solving, business analytical and customer service skills in Business education students. Specifically, the study determined:

1. The experiential learning pedagogies for developing problem-solving skills in Business education students
2. The experiential learning pedagogies for developing business analytical skill in Business education students
3. The experiential learning pedagogies for developing customer service skill in Business education students

Research Questions

The study was guided by the following research questions:

1. What are the experiential learning pedagogies for developing problem-solving skill in Business education students?
2. What are the experiential learning pedagogies for developing business analytical skill in Business education students?
3. What are the experiential learning pedagogies for developing customer service skill in Business education students?

Hypothesis

The following null hypotheses were tested at 0.05 level of significance:

H_{O1}: There is no significant difference in the mean responses of old and new business education students on experiential learning pedagogies for developing problem-solving skills in Business education students.

H_{O2}: There is no significant difference in the mean responses of male and female business education students on experiential learning pedagogies for developing business analytical skill in Business education students.

H_{O3}: There is no significant difference in the mean responses of business education students in Accounting and Office management options in Business education on experiential learning pedagogies for developing customer service skill in Business education students.

Methodology

Survey design was adopted for the study. The design was considered appropriate since data were collected without manipulation, from a representative sample and the findings generalized on the entire population. The population of the study comprised two hundred and eighty-three (283) University Business education students from 1st to 4th year of their study in 2025/2026 academic session. Structured measurement scale developed by the researcher was used for data collection. The scale had four-point rating response options ranging from strongly agree (4 points) to strongly disagree (1 point). After development, the measurement scale was subjected to validation by three experts in Measurement and Business education. The experts were asked to determine the appropriateness of the items in the scale and whether it is fit for purpose. The experts also determined the clarity of instruction for the respondents and simplicity of language used in the scale. The suggestions and corrections of the experts were used to make the scale fit for purpose before usage. Reliability of the scale was established using Cronbach Alpha statistic. Alpha value of 0.88 was gotten when the scale was tested for reliability. The scale in google form was shared to through class WhatsApp platforms for their responses. Two hundred and sixty-six (266) Business education students, representing 94% responded to the scale and their responses were used for the study. Descriptive statistics of mean and standard deviation were used to analyse the data while t-test was used to test the null hypotheses. The decision rule was to accept any item with a mean score of 3.0 and above as an experiential learning pedagogy for developing problem-solving, business analytical and customer service skills in Business education students and to reject any item with a mean score below 3.0. For test of null hypotheses, the decision rule was to accept the null hypothesis if t-calculated value is less than t-critical value and to reject the null hypothesis if t-calculated value is greater than t-critical value.

Results

Table 1: Mean and standard deviation of responses on experiential learning pedagogies for developing problem-solving skill in Business education students

S/N	Items	Mean	SD	Remarks
1.	Experimentation	3.66	1.23	Agree
2.	Inquiry-based learning	3.53	1.10	Agree
3.	Project-based learning	3.69	1.29	Agree
4.	Brainstorming	3.46	0.98	Agree
5.	Case Study	3.71	1.08	Agree
6.	Investigation-Based Multiple Representation (IBMR) Learning Model	3.44	1.06	Agree
7.	Analogy	3.55	0.99	Agree
8.	Heller and Heller's pedagogy	3.40	1.21	Disagree
9.	Heuristic Search	3.323	1.04	Disagree

Data in Table 1 indicate that all the items except two had mean scores above 3.0 used as a criterion for decision-making. This shows that the respondents accepted the items except Heller and Heller's pedagogy and Heuristic search as learning pedagogies that develop problem-solving skill in Business education students.

Table 2: Mean and standard deviation of responses on experiential learning pedagogies for developing business analytical skill in Business education students

S/N	Items	Mean	SD	Remarks
11.	Case Study	3.53	1.06	Agree
12.	Role play	3.59	1.11	Agree
13.	Heuristic Search	2.50	0.98	Disagree
14.	Practicum	2.91	1.15	Disagree
15.	Problem-based learning	3.58	1.19	Agree
16.	Simulation	3.06	1.09	Agree
17.	Laboratory-based learning	2.89	1.05	Disagree
18.	Group Discussion	3.23	1.10	Agree

Data in Table 2 indicate that all the items except three, had mean scores above 3.0 used as a criterion for decision-making. This shows that the respondents accepted the items except heuristic search, practicum and laboratory-based learning heller's pedagogy and as learning pedagogies that develop business analytical skill in Business education students.

Table 3: Mean and standard deviation of responses on experiential learning pedagogies for developing customer service skill in Business education students

S/N	Items	Mean	SD	Remarks
19.	Presentation (oral and written)	3.11	1.06	Agree
20.	Report Writing	2.94	1.20	Disagree
21.	Simulation	3.23	1.09	Agree
22.	Demonstration	3.13	0.89	Agree
23.	Role playing	3.47	0.99	Agree
24.	Service learning	3.58	1.09	Agree
25.	Interactive group games	3.20	1.12	Agree
26.	Reflective observation	3.01	1.07	Agree

Data in Table 3 indicate that all the items except one, had mean scores above 3.0 used as a criterion for decision-making. This shows that the respondents accepted all the items except report writing as learning pedagogies that develop customer service skill in Business education students.

Results of Test of Hypothesis

The results of test of null hypotheses are presented in the Tables 4 - 6 below.

Table 4: t-test Analysis on the mean ratings of old and new business education students on experiential learning pedagogies for developing problem-solving skills in Business education students

Category of Respondents	N	Mean	Std.	Df	t-cal.	Alpha	t-crit.	Decision
Old Students	188	3.34	.71	264	.45	0.05	.630	Not significant
New Students	77	3.32	.67					

Data in Table 4 show that the t-calculated value is less than the t-critical value. This means that the null hypothesis is not rejected. The implication is that the respondents share similar opinion on the experiential learning pedagogies for developing problem-solving skills in Business education students.

Table 5: t-test analysis on the mean ratings of male and female business education students on experiential learning pedagogies for developing business analytical skill in Business education students

Category of Respondents	N	Mean	Std.	Df	t-cal.	Alpha	t-crit.	Decision
Male Students	255	3.34	.55	264	.49	0.05	.630	Not significant
Female Students	295	3.32	.63					

Data in Table 5 show that the t-calculated value is less than the t-critical value. This means that the null hypothesis was not rejected. The implication is that the respondents do not vary significantly in their opinion on the experiential learning pedagogies for developing business analytical skills in Business education students.

Table 6: t-test analysis on the mean ratings of business education students in Accounting and Office management options in Business education on experiential learning pedagogies for developing customer service skill in Business education students

Category of Respondents	N	Mean	Std.	Df	t-cal.	Alpha	t-crit.	Decision
Accounting Option	255	3.34	.69	264	.37	0.05	.630	Not significant
OTM Option	295	3.32	.60					

Data in Table 6 show that the t-calculated value is less than the t-critical value. This means that the null hypothesis was accepted. The implies that the respondents are in agreement on their opinion on the experiential learning pedagogies for developing business analytical skills in Business education students.

Discussion of Findings

Findings of the study revealed that experiential learning pedagogies for developing problem-solving skill in Business education students are experimentation, inquiry-based learning, project-based learning, brainstorming, case study, investigation-based multiple representation learning and analogical pedagogy. This finding is perhaps due to the fact that these pedagogies encourage active involvement of students and make them curious in the learning process. The teacher guides the students in following through the processes for proffering solution to a given task or problem. These pedagogies make business education students innovative, querying the status quo and adopting approaches that seek improvement by deviating from established practices. The finding underscores the suitability of these teaching pedagogies in imbuing students with the ability to come up with and implement new ideas, processes, products, or services in order to improve business performance and effectiveness in the workplace. This finding agrees with Ballester-Miquel, et al. (2026) that organizations that foster strong leadership and practical problem-solving skills are better equipped to innovate and adapt to the challenges of today's marketplace. Thus, making the adoption of these pedagogies that develop problem-solving skill in students necessary by business education teachers. The finding further corroborates with Musengimana, et al. (2025) who found inquiry-based learning, Investigation-Based Multiple Representation (IBMR) learning model, among others as instructional strategies for enhancing problem-solving skill in students.

The finding further revealed that experiential learning pedagogies for developing business analytical skill in Business education students are case study, role play, problem-based learning, simulation and group discussion. These pedagogies promote critical thinking, logical thinking, comprehensive understanding of concept and problems and relationships existing between variables or data. These abilities are needed by business students for achieving efficient marketing, new revenue opportunities, better customer service, improved operational efficiency, competitive advantages and form making informed business decisions. This finding is in line with Wang et al. (2025) and Rasheva-Yordanova, et al. (2018) who harped the importance of analytical skill in developing students' ability to think deeply, deconstruct problems, and evaluate evidence to enhance performance and critical thinking skills. The authors advocated for use of teaching pedagogies that enhance analytical skill development across all disciplines and countries.

Finally, the study revealed that experiential learning pedagogies for developing customer service skill in Business education students are presentation, simulation, demonstration, role play, service learning, interactive group games and reflective observation. Customer satisfaction and retention are critical for increasing the market share and profitability of a business. Thus, teachers have to be intentional in enhancing business education students' customer skill by deploying suitable pedagogies. This finding agrees with Sulayman et al. (2020) and Ortman (2017) who maintained that small and medium sized enterprises (SMEs) should have customer service standards and that their employees or owners should have good customer service skills. Business education students are prospective employees or owners of SMEs hence it becomes expedient their trainers to train them with experiential pedagogies that will enable them to acquire this skill.

Conclusion

Based on the findings, it was concluded that experiential learning pedagogies are contemporary and are advantageous over the traditional teaching methods. Experiential learning pedagogies are also innovative, engaging and promote students' acquisition of problem-solving skill, business analytical skill and customer skill among others. It is therefore important that business education lecturers use these pedagogies appropriately depending on the type of skill they want the students to acquire.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Business education lecturers and students should attend capacity building programmes regularly on the use of experiential learning pedagogies.

2. University administrators should step up effort in providing necessary facilities and resources needed to implement experiential learning pedagogies in their universities.

3. Business education lecturers who exhibit extra ordinary skills in using experiential learning pedagogies in teaching students should be rewarded as a way of motivating other to do so.

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COMPETENCY-BASED BUSINESS EDUCATION AND EXPERIENTIAL LEARNING IN ENHANCING SELF-RELIANCE AMONG BUSINESS EDUCATION STUDENTS

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Abstract

This study examined the relationship between competency-based business education and experiential learning in enhancing self-reliance among business education students in Delta State, Nigeria. The study specifically focused on Practical Skill Acquisition and Problem-Solving Competence as dimensions of Competency-Based Business Education, while Project-Based Learning and Internship/Industrial Work Experience were examined as measures of Experiential Learning. A descriptive correlational survey design was adopted for the study. The population comprised 219 300Level and 400level undergraduate Business Education students 2025/2026 academic session of Delta State University, Abraka, and University of Delta, Agbor. A structured questionnaire was used for data collection and was subjected to expert validation and reliability testing using Cronbach's Alpha. Out of 219 copies of the questionnaire administered, 200 usable copies were retrieved and analyzed. Data were analyzed using descriptive statistics and the Pearson Product Moment Correlation Coefficient (PPMC) at the 0.05 level of significance. The findings revealed a strong positive relationship between Practical Skill Acquisition and Internship/Industrial Work Experience ($r = 0.534$, $p < 0.05$). Problem-Solving Competence also had significant positive relationships with Internship/Industrial Work Experience ($r = 0.566$, $p < 0.05$). Based on these findings, the study concludes that competency-based Business Education significantly enhances experiential learning by equipping students with practical skills and problem-solving competencies that can be applied through authentic workplace experiences. The study recommends that Business Education programmes should strengthen practical instructional activities and structured internship/industrial work experience to improve students' competence, employability, entrepreneurship and self-reliance.

Keywords: Competency-Based Business Education, Practical Skill Acquisition, Problem-Solving Competence, Project-Based Learning, Internship, Industrial Work Experience, Experiential Learning.

Background to the Study

Business Education is a vocational and business-oriented field designed to equip learners with the knowledge, skills, attitudes and competencies needed for effective participation in the workplace and entrepreneurial activities. In the era of technological change, graduate unemployment and growing demand for practical competencies, competency-based Business Education emphasizes demonstrable knowledge and skills that align with occupational and entrepreneurial requirements (Baumgartner, 2018; Morris et al., 2013). This approach is particularly important for promoting self-reliance among Business Education students by enabling them to apply vocational skills, creativity, problem-solving abilities and entrepreneurial competencies to become economically productive and less dependent on paid employment (Obidile & Onyeneke, 2022). However, inadequate resources, poorly prepared instructors and weak curriculum and labour market alignment may constrain its effectiveness (Ogunbote et al., 2026). Experiential learning complements competency-based education by allowing students to learn through concrete experiences, reflection, experimentation and real-life applications, thereby transforming theoretical knowledge into practical competencies. Activities such as simulations, role plays, business laboratory practice, case studies, peer assessment, creative competitions, projects, internships and business ventures can enhance entrepreneurial skills, competencies and intentions (Ugwulebo et al., 2022; Motta & Galina, 2023; Mason & Arshed, 2013). Therefore, integrating competency-based approaches with meaningful experiential learning is will essential for addressing the theory-practice gap and developing Business Education graduates who are innovative, employable, entrepreneurial and capable of creating economic value for themselves and society.

Statement of the Problem

Business Education programme by its objectives is to equip students with relevant knowledge, skills, attitudes and competencies for productive employment and self-reliance, yet concerns persist that some graduates possess substantial theoretical knowledge without adequate practical and

entrepreneurial competencies to apply it in real-world situations. Graduate unemployment, underemployment and dependence on paid employment suggest that academic qualifications alone may not sufficiently promote self-reliance, particularly where students have limited exposure to practical skill acquisition, creativity, innovation, opportunity recognition, problem solving and business management. Therefore, uncertainty remains regarding the extent to which Competency-Based Business Education and Experiential Learning contribute to enhancing self-reliance among Business Education students. The study consequently seeks to examine whether competency acquisition and learning-by-doing improve students' innovation, business opportunity recognition, practical problem-solving and capacity for independent economic activity, while providing evidence for lecturers, curriculum developers, institutions and policymakers on strengthening the practical and entrepreneurial orientation of Business Education programmes.

Purpose of the Study

The main purpose of this study was to examine the relationship between Competency-Based Business Education and Experiential Learning in Enhancing Self-Reliance among Business Education Students. The specific objectives of the study are to:

1. determine the relationship between practical skill acquisition and internship/industrial work experience in enhancing self-reliance among business education students.
2. determine the relationship between problem-solving competence and internship/industrial work experience in enhancing self-reliance among business education students.

Research Questions

The following research questions guided the study:

1. What is the relationship between practical skill acquisition and internship/industrial work experience in enhancing self-reliance among business education students?
2. What is the relationship between problem-solving competence and internship/industrial work experience in enhancing self-reliance among business education students?

Research Hypotheses

The following null hypotheses was be tested at the 0.05 level of significance:

Ho_1: There is no significant relationship between practical skill acquisition and internship/industrial work experience in enhancing self-reliance among business education students.

Ho_2: There is no significant relationship between problem-solving competence and internship/industrial work experience in enhancing self-reliance among business education students.

Conceptual Review

Concept of Competency-Based Business Education

Competency-Based Business Education is an educational approach that emphasizes the acquisition, demonstration and application of relevant knowledge, skills, attitudes and abilities needed for effective performance in business, occupational and entrepreneurial environments. Unlike approaches that focus mainly on memorization, it emphasizes learners' ability to demonstrate practical competencies, perform business-related tasks, solve workplace problems and respond to entrepreneurial opportunities (Morris et al., 2013). In Business Education, it is particularly associated with practical skill acquisition and problem-solving competence, enabling students to apply theoretical knowledge to accounting, office operations, marketing, business planning, information technology and entrepreneurial activities while identifying challenges and developing appropriate solutions. Competency-oriented programmes also seek to align students' professional, methodological, social and self-management competencies with workplace expectations (Baumgartner, 2018). By developing practical and problem-solving abilities, competency-based Business Education can enhance employability, entrepreneurship, innovation, opportunity recognition and students' capacity to independently create economic value. Thus, it provides a practical, performance-oriented connection between classroom learning and workplace or entrepreneurial realities, making practical skill acquisition and problem-solving competence important dimensions in developing capable and self-reliant Business Education graduates.

Dimensions of Competency-Based Business Education:

Practical Skill Acquisition

Practical skill acquisition refers to the process through which learners develop the ability to effectively perform specific tasks by applying acquired knowledge, techniques and procedures in real or simulated situations. In Business Education, it involves skills in bookkeeping, accounting, office management, marketing, business communication, entrepreneurship and computer applications, enabling students to transform theoretical knowledge into functional abilities applicable in workplaces and business ventures (Morris et al., 2013). Practical skill acquisition is essential for employment, entrepreneurship and self-

reliance because repeated practice builds students' proficiency, confidence and ability to perform tasks independently, such as preparing financial records, using accounting software, conducting market surveys and promoting products. Application-oriented competency frameworks further emphasize aligning educational competencies with workplace requirements (Baumgartner, 2018). Therefore, practical skill acquisition can enhance employability, adaptability and entrepreneurial capacity by reducing the gap between classroom knowledge and workplace expectations, while strengthening students' ability to identify opportunities, provide services, establish businesses and participate productively in economic activities.

Problem-Solving Competence

Problem-solving competence refers to the ability to identify problems, analyze their causes, generate and evaluate alternative solutions, and implement appropriate actions to achieve desired outcomes. It involves critical thinking, analytical reasoning, creativity, decision-making and the application of knowledge to unfamiliar situations, making it particularly important in Business Education, where students face changing consumer preferences, technological developments, competition and financial challenges (Morris et al., 2013). Its development requires exposure to realistic learning activities such as case studies, business simulations, problem-based learning, group projects, role plays and practical assignments, which enable students to apply knowledge, assess alternatives and make informed decisions. Mulder (2017) emphasizes that competence involves the integrated application of knowledge, skills and attitudes within specific contexts, indicating that problem-solving cannot be adequately developed through theoretical instruction alone. Strong problem-solving competence enhances employability, entrepreneurship and self-reliance by enabling graduates to respond independently and creatively to business challenges such as limited capital, competition, changing customer needs and supply difficulties.

Concept of Experiential Learning

Experiential learning refers to a learning process through which students acquire knowledge, skills and competencies through direct involvement in meaningful experiences, followed by reflection and application. Unlike lecture-based approaches that emphasize theoretical explanations, experiential learning actively engages learners in real or simulated situations such as business simulations, practical projects, case studies, role plays, entrepreneurship activities, fieldwork and workplace exposure. Kolb (1984) conceptualized it as a cycle involving concrete experience, reflective observation, abstract conceptualization and active experimentation. In Business Education, experiential learning is important because it enables students to make decisions, solve problems, collaborate, evaluate outcomes and learn from practical experiences, thereby connecting classroom theories with real business situations. Mason and Arshed (2013) noted that experiential approaches can develop entrepreneurial capabilities, while Motta and Galina (2023) found that experiential learning is increasingly applied in entrepreneurship education because it enables students to learn through action and experience. Through project-based activities, internships and industrial exposure, students can practise business skills, interact with real business environments and develop confidence in applying knowledge.

Measure of Experiential Learning:

Internship/Industrial Work Experience

Internship or industrial work experience refers to a structured period during which students are placed in actual organizations or workplaces to gain practical experience and apply classroom knowledge to real occupational situations. For Business Education students, such placements may occur in banks, accounting firms, business organizations, schools, government establishments and private enterprises, enabling them to observe professional practices, perform workplace tasks and understand occupational expectations (Jackson, 2015). As an important component of experiential learning, internship provides exposure to real customers, organizational procedures, business technologies, workplace communication, managerial decisions and operational challenges that may not be adequately reproduced in the classroom. Through this exposure, students can develop professional competence, communication, teamwork, adaptability, decision-making and problem-solving skills while receiving feedback from supervisors and experienced professionals. When properly structured and supervised, it can bridge the gap between academic preparation and workplace expectations, thereby contributing to the development of employable, entrepreneurial and self-reliant Business Education graduates.

Relationship between Competency-Based Business Education and Experiential Learning

Competency-Based Business Education and experiential learning are closely related because both emphasize the practical application of knowledge and development of demonstrable competencies through active learning. While Competency-Based Business Education focuses on what students can demonstrate in terms of knowledge, skills and abilities, experiential learning provides practical contexts in which these competencies can be developed and applied. Practical skill acquisition and problem-

solving competence are strengthened when students engage in realistic business activities requiring performance, analysis, creativity, decision-making and implementation of solutions (Morris et al., 2013). This relationship is evident in project-based learning, where students apply competencies to business plans, market research, resource management, opportunity identification and operational problem-solving. Project-based learning promotes autonomy, investigation, collaboration, communication and reflection (Kokotsaki, Menzies & Wiggins, 2016), while experiential approaches provide opportunities for entrepreneurial engagement and capability development (Mason & Arshed, 2013). The relationship is further demonstrated through internship or industrial work experience, which exposes students to authentic workplaces where they can apply practical skills, use business technologies, interact with professionals and respond to real organizational challenges. Such work-integrated learning supports the development of employability competencies by connecting academic knowledge with workplace contexts (Jackson, 2015). Therefore, Competency-Based Business Education provides the foundational knowledge and competencies, while project-based learning and internship/industrial work experience provide opportunities to apply, reinforce and further develop these competencies, making Business Education more practical and responsive to students' workplace, entrepreneurial and self-reliance needs.

Theoretical Review

The Study is anchored on Human Capital Theory and Experiential Learning Theory

Human Capital Theory, propounded by Gary Becker and further developed in 1993, holds that education, training, and skill acquisition constitute investments in individuals that enhance their knowledge, competencies, productivity, employability, income, innovation, entrepreneurship, and contribution to economic development (Becker, 1993). The theory is highly relevant to Competency-Based Business Education because it views education as a means of developing practical and measurable competencies rather than merely transmitting theoretical knowledge. Through Practical Skill Acquisition and Experiential Learning, including industrial training, internships, simulations, and entrepreneurship projects, students develop the competencies needed to innovate, identify business opportunities, solve business problems, and establish sustainable enterprises. In this study, Competency-Based Business Education represented by Practical Skill Acquisition and Experiential Learning, constitutes an investment in students' human capital, while the Development of Entrepreneurial Skills, measured by Innovation Skills and Business Opportunity Recognition, represents the expected outcomes of such investment. Thus, Human Capital Theory provides a strong foundation for explaining how competency-based educational experiences can enhance students' entrepreneurial capabilities, promote self-reliance and employability, encourage job creation, and contribute to sustainable economic development. While Experiential Learning Theory (ELT), developed by David A. Kolb in 1984, underpins the study by explaining that meaningful learning occurs through the transformation of experience rather than passive reception of information. Kolb (1984) conceptualized learning as a continuous cycle involving concrete experience, reflective observation, abstract conceptualization and active experimentation, through which learners participate in activities, reflect on their experiences, develop ideas and apply them to new situations. The theory is relevant to Competency-Based Business Education because students can develop practical skill acquisition and problem-solving competence through hands-on activities such as business simulations, practical exercises and projects, as well as through exposure to real business challenges (Morris et al., 2013). It also supports the use of project-based learning and internship/industrial work experience, where students apply classroom knowledge, interact with authentic business environments, receive feedback and experiment with alternative solutions. Jackson (2015) similarly emphasizes that work-integrated learning enables students to apply academic knowledge in workplace contexts and develop employability capabilities. Therefore, ELT provides a suitable theoretical foundation for the study by explaining how active experiences, reflection, conceptualization and experimentation can transform classroom knowledge into practical and problem-solving competencies, ultimately supporting students' ability to function effectively and independently in workplace and entrepreneurial environments.

Methodology

The study adopted a descriptive correlational survey design to investigate the relationship between Competency-Based Business Education and Experiential Learning in Enhancing Self-Reliance among Business Education Students. The study population comprised 219 students of 300L and 400L 2025/2026 academic sessions enrolled in Business Education programmes at Delta State University, Abraka, and University of Delta, Agbor, which are the two state-owned universities offering Business Education programmes in Delta State. A structured questionnaire was used as the principal instrument for data collection. The instrument was subjected to expert validation to ascertain its appropriateness and clarity, while its reliability was established using the Cronbach's alpha reliability coefficient. Out of

the 219 copies of the questionnaire administered, 200 copies were successfully retrieved and found usable for the analysis, representing the valid responses used for the study. The data obtained from the respondents were analyzed using appropriate descriptive and inferential statistical techniques. Descriptive statistics were employed to summarize the responses of the students, while the Pearson Product Moment Correlation Coefficient (PPMC) was used to test the hypothesized relationships at the 0.05 level of significance. The analysis provided empirical evidence on the relationship between competency-based Business Education and the development of entrepreneurial skills among undergraduate Business Education students.

Data Presentation Analysis

The data collected were presented in this section. A total of 219 copies of the questionnaire were administered to the respondents.

Table 1: Questionnaire Administration

S/N		Number
1	**Questionnaires administered**	219
2	**Questionnaires returned**	200
3	**Questionnaires not returned**	19
4	**Total usable copies**	**200**

Source: Field Survey, 2026.

Table 1 above shows the order in which copies of the questionnaire were administered to the respondents and their collection rate. From the table, out of the 219 copies of the questionnaire administered to the respondents, 200 copies were successfully processed and used while 19 were either not completely filled or retrieved.

Bivariate Analysis

Hypothesis Onek

Ho_1: There is no significant relationship between Practical Skill Acquisition and Internship/Industrial Work Experience in enhancing self-reliance among business education students.

Table 2: Bivariate Analysis between Practical Skill Acquisition and Internship/Industrial Work Experience

	Practical Skill Acquisition	Internship/Industrial Work Experience
Practical Skill Acquisition	Correlation Coefficient	1.000
	Sig. (2-tailed)	.
	N	200
Internship/Industrial Work Experience	Correlation Coefficient	.534**
	Sig. (2-tailed)	.000
	N	200

Source: Field Survey, 2026.

Correlation is significant at the 0.01 level (2-tailed).

The correlation coefficient r = 0.534 indicates a moderate positive relationship between practical skill acquisition and internship/industrial work experience among Business Education students. The significance value p = 0.000 is less than 0.05. Consequently, the null hypothesis is rejected. This indicates that there is a statistically significant relationship between practical skill acquisition and internship/industrial work experience. The finding suggests that the development of practical skills is positively associated with students' exposure to or participation in internship and industrial work experiences.

Hypothesis Two

Ho_2: There is no significant relationship between Problem-Solving Competence and Internship/Industrial Work Experience in enhancing self-reliance among business education students.

Table 3: Bivariate Analysis between Problem-Solving Competence and Internship/Industrial Work Experience

	Problem-Solving Competence	Internship/Industrial Work Experience
Problem-Solving Competence	Correlation Coefficient	1.000
	Sig. (2-tailed)	.
	N	200
Internship/Industrial Work Experience	Correlation Coefficient	.566**
	Sig. (2-tailed)	.000
	N	200

Source: Field Survey, 2026.

Correlation is significant at the 0.01 level (2-tailed).

The correlation coefficient r = 0.566 indicates a moderate positive relationship between problem-solving competence and internship/industrial work experience among Business Education students. The significance value p = 0.000 is less than the 0.05 level of significance. Therefore, the null hypothesis is rejected. This implies that there is a statistically significant relationship between problem-solving competence and internship/industrial work experience among Business Education students. The finding suggests that students with stronger problem-solving competence tend to have greater capacity to benefit from or engage effectively in internship and industrial work experiences.

Discussion of Findings

The findings revealed significant positive relationships between the dimensions of Competency-Based Business Education and the measures of Experiential Learning in enhancing self-reliance among Business Education students. Practical Skill Acquisition had a strong positive relationship with Internship/Industrial Work Experience ($r = 0.534$, $p < 0.05$). This suggests that students with stronger practical competencies are more likely to gain greater benefits from workplace exposure. Hands-on training, simulations and practical exercises enable students to translate theoretical knowledge into practical abilities. The findings support Morris et al. (2013), who emphasized competency development through practical entrepreneurial education, Abdulkarim (2019), who reported that action-based experiential approaches enhance entrepreneurial skills acquisition among Business Education students, and Baumgartner (2018), who stressed the importance of application-oriented competencies for meeting workplace requirements. Similarly, Problem-Solving Competence showed a moderate positive relationship with Internship/Industrial Work Experience ($r = 0.566$, $p < 0.05$). This indicates that participation in authentic workplace experiences is significantly associated with students' ability to identify problems, analyze situations, generate alternatives and implement appropriate solutions. It also helps develops critical thinking, creativity, collaboration and decision-making Additionally, industrial experience also exposes students to real organizational challenges. These findings agree with Okolie et al. (2021), who reported a positive association between entrepreneurship education and creative problem-solving among Nigerian undergraduates, Jackson (2015), who emphasized the role of work-integrated learning in applying academic knowledge and developing employability capabilities, and Kokotsaki et al. (2016), who identified project-based learning as an effective approach for promoting active learning, investigation, collaboration and problem-solving skills.

Conclusion

The study examined the relationship between competency-based business education and experiential learning in enhancing self-reliance among business education students, focusing on practical skill acquisition and problem-solving competence as dimensions of CBBE and project-based learning and internship/industrial work experience as measures of Experiential Learning. The findings revealed that practical skill acquisition has a strong positive relationship with internship/industrial work experience, while problem-solving competence also has significant positive relationships with internship/industrial work experience. The study therefore concludes that competency-based business education is an effective approach to strengthening experiential learning because the development of practical skills and problem-solving competence enables students to apply theoretical knowledge, undertake meaningful projects, solve real-life business problems and gain valuable workplace experience. Strengthening competency-based instructional practices and experiential learning opportunities in

business education is consequently essential for improving students' practical competence, employability, entrepreneurship, self-reliance, workplace readiness and capacity to contribute meaningfully to sustainable economic development.

Recommendations

1. Business Education departments should strengthen practical skill acquisition by providing regular hands-on activities, simulations, business laboratories, practical assignments and entrepreneurship projects.

2. Universities should strengthen internship and industrial work experience programmes by establishing partnerships with relevant businesses, banks, accounting firms, government establishments, entrepreneurial ventures and other organizations.

3. Business Education lecturers and curriculum developers should emphasize problem-solving competence by incorporating case studies, business simulations, problem-based tasks, group assignments and real-life business scenarios into teaching.

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COMPETENCY-BASED BUSINESS EDUCATION AND DEVELOPMENT OF ENTREPRENEURIAL SKILLS AMONG UNDERGRADUATE STUDENTS OF BUSINESS EDUCATION IN DELTA STATE

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Abstract

This study examined competency-based business education and development of entrepreneurial skills among undergraduate students in Business Education in Delta State. The study was motivated by the persistent challenge of graduate unemployment and the concern of excessive emphasis on theoretical instruction which limits students' acquisition of practical competencies required for self-employment and enterprise development. Specifically, the study investigated the relationships between practical skill acquisition and innovation skills, practical skill acquisition and business opportunity recognition, experiential learning and innovation skills, and experiential learning and business opportunity recognition. The study anchored on Human Capital Theory and adopted a descriptive correlational survey design. The population comprised 219 undergraduate Business Education students drawn from Delta State University, Abraka, and University of Delta, Agbor. A structured questionnaire was used for data collection, while data were analysed using Pearson Product Moment Correlation at the .05 level of significance. The study obtained 195 usable responses from the 219 questionnaires administered. The findings revealed a strong and statistically significant positive relationship between practical skill acquisition and innovation skills ($r = 0.512$, $p < 0.05$), experiential learning also demonstrated significant positive relationship with innovation skills ($r = 0.387$, $p < 0.05$). Based on the findings, it was concluded that competency-based business education significantly contributes to the development of entrepreneurial skills among undergraduate Business Education students by bridging the gap between theoretical knowledge and practical business experience. The paper, therefore recommended that, there should be strengthened practical training, experiential learning, entrepreneurship laboratories, business incubation programmes, and university-industry collaboration to enhance students' innovation capabilities, opportunity recognition, employability, and self-reliance.

Keywords: Competency-Based Business Education, Practical Skill Acquisition, Experiential Learning, Innovation Skills, Business Opportunity Recognition, Entrepreneurial Skills.

Introduction

Business Education is vital to economic development because it equips learners with knowledge, attitudes, and practical competencies for employment, self-reliance, and entrepreneurship. The changing global business environment, technological advancement, and graduate unemployment have

increased the need for Competency-Based Business Education (CBBE), which emphasizes practical skill acquisition and the demonstration of competencies through learner-centered activities such as problem-solving, critical thinking, collaboration, simulations, internships, industrial training, and project-based learning (Mulder, 2017; Okoro, 2021). CBBE promotes entrepreneurial skills such as opportunity recognition, creativity, innovation, business planning, financial management, leadership, decision-making, and risk management, which are essential for venture creation and sustainability. Although entrepreneurship education has been incorporated into Nigerian university curricula to promote self-employment, many graduates still experience competency gaps due to excessive theoretical instruction, inadequate practical exposure, limited facilities, and weak industry collaboration (UNESCO, 2021; Oviawe & Uwameiye, 2020; Audu & Idris, 2022). Grounded in Kolb's Experiential Learning Theory and Becker's Human Capital Theory, competency-based education emphasizes learning through concrete experience, reflection, conceptualization, active experimentation, and investment in productive skills (Kolb, 2024; Becker, 1993). Empirical studies further indicate that competency-based instructional practices can enhance entrepreneurial intentions, venture creation capabilities, innovation, employability, and other practical competencies among university students (Rahman et al., 2021; Nwosu & Chukwuemeka, 2023).

Statement of the Problem

The rising rate of graduate's unemployment and underemployment in Nigeria has heightened concerns about whether Business Education students acquire the practical and entrepreneurial competencies needed for employment and venture creation. Although entrepreneurship and Business Education are intended to promote self-reliance, observations have shown that most graduates still struggle to secure meaningful employment or establish sustainable businesses. This may not be unconnected with the inadequate implementation of competency-based instructional practices due to insufficient practical facilities, funding constraints, limited industry collaboration, outdated teaching methods, and inadequate exposure to real business environments. Competency-Based Business Education (CBBE) seeks to address this gap by emphasizing practical skill acquisition, hands-on learning, problem-solving, experiential activities, and continuous assessment to develop competencies such as innovation, opportunity recognition, business planning, critical thinking, decision-making, communication, and leadership. Against this backdrop, the study examined the relationship between CBBE and entrepreneurial skills among undergraduate Business Education students, specifically focusing on how practical skill acquisition and experiential learning relate to innovation skills and business opportunity recognition, with the findings expected to guide curriculum developers, lecturers, university administrators, policymakers, and other stakeholders in strengthening competency-based practices that enhance entrepreneurial competence, employability, self-reliance, and sustainable economic development.

Purpose of the Study

The main purpose of this study is to examine the relationship between Competency-Based Business Education and the Development of Entrepreneurial Skills among Undergraduate Students of Business Education.

The specific objectives of the study are to:

1. investigate the relationship between Practical Skill Acquisition and Innovation Skills among undergraduate students of Business Education.
2. examine the relationship between Experiential Learning and Innovation Skills among undergraduate students of Business Education.

Research Questions

The following research questions guided the study

1. What is the relationship between Practical Skill Acquisition and Innovation Skills among undergraduate students of Business Education in Delta State?
2. What is the relationship between Experiential Learning and Innovation Skills among undergraduate students of Business Education in Delta State?

Research Hypotheses

The following null hypotheses were tested at the 0.05 level of significance

Ho_1: There is no significant relationship between Practical Skill Acquisition and Innovation Skills among undergraduate students of Business Education in Delta State

Ho_2: There is no significant relationship between Experiential Learning and Innovation Skills among undergraduate students of Business Education in Delta State

Conceptual Review
Concept of Competency-Based Business Education

Conceptual Framework

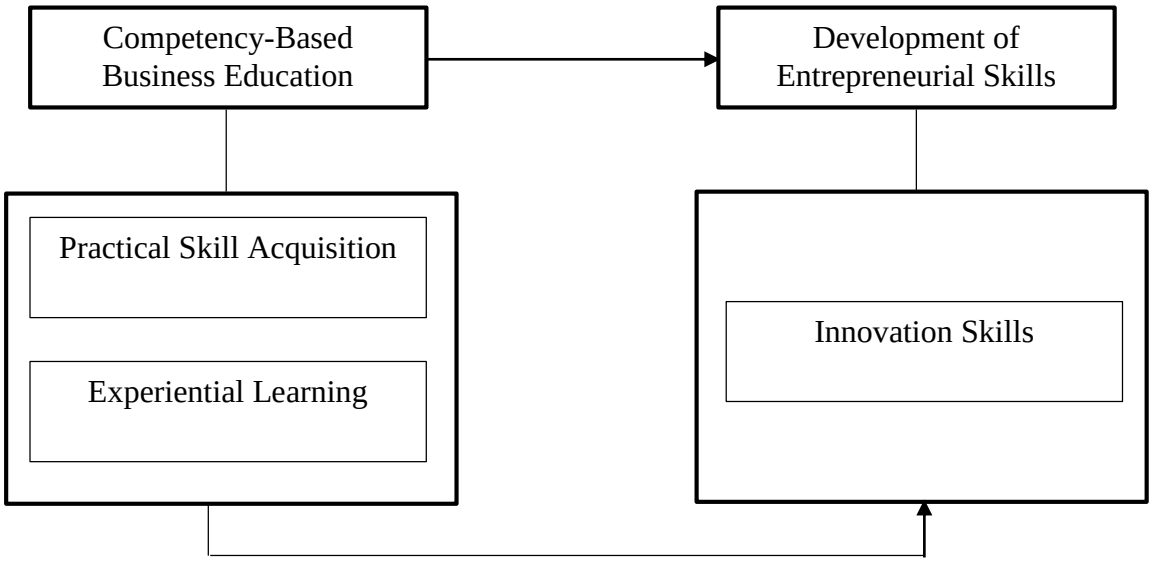


Figure 1: Showing the conceptual framework of the relationship among competency-based business education and the development of entrepreneurial skills among undergraduate students of business education.

Source: (Researcher's Conceptualization, 2026)

Competency-Based Business Education (CBBE) is a learner-centered and outcome-oriented approach that focuses on the acquisition, development, and demonstration of measurable knowledge, practical skills, attitudes, and values required for effective performance in business and entrepreneurial activities. Unlike traditional content-based education, CBBE emphasizes the application of knowledge to real-life business situations and integrates strategies such as project-based learning, simulations, case studies, internships, industrial work experience, collaborative learning, business incubation, and experiential learning. Its assessment also focuses on students' ability to demonstrate practical competence rather than relying solely on written examinations. By equipping learners with competencies such as communication, leadership, digital literacy, financial management, critical thinking, creativity, teamwork, problem-solving, and decision-making, CBBE helps bridge the gap between classroom learning and workplace requirements, enabling graduates to adapt to changing labour-market demands, identify entrepreneurial opportunities, achieve self-reliance, and contribute to sustainable economic development (Mulder, 2017; UNESCO, 2021; Okoro, 2021; Oviawe, 2020).

Dimensions of Competency-Based Business Education
Practical Skill Acquisition

Practical Skill Acquisition refers to the systematic development of hands-on, technical, and occupational competencies that enable Business Education students to perform specific business and entrepreneurial tasks effectively. Within Competency-Based Business Education (CBBE), it emphasizes applying theoretical knowledge to real-life activities such as bookkeeping, office management, business communication, digital marketing, financial record keeping, customer relations, and entrepreneurial decision-making. Practical skill acquisition is strengthened through learner-centered methods including demonstrations, workshops, simulations, laboratory practices, case

studies, project-based learning, industrial work experience, internships, cooperative education, and entrepreneurship projects. These experiences integrate technical skills with soft skills such as communication, teamwork, leadership, creativity, and problem-solving, while repeated practice and performance-based assessment help students achieve mastery and confidence. By exposing learners to authentic business environments and continuous practice, practical skill acquisition enhances task performance, adaptability, employability, and entrepreneurial competence, thereby preparing Business Education graduates for both paid employment and self-employment (Okoro, 2021; Mulder, 2017; Oviawe, 2020).

Experiential Learning

Experiential Learning is a learner-centered approach that promotes learning through direct experience, active participation, reflection, and practical engagement in real-life situations. In Competency-Based Business Education, it enables students to connect classroom knowledge with authentic business experiences through activities such as internships, industrial attachments, simulations, field trips, enterprise projects, business plan competitions, and community-based initiatives. Kolb (2024) explains that experiential learning involves transforming experiences into meaningful knowledge through a continuous cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation. This process helps Business Education students develop entrepreneurial competencies including opportunity recognition, creativity, innovation, leadership, critical thinking, decision-making, communication, and business management, while also promoting independence, adaptability, resilience, and collaboration. By combining practical engagement with reflection and application, experiential learning strengthens learners' cognitive, behavioural, and affective development and prepares them to respond effectively to the challenges of contemporary entrepreneurship (Kolb, 2024; Beard & Wilson, 2018).

Concept of Development of Entrepreneurial Skills

Development of Entrepreneurial Skills refers to the continuous process through which individuals acquire and apply the knowledge, competencies, attitudes, and behaviours needed to identify opportunities, establish and manage businesses, mobilize resources, and sustain enterprise growth. In Business Education, entrepreneurial skill development is a key objective of competency-based learning because it prepares students for self-reliance, employment creation, and productive participation in the economy. These skills include innovation, opportunity recognition, creativity, leadership, communication, financial management, critical thinking, problem-solving, negotiation, business planning, adaptability, and resilience, which are developed more effectively through practical experiences such as experiential learning, projects, internships, industrial training, mentorship, and business simulations rather than theoretical instruction alone. Competency-Based Business Education provides students with authentic learning opportunities that encourage entrepreneurial thinking, confidence, and the practical application of business knowledge. Ultimately, entrepreneurial skill development enables undergraduate Business Education students to transform ideas into innovative and sustainable ventures, while enhancing their employability and contributing to economic development (Hisrich, Peters, & Shepherd, 2020; Oviawe, 2020; Neck, Greene, & Brush, 2018; Fayolle & Gailly, 2025).

Measure of Development of Entrepreneurial Skills

Innovation Skills

Innovation skills refer to the ability to generate, develop, and implement new or improved ideas, products, services, and processes that create value and respond to changing market and societal needs. In entrepreneurship, innovation involves not only creating new products but also improving existing products, adopting efficient production methods, developing new marketing strategies, and finding creative solutions to business challenges. Within Business Education, competency-based approaches develop innovation through critical thinking, creativity, experimentation, collaboration, problem-solving, and practical activities such as business simulations, project-based learning, product design, business plan development, entrepreneurship competitions, and collaborative exercises. Innovation skills encompass creative thinking, opportunity exploration, idea generation, adaptability, calculated risk-taking, technological literacy, decision-making, and continuous learning. By exposing students to real-life business challenges and encouraging them to develop and implement feasible solutions, Competency-Based Business Education enables undergraduate students to transform business ideas into viable and sustainable ventures capable of competing effectively in dynamic business environments (Schumpeter, 2024).

Competency-Based Business Education and Development of Entrepreneurial Skills

Competency-Based Business Education (CBBE) is designed to develop learners' practical competencies and therefore plays an important role in entrepreneurial skill development by

emphasizing the mastery and application of knowledge, technical skills, attitudes, and values required for effective business practice. Through practical skill acquisition, experiential learning, simulations, internships, business projects, and industrial work experience, students develop the capacity to identify opportunities, generate innovative ideas, solve business problems, and establish sustainable enterprises. Human Capital Theory suggests that investment in education and skills enhances individual productivity and economic potential (Becker, 1984), while Kolb's Experiential Learning Theory emphasizes learning through concrete experience, reflection, conceptualization, and active experimentation (Kolb, 1984). Practical and experiential learning therefore strengthens innovation, creativity, critical thinking, opportunity recognition, leadership, decision-making, adaptability, resilience, and problem-solving. Empirical studies support this relationship, with Rahman, Uddin, and Khan (2021) reporting that competency-based instruction enhances entrepreneurial intention, innovation, and opportunity recognition, while Oviawe (2020) found that practical-oriented business education improves entrepreneurial competence and employability; Mulder (2017) similarly emphasized the integration of knowledge, skills, and professional attitudes through authentic learning experiences. Thus, increased exposure to competency-based learning is expected to enhance entrepreneurial skills, particularly innovation and business opportunity recognition, while promoting self-reliance, employability, employment creation, and sustainable economic development.

Theoretical Review

The Study is anchored on Human Capital Theory

Human Capital Theory

Human Capital Theory, propounded by Gary Becker and further developed in 1993, holds that education, training, and skill acquisition constitute investments in individuals that enhance their knowledge, competencies, productivity, employability, income, innovation, entrepreneurship, and contribution to economic development (Becker, 1993). The theory is highly relevant to Competency-Based Business Education (CBBE) because it views education as a means of developing practical and measurable competencies rather than merely transmitting theoretical knowledge. Through Practical Skill Acquisition and Experiential Learning, including industrial training, internships, simulations, and entrepreneurship projects, students develop the competencies needed to innovate, identify business opportunities, solve business problems, and establish sustainable enterprises. In this study, CBBE, represented by Practical Skill Acquisition and Experiential Learning, constitutes an investment in students' human capital, while the Development of Entrepreneurial Skills, measured by Innovation Skills and Business Opportunity Recognition, represents the expected outcomes of such investment. Thus, Human Capital Theory provides a strong foundation for explaining how competency-based educational experiences can enhance students' entrepreneurial capabilities, promote self-reliance and employability, encourage job creation, and contribute to sustainable economic development.

Empirical Review

Rahman, Uddin, and Khan (2021) investigated the influence of competency-based education on entrepreneurial intention among university students in Bangladesh. The study adopted a quantitative survey research design involving 412 undergraduate students selected from four public universities. Data were collected using a structured questionnaire and analyzed using Structural Equation Modeling (SEM). The findings revealed that competency-based instructional practices, particularly practical learning experiences and experiential activities, had a significant positive influence on students' entrepreneurial intention, innovation capability, and opportunity recognition. Students who actively participated in practical projects and experiential learning demonstrated higher levels of creativity and entrepreneurial confidence than those exposed mainly to conventional teaching methods. The study concluded that competency-based education enhances entrepreneurial competence by integrating theoretical knowledge with practical experience. The relevance of this study to the present research lies in its emphasis on competency-based learning as a predictor of entrepreneurial skills among undergraduate students. However, while the study focused on entrepreneurial intention in Bangladesh, the present study will examine the relationship between competency-based business education and the development of entrepreneurial skills among undergraduate Business Education students in Nigeria.

Oviawe (2020) examined entrepreneurship education and sustainable development in Nigerian universities with emphasis on practical business education. The study employed a descriptive survey design involving lecturers and undergraduate students from selected Nigerian universities. Data were collected through questionnaires and analyzed using descriptive statistics and Pearson Product Moment Correlation. The findings indicated that practical-oriented instructional strategies, industrial training, business simulations, and project-based learning significantly enhanced entrepreneurial competencies, innovation, and employability among students. The study further identified inadequate

instructional facilities, poor funding, and insufficient practical exposure as major constraints to effective entrepreneurship education implementation. The researcher concluded that universities should strengthen competency-based instructional practices to improve graduate self-employment and enterprise development. This study is relevant because it demonstrates the importance of practical skill acquisition in developing entrepreneurial competence. Nevertheless, it focused broadly on entrepreneurship education, whereas the present study specifically investigates competency-based business education using practical skill acquisition and experiential learning as dimensions.

Nwosu and Chukwuemeka (2023) investigated the relationship between competency-based learning and entrepreneurial skill acquisition among university students in South-East Nigeria. The study adopted a correlational research design involving 350 undergraduate students selected through stratified random sampling. Data were analyzed using Pearson Product Moment Correlation and multiple regression analysis. The findings revealed a strong positive relationship between competency-based learning strategies and entrepreneurial competencies, particularly innovation, creativity, business opportunity identification, and business planning. The study concluded that competency-based instructional practices significantly improve students' entrepreneurial capabilities by providing opportunities for practical engagement and experiential learning. The study recommended greater investment in entrepreneurship laboratories, industrial partnerships, and practical business education. The relevance of the study lies in its demonstration that competency-based learning contributes significantly to entrepreneurial skill acquisition. However, unlike the present study, it did not specifically focus n undergraduate students of Business Education or examine experiential learning as a separate dimension.

Methodology

This study employed a descriptive correlational survey design to examine the relationship between competency-based business education and the development of entrepreneurial skills among undergraduate students of business education. The population was restricted to students enrolled in Delta State University Abraka and University of Delta Agbor, the two state owned universities offering Business Education programmes in the state, making a total study population of 219 students as captured in the documented enrolment figures. A structured questionnaire was used for data collection instrument, validated through three (3) experts review and assessed for reliability using Cronbach's alpha. The study obtained 200 usable responses from the 219 questionnaires administered. Data analysis involved descriptive statistics to summarize student responses and Pearson Product Moment Correlation Coefficient to test the hypothesized relationships at .05 significance level. These findings provided empirical evidence that competency-based business education significantly contributes to the development of entrepreneurial skills among undergraduate Business Education students.

Data Presentation Analysis

The data collected in the questionnaire were presented in this section. A total of 150 copies of the questionnaire were administered to the respondents.

Table 1: Questionnaire Administration

S/N		Number
1	**Questionnaires administered**	219
2	**Questionnaires returned**	195
3	**Questionnaires not returned**	24
4	**Total usable copies**	**195**

Source: Field Survey, 2026.

Table 1 shows the order in which copies of the questionnaire were administered to the respondents and their collection rate. From the table, it is observed that out of the 219 copies of the questionnaire administered to the respondents, 195 copies were collected and were useful while 24 were not retrieved.

Bivariate Analysis

Hypothesis One

Ho_1: There is no significant relationship between Practical Skill Acquisition and Innovation Skills among undergraduate students of Business Education.

Table 2: Bivariate Analysis between Practical Skill Acquisition and Innovation Skills

	Practical Skill Acquisition	Innovation Skills
Practical Skill Acquisition	Correlation Coefficient	1.000
	Sig. (2-tailed)	.
	N	195
Innovation Skills	Correlation Coefficient	.512**
	Sig. (2-tailed)	.000
	N	195

Source: Field Survey, 2026. Correlation is significant at the 0.01 level (2-tailed).

The correlation coefficient r = 0.512 indicates a strong positive relationship between practical skill acquisition and innovation skills. the significance value (p = 0.000) is less than 0.05, so the null hypothesis is rejected. this implies that improvements in practical skill acquisition significantly enhance the innovation skills of students.

Hypothesis Two

Ho_2: There is no significant relationship between Experiential Learning and Innovation Skills among undergraduate students of Business Education.

Table 3: Bivariate Analysis between Experiential Learning and Innovation Skills

	Experiential Learning	Innovation Skills
Experiential Learning	Correlation Coefficient	1.000
	Sig. (2-tailed)	.
	N	195
Innovation Skills	Correlation Coefficient	.387**
	Sig. (2-tailed)	.000
	N	195

Source: Field Survey, 2026. Correlation is significant at the 0.01 level (2-tailed).

The correlation coefficient r = 0.387 indicates a moderate positive relationship between Experiential Learning and Innovation Skills. With p = 0.000 < 0.05, the null hypothesis is rejected. This implies that Experiential Learning significantly influence students' Innovation Skills abilities.

Discussion of Findings

The findings established significant positive relationships between the dimensions of Competency-Based Business Education and the development of entrepreneurial skills among undergraduate Business Education students. Practical Skill Acquisition showed a strong relationship with Innovation Skills ($r = 0.512$, $p < 0.05$) indicating that hands-on training, practical business activities, simulations, and entrepreneurship projects enhance students' creativity, innovative thinking, problem-solving, and ability to identify viable business opportunities. These findings support Becker's Human Capital Theory (1993) and are consistent with Rahman et al. (2021), Nwosu and Chukwuemeka (2023), and Oviawe (2020), who emphasized the contribution of practical competency development to innovation, opportunity recognition, and entrepreneurial competence. Similarly, Experiential Learning was significantly related to Innovation Skills ($r = 0.387$, $p < 0.05$) demonstrating that internships, industrial attachments, simulations, field trips, business incubation, and other authentic learning experiences enhance students' innovative abilities and capacity to recognize and evaluate entrepreneurial opportunities. The findings support Kolb's Experiential Learning Theory (2024), as well as Gubik and Bartha (2019) and Ardichvili et al. (2023), who highlighted the importance of practical experience, reflection, prior knowledge, and environmental awareness in developing innovation and opportunity recognition. Overall, the results confirm that competency-based business education, particularly through practical skill acquisition and experiential learning, significantly contributes to the development of entrepreneurial skills among undergraduate Business Education students.

Conclusion

The study examined the relationship between Competency-Based Business Education (CBBE) and the Development of Entrepreneurial Skills among undergraduate Business Education students, focusing on Practical Skill Acquisition and Experiential Learning as dimensions of CBBE and Innovation Skills as measure of entrepreneurial skills. The findings revealed that Practical Skill Acquisition has a strong positive relationship with Innovation Skills while Experiential Learning also has significant positive relationships with Innovation Skills. The study therefore concludes that competency-based business education is an effective approach to developing entrepreneurial skills because practical learning and exposure to real-world business environments enable students to apply theoretical knowledge, generate innovative ideas, identify viable opportunities, and develop sustainable ventures. Strengthening competency-based instructional practices in Business Education is consequently essential for improving students' entrepreneurial competence, employability, self-reliance, job creation, and contribution to sustainable economic development.

Recommendations

Based on the findings and conclusion of the study, the following recommendations are made:

1. University management and Business Education departments should strengthen practical skill acquisition programmes by providing well-equipped entrepreneurship laboratories, business simulation centres, and practical workshops that enable students to acquire relevant entrepreneurial competencies.
2. Lecturers should integrate experiential learning strategies into Business Education instruction through internships, industrial attachments, business incubation programmes, field trips and business plan competitions to enhance students' innovation skills and entrepreneurial capacity.
3. Government, educational agencies, and university administrators should increase funding for competency-based Business Education programmes by providing modern instructional facilities, digital technologies, and entrepreneurship support initiatives that promote effective practical learning.
4. Universities should establish stronger partnerships with industries, entrepreneurs, and business organizations to provide mentorship opportunities, industrial training, and real-world business experiences that will improve students' ability to recognize and exploit viable business opportunities.

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FROM DIGITAL SKILLS TO AI COMPETENCIES: REIMAGINING BUSINESS EDUCATION FOR ENTREPRENEURIAL SUCCESS IN NIGERIA

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Abstract

Entrepreneurship is drastically changing with the advent of Artificial Intelligence (AI) in an era of automation, data-driven decision making, innovation, customer engagement and new ways of business value creation. Participating in an AI-driven economy, however, goes beyond merely having access to digital tools; it demands skills that empower people to grasp, assess and implement AI technologies in entrepreneurship in a responsible manner. This study looks at the competencies of AI that can be relevant to entrepreneurial success and provides a framework for integrating AI competencies into the Business Education curriculum in Nigeria using evidence informed approach. The methodology used is documentary research design that included directed qualitative content analysis, competency extraction, curriculum mapping and synthesis of curriculum framework. The relevant AI competency frameworks, Nigerian curriculum documents, policy documents, labour-market reports and current studies on AI competency, entrepreneurship education and digital competencies were analyzed. The results highlight seven key competency areas of AI that are crucial for entrepreneurial development: AI literacy and foundations, Human-AI interaction, data-informed decision-making, business-process automation, AI-enabled marketing, innovation and venture development, and critical and responsible AI use. The finding of the curriculum mapping indicates that none of the AI competency areas were found to be explicitly present within the curriculum provision *while few were implicitly present in existing digital, entrepreneurial and technological learning outcomes. The study proposed a framework for the Business Education curriculum which integrates AI into the existing business education courses rather creating a stand-alone AI course, with a focus on the progressive development of understanding from basic awareness of AI to the application of AI in real-life business scenarios. The study adds to the discourse on curriculum by defining the competence in AI as an emerging type of human capital that demands transferable knowledge, skills, critical thinking and ethical responsibility.*

Keywords: Artificial Intelligence; AI Competencies; Entrepreneurship Education; Business Education; Curriculum Redesign; Digital skill

1. Introduction

The advent of Artificial Intelligence (AI) has shown to be a major force of economic change, impacting how organisations generate value, analyse information, make decisions, and develop products and services. Machine learning, generative AI and automation and intelligent automation have evolved rapidly making the use of technologies accessible to non-specialised technical environments. In the context of today's economic system, digital literacy alone is no longer sufficient as skills and knowledge are needed to understand the capabilities of AI, assess AI outputs and apply AI responsibly to real-world problems. The Organisation for Economic Co-operation and Development (OECD) suggests that AI is changing what occupations need to have in terms of skills, with the growing emphasis on management, analytical, and business-process skills in AI-exposed settings (Green, 2024). Likewise, the International Labour Organization (ILO, 2024) highlights that in a digitally transformed economy, not only must it have technical skills, but it must have transferable skills as well to ensure productivity and adaptation.

Higher Education Institutions (HEIs) hold a significant stake in AI transformation, as its impact on their operations and missions grows increasingly pronounced. The role of universities is no longer just to train future specialists working on the design of AI systems, but to also create graduates in all disciplines

with the capacity to work successfully and responsibly with AI technologies. UNESCO's AI Competency Framework for Students emphasizes the human-centred thinking, ethical consciousness, AI techniques, and the use of AI systems as opposed to just using technical tools (UNESCO, 2024). The view is that future graduates should be capable of being technologically literate and have critical thinking, judgement and responsible decision-making skills.

One area where AI skills are becoming more crucial for entrepreneurs is in the field of Entrepreneurship. AI technologies aid entrepreneurial initiatives like opportunity identification, market analysis, customer engagement, business planning, content creation, forecasting and operational efficiency. Entrepreneurs, especially, have seen new opportunities with the advent of generative AI, as AI systems can outperform them in information processing, idea generation, and business experimentation. Entrepreneurial value isn't a byproduct of the ability to access AI tools, though. AI's use needs to be understood by the entrepreneurs, effective communication with AI systems is required, the information produced needs to be evaluated and human judgment should be used to make business decisions. Bell and Bell (2023) thus reason that entrepreneurship education should not forget to incorporate generative AI with critical, reflective and practical entrepreneurial capabilities. In the same way, Chalmers, MacKenzie and Carter (2024) was able to show that AI can contribute to the development of entrepreneurial competency when students engage with the AI in meaningful learning activities.

The need for AI competence is particularly important in Business Education as it is a subject that is on the intersection of Business knowledge, technology, management, and entrepreneurship. Business Education graduates are expected to work in an environment where organisations are increasingly dependent on data analysis, automation, digital marketing and decision making based on technology. Graduates, therefore, might be expected to have some skills and knowledge of the applications of AI in fields such as accounting, marketing, management, office technology and enterprise development, but not necessarily high-level coding expertise. These competencies include AI-supported financial analysis, customer intelligence, business modelling, workflow automation, innovation management and responsible AI application.

This is a salient issue in the Nigerian context. The National Artificial Intelligence Strategy of the Federal Government of Nigeria (FMCIDE, 2024) defines AI as one of the critical mechanisms for economic growth, innovation, technological advancement and enhanced productivity, and talents development and skill acquisition as some of the key areas to meet the demand for national AI development. As the digital economy in Nigeria grows, so does the need for HEIs to equip their graduates with the skills needed to harness new technologies to address entrepreneurial and organisational problems. The World Bank (2025) also calls for fostering advanced digital skills, building stronger university-industry relations and innovation ecosystems for supporting digital entrepreneurship.

However, a crucial question is yet to be answered in relation to the extent to which Business Education curriculum in Nigeria is aligned with the competencies of Artificial Intelligence (AI) that are increasingly demanded for entrepreneurship practice. There might be existing curriculum components that are relevant to digital, technological and entrepreneurial considerations; however, the constantly evolving capabilities of AI tools necessitate a systematic analysis of the current curriculum to determine if it is sufficient to cover AI-specific knowledge, application skills, ethical standards, and entrepreneurial use-cases.

The question is not just if AI courses are offered in Business Education programmes, but also if curricula are designed to equip students with transferable AI skills that help them to comprehend, leverage, and critically consider the use of AI in business settings. To tackle this, it is necessary to systematically analyze AI competency frameworks, policy documents, and curriculum requirements and relevant research evidence. Thus, this study focuses on the competencies of AI that are relevant to entrepreneurial success, explores the extent of the integration of AI competencies in the provisions of the Nigerian Business Education curriculum and proposes an evidence-informed framework for incorporating AI into the curriculum.

1.1 Statement of the Problem

Artificial Intelligence offers entrepreneurship opportunities by altering how entrepreneurs discover opportunities, analyse the markets, communicate with customers and even how operations are carried out. The Nigerian National Artificial Intelligence Strategy also recognizes human capital development

as an important requirement for AI adoption and the digital transition (FMCIDE, 2024). For Business Education, this transition means that all the aspects related to employability, readiness for enterprise and business capacities now require to be AI-supported because of the integral role of Business Education in these aspects.

Yet, the current reality of doing businesses assisted by AI necessitates new kinds of competencies beyond just digital literacy. Entrepreneurs now need to be able to comprehend AI possibilities and constraints, be able to engage with a generative AI model, draw conclusions and generate solutions supported by AI, automate processes, leverage AI for marketing purposes, and make appropriate decisions for technology deployment. Even though several recent authors have noted the relevance of AI for entrepreneurial education (e.g. Bell & Bell, 2023; Chalmers et al., 2024; Darnell & Gopalkrishnan, 2024), there is still limited research on the entrepreneurial AI skills that are needed by business educators in Nigeria and how they are being addressed by Business Education curriculum. Thus, there is a gap relating to understanding, in a more context-specific manner, the fit between AI competencies required in the contemporary business environment and what the Business Education Curriculum provide to graduates. As a matter of fact, failure to understand this alignment, curriculum change will continue to be an iterative process of targeting specific AI applications.

The aim of this study, therefore, is to identify entrepreneurial AI competencies and, consequently, translate these competencies into an evidence-based AI integration framework for Nigerian Business Education curriculum based on documentary analysis of AI competency standards, curriculum documents, policy documents and literature on AI and entrepreneurial education.

1.2 Purpose and Objectives of the Study

This study aims to establish AI competencies for successful entrepreneurship, investigate how these competencies feature in the current Business Education curriculum in Nigeria, and provide an evidence-informed framework for their integration in a systematic manner. Specifically, this study aims to:

1. identify the set of AI competencies relevant for entrepreneurial success through reviewing of existing AI competency frameworks, relevant government policy documents, and current literature on the topic;
2. investigate the extent to which these established AI competencies are reflected in the contemporary Business Education curriculum documents for Nigeria; and
3. propose an evidence-informed framework for mainstreaming of AI competencies into the Nigerian Business Education curricula to boost entrepreneurial success.

1.3 Research Questions

This study shall be guided by the following research questions:

1. What AI competencies for successful entrepreneurship can be drawn from the existing AI competency frameworks, policy documents and contemporary literature?
2. To what extent are these established AI competencies reflected in the current Nigerian Business Education curriculum documents?
3. How can these established AI competencies be systematically infused into the Nigeria Business Education curriculum to promote entrepreneurship development in Nigeria?

2. Literature Review

2.1 Artificial Intelligence and Emerging Competency Requirements

AI has already transitioned from a specialised technological domain to become a general-purpose capability, which, broadly speaking, impacts processes, commerce and entrepreneurship (European Commission, 2018). Business operations now routinely leverage systems supported by AI, applying it to analyse data, predict outcomes, automate routine processes, communicate with customers and inform decisions. As more businesses incorporate AI, employees will need to move beyond baseline digital literacy skills to being able to understand, evaluate and ethically deploy intelligent systems (Green, 2024).

We must conceptualise AI competency as far beyond the ability to use AI applications. It is the composite of knowledge, skills, values and judgment needed to discern both when, and how, AI systems can and should be employed. The AI Competency Framework for Students published by UNESCO (2024) includes four interrelated pillars of AI competency – one of which comprises of a human-centred perspective; another relates to ethics of AI; the next deals with AI techniques and applications and the final element pertains to designing AI systems. This set of dimensions stresses that effective interactions with AI need technical awareness along with ethical literacy and critical judgment and the capacity to deploy AI purposefully.

An implication of this development for learning environments is that learning to use AI for Business should not aim to train our students on how to use specific AI technologies or software applications that will swiftly become outdated, or that only apply in narrow contexts. Rather, courses should build competency skills that permit learners to assess the emergence of these technologies and determine

their suitability and utility across various working environments. With reference to learning AI within business education, the focus must be on bridging our student's knowledge of AI with their business reasoning skills, their entrepreneurship decision-making abilities and their approaches to solve real-world business problems.

2.2 Artificial Intelligence and Entrepreneurship

Entrepreneurship's growing connection to AI can be attributed to several new pathways to finding business opportunities, analyzing potential markets, creating products, bettering customer experiences, and becoming more operationally efficient that AI offers entrepreneurs. The emergence of generative AI specifically seems poised to push boundaries by assisting with brainstorming ideas, developing content, processing information and creating business strategies. The other side of an AI fueled entrepreneurship landscape however, is not merely having access to an AI tool, but leveraging its capacity effectively. Entrepreneurs must comprehend AI's strengths and shortcomings, know what directions to pursue, review the products it generates and connect what AI learns with a more profound understanding of how a specific business works in the real world.

Bell & Bell (2023) believe entrepreneurial courses should engage with generative AI while still teaching critical reflection, awareness and core entrepreneurial activities, such as writing. Chalmers et. al (2024) find that AI aids students in developing entrepreneurial competence in creativity, analysis and problem-solving. AI, however has potential when learners are capable of interrogating data, understanding constraints and transitioning technological opportunities into useful entrepreneurial opportunities. Darnell and Gopalkrishnan (2024) further emphasize experiential activities where learners use, critique and reflect on AI-powered activities for entrepreneurial studies. The context of Nigeria National Artificial Intelligence Strategy indicates that skill-acquisition, innovation capacity and adoption of responsible AI are critical to overall progress of the country in AI adoption. Entrepreneurial AI competency can thus be understood as the overlap of understanding technology and the ability to find business opportunities, to find a solution to business problems and to achieve an economic benefit.

2.3 AI Competencies Relevant to Entrepreneurial Success

Entrepreneurial AI competence is a multi-component skill set, that includes AI literacy, human-AI interaction, and the effective application of the generative AI technologies. To make sure they recognize when to use AI to create value and when it does not, and to prevent becoming over reliant on automated systems, entrepreneurs must grasp concepts and capabilities of AI, its limitations, and its applications (Long & Magerko, 2020; Ng et al., 2021). They also must be able to communicate with AI tools, to critically assess AI outputs, and apply them in business-related activities, like customer engagement, strategic planning, market research, and business idea development (Dwivedi et al., 2023). The key skills needed for this are technical, as well as critical thinking skills, to ensure AI applications have the right fit for business goals and context (UNESCO, 2021).

Another factor is the use of data for decision making and business process automation. Entrepreneurs need to be able to interpret data patterns and gain insights, predict trends, and make decisions with the assistance of AI tools to improve their opportunity identification, resource allocation, and competitiveness (Kraus et al., 2019; Verhoef et al., 2021). While automated recommendations might contain errors or limitations, however, AI outputs still need human judgement and validation (Floridi et al., 2018). Likewise, entrepreneurs should assess the right place for the implementation of AI-based automation, taking into account four metrics – cost, service quality, efficiency and customer experience (Davenport & Ronanki, 2018). When leveraged with creative and strategic thinking from entrepreneurs, AI can contribute to innovation, entrepreneurial development, market analysis, customer segmentation, marketing strategies, and even personalised offerings (Cockburn et al., 2018; Huang & Rust, 2021).

In addition to technological skills, entrepreneurial AI mastery demands entrepreneurial judgment and ethical sensibility, along with cybersecurity expertise. Opportunity recognition, business model development and decision making can be aided by AI, but AI can't take the place of human interpretation and judgement based on context (Shepherd & Gruber, 2021). It is important, therefore, for entrepreneurs to become familiar with algorithmic bias, transparency, privacy and responsible use of artificial intelligence, and learn how to validate AI recommendations (Floridi et al., 2018; OECD, 2019). Furthermore, the EU Agency for Cybersecurity (ENISA) 2021 noted that the use of AI-powered digital systems is growing in use by businesses, and thus cybersecurity and data protection knowledge is becoming increasingly vital. In summary, entrepreneurship with AI is a combination of technical skills, critical thinking, ethical awareness, and business acumen that is necessary for effective AI-enabled entrepreneurship.

2.4 Artificial Intelligence and Business Education

Business Education is essential in producing graduates who can function effectively as employees, entrepreneurs, and as business managers. Employability, entrepreneurial skills, and response to rapidly changing economic phenomena are important considerations in Nigeria's Core Curriculum and Minimum Academic Standards (CCMAS) (NUC, 2023). This increasing prevalence of AI thus prompts the question of the extent to which Business Education courses can train students for the future of business with AI, rather than excluding AI from courses altogether by incorporating overly technical Computer Science topics. AI-enabled business courses can be designed without replacing Business Education courses entirely with courses in advanced computer science.

Hence, the incorporation of AI skills may involve utilizing AI within business disciplines as contexts to solve real business issues. For instance, application of AI in finance may arise when teaching accounting courses, for customer intelligence with marketing, for automation with business office technology and management, and for the application of AI to opportunity identification in an entrepreneurial education course. A competency-based model would therefore be more useful in that technology platform will soon be outdated while business critical examination of results obtained from AI-enabled systems, responsible deployment, interpretation and analysis of data acquired from applications of AI and entrepreneurial problem-solving derived using AI, are skills that have longevity.

2.5 Business Education, Entrepreneurship and Nigeria's Digital Economy

Nigeria's rapidly growing digital economy necessitates the training of graduates with both entrepreneurial aptitude and technological skills. AI development in Nigeria is hinged upon the four pillars identified in the National Artificial Intelligence Strategy, which include talent development, innovation, infrastructure and ethics (FMCIDE, 2024). Likewise, sophisticated digital skills, partnership between universities and the industry and innovation eco-systems are deemed essential for fostering digital entrepreneurship (World Bank, 2025). This context requires Business Education to shift beyond conventional ICT expertise, to the acquisition of AI- driven entrepreneurial skills. Digital entrepreneurial skills among students of Business Education is the core focus by Enang (2023). However, there is a need to address an additional parameter which is: 'how artificial intelligence can be used to foster entrepreneurship creation, development and innovation.'.

2.6 Research Gap

International AI competency frameworks address AI literacy, ethics, application and the utilization of AI in a human-centred way; but few studies have considered the connection between these competencies and entrepreneurial Business Education in Nigeria. Existing research has explored issues of AI, entrepreneurial education and digital skills; but there are very few clear sources about the appropriate AI skills for entrepreneurship; the incorporation (or otherwise) of these competencies in the current Nigerian Business Education curriculum; and the role that the documentation can take in developing an operational curriculum integration plan. This paper tries to bridge this gap by looking at evidence from AI competency frameworks, policy documents, course materials and related literature, it attempts to propose a framework for integrating AI into Business Education curriculum.

2.7. Theoretical Framework

Human Capital Theory

For this study, Human Capital Theory (Becker, 1964) serves as an initial theoretical justification as human beings, knowledge, education, abilities, and skills are conceived to be investments and affect individual's productiveness. In this AI dispensation, the ability to learn, apply and evaluate AI are also known as the new types of human capital which affect employability, adaptability and entrepreneurial activities. Based on this perspective, integration of AI capabilities into Business Education is a strategy which helps to invest in students' ability to adjust to the business world, for example, the ability to use AI for identifying opportunities and analyzing markets in new businesses, or, for example, using AI for new decision support system and for innovation, in order to enhance students' entrepreneurial ability.

Competency-Based Theory

Theoretical Integration

This combined body of work, Human Capital Theory, addresses how AI capabilities are viewed as economic assets in a changing economy, and competency-based theory (Gervais, 2016; Mulder, 2017) addresses how these assets are arranged into curriculum outcomes that are quantifiable. In light of this, it conceptualizes entrepreneurial AI competency as human capital in its earliest form, arising through competency-based learning. This is the fundamental belief that drives both the categorization, identification, and mapping of these competencies in the analysis of documents.

3. Methodology

3.1 Research Design

The design used for this research was a documentary research design incorporating directed qualitative content analysis, competency extraction, curriculum mapping, and evidence-informed framework

synthesis. Documentary research was a suitable design because instead of gathering data directly from respondents, this study was concerned with obtaining and analyzing relevant existing documents from authoritative sources that address the specific issue of AI competencies and their impact on the Business Education curriculum. Four distinct actions in the analysis took place: Selection of relevant documentary source material, AI competency statements are extracted and categorized, AI competencies are mapped against business education curriculum provision. Creation of the framework integrating the AI components in the business education curriculum framework.

3.2 Documentary Sources and Selection Criteria

The corpus of documents analyzed encompassed a variety of materials, AI competency frameworks, curriculum documents from Nigeria, policy documents and work reports, international labour-market reports, and academic papers on AI and entrepreneurship education and digital competency. The document analyses involved the following documents, International AI competency frameworks; mainly UNESCO AI Competency Framework for students and teachers, Nigerian Curriculum Documents; mainly the National Universities Commission (NUC) Core Curriculum and Minimum Academic standards (CCMAS), Nigeria's National Artificial Intelligence Strategy (NAIS). International Policy Documents of intergovernmental and professional organizations like OECD, ILO, World bank. Peer reviewed study on AI and entrepreneurial education, entrepreneurship competencies, and digital business skills. Documents were chosen based on their importance to AI competency development, entrepreneurship, learning and education processes, curriculum stipulations and digital transformation and information contained in documents without established authorships, authentic organizations and essential relevance to AI competencies were excluded.

3.3 Data Analysis Procedure

Using a Competency Extraction and Curriculum Mapping Matrix documentary evidence was assessed and was recorded to be: source document; extracted competency; competency description; competency domain; entrepreneurial significance; potential use for Business Education; provision in curriculum; and analysis result. Comparable competency statements were mapped, related statements were merged and subsequently classified in wider competency domains. Mapping the extracted domains to business education curriculum provision was achieved based on three forms of representation namely explicitly; partially/implicitly and non-evident. Ultimately, the evidence was integrated with business education curriculum to design an AI-infused business education curriculum model detailing: competency areas; learning outcomes; subject of instruction; pedagogy used; application; and evaluation technique.

4. Results

4.1 Identified AI Competencies Relevant to Entrepreneurial Success

Analysis of documentary evidence, 26 key areas of competence related to entrepreneurship and Business Education curriculum, was reduced to seven broader areas of AI competence to achieve the documentary analysis in terms of business entrepreneurial success and business education curriculum design. The 7 areas of AI competence show technology awareness, business applicability of technology, analysis skills, ethical and responsible AI operation in entrepreneurship.

Table 1
Identified AI Competency Domains and Entrepreneurial Applications

AI Competency Domain	Core Competency Focus	Entrepreneurial Application
AI literacy and foundations	Understanding AI concepts, capabilities, limitations and applications	Selecting appropriate AI solutions for business problems
Human–AI interaction	Effective communication with generative AI systems and prompt development	Market research, idea generation and business planning
Data-informed decision-making	Interpreting AI-supported data and analytical outputs	Forecasting, customer analysis and strategic decisions
Business-process automation	Identifying opportunities for AI-supported workflow improvement	Improving efficiency and reducing operational costs
AI-enabled marketing	Applying AI for customer analysis, content creation and engagement	Market targeting and customer relationship development
Innovation and venture development	Using AI for opportunity recognition and business modelling	New venture creation and entrepreneurial innovation
Critical and responsible AI use	Evaluating AI outputs, ethical judgement, privacy and accountability	Responsible technology adoption and risk management

The results illustrate that AI competence for entrepreneurs encompasses far more than simply a technical know-how. A merging of AI understanding and business decision-making, as well as creativity, ethics and practical usability is evident.

4.2 Curriculum Mapping Findings

The identified AI competency domains were mapped against current Business Education curriculum provisions in an attempt to identify alignment with the curriculum. In all cases, none of the competency areas was found to be explicitly present within the curriculum provision. Not one of the seven competency domains were considered explicitly present in the analyzed curriculum provision. Though several of the competency areas did implicitly exist, via respective digital, entrepreneur and business competencies.

Table 2

Representation of AI competences in Business Education CCMAS

Curriculum Representation Category	Number of Domains	Percentage
Explicit AI competency representation	0	0%
Implicit/partial representation	5	71.4%
Not evident	2	28.6%
Total	7	100%

As displayed in Table 2 above, AI competencies are noticeably absent from the current business education CCMAS curriculum. None of the curriculum documents examined featured the inclusion of specific AI competencies among their content domains; therefore, there is a substantial curriculum gap between the emerging business environment under the impact of AI and current academic provisions. However, 5 domains (71.4%) were represented partially with topics under the umbrellas of "digital competence, technological use and entrepreneurship and learning", whereas 2 domains (28.6%) presented no sign of integration, which could be understood as the lack of key AI-related competencies at a curriculum level. The findings suggest the need for an AI-integrated curriculum framework that could guide curriculum designers in shifting the perspective from generalized digital competence toward specific AI literacy, "ethical use of AI" and business applications in an entrepreneurial way.

4.3 Identified Curriculum Gaps

From the analysis of document, there are three main aspects missing in the curriculum: Firstly, the existing Business Education curriculum seems to focus on general digital literacy not specific AI competence. Learning related to ICT is providing good groundwork but no guarantee that it equipped learners with AI skill, assessment skill and strategic application of AI skill. Secondly, use of AI within the entrepreneurial environments was not adequately explored. A new set of learning competencies related to AI supported market intelligence, business automation, customers' intelligence, business planning and business development is missing in relevant courses. Thirdly, more focus has to be laid on the ethical and responsible application of AI. Student's competence will grow when they are equipped with relevant know how of using client's information, business information and AI suggestions within business application and hence it is necessary students gain competence related to privacy, responsibility, bias and good decision-making in applying AI.

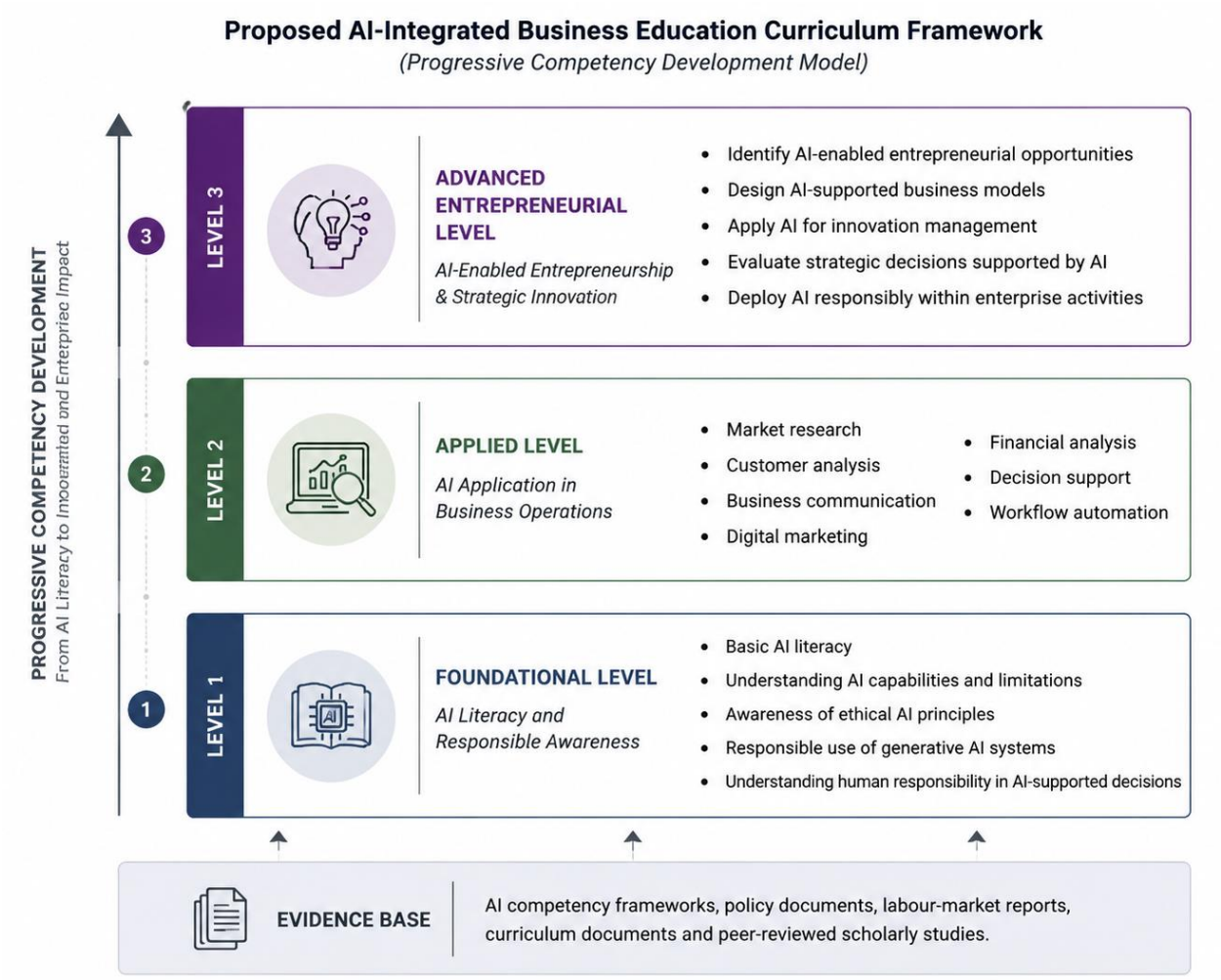


Figure 1. Proposed AI-integrated Business Education Curriculum Framework.
The framework presents a three-level progression of AI competencies for Business Education students, advancing from foundational literacy and ethical awareness to applied business use and ultimately to AI-enabled entrepreneurship and strategic innovation.

This approach of integrating AI within already-established Business Education subjects (as opposed to establishing a singular AI subject) places significant weight on this integrated perspective. It is well accepted that AI already plays a critical role in a wide range of business disciplines, and understanding its application will be greatly enhanced when applying this knowledge in real entrepreneurial settings.

5. Discussion

This study established that entrepreneurship competence in an AI-enable economy is more than ability to use technological applications. The entrepreneurial competence in AI is a multi-faceted ability comprising of both technological competence (understanding of AI applications, their usage and evaluation) and business acumen and knowledge (interpretation of results, evaluation, and making judgement in business process). These findings agree with the conceptualization of AI competence by UNESCO's (2024) AI Competency Framework which conceptualizes AI competency around human-centered thinking, ethical intelligence, understanding AI applications, and meaningful use of it. The identification of seven areas of AI competence in this study corroborates that entrepreneurship education must go beyond the current level of digital competence.

It has been indicated by many scholars that in the AI-supported economy it's not just digital literacy alone which an entrepreneur would require but also capacity on how to interpret the results from AI technology, how to design effective interaction between entrepreneur and AI and where appropriate applications of automation, critical appraisal of information, recommendation and selection of opportunities, etc., because AI systems can enhance decision-making, their outputs require human oversight because they may contain inaccuracies, reflect embedded biases, or fail to account for specific contextual circumstances (Floridi et al., 2018; OECD, 2019). It also aligns with previous findings on integrating AI in entrepreneurship education (Bell & Bell, 2023, Chalmers et al., 2024). This study

contributes to this argument by presenting seven curriculum domains for AI competencies that could fit well in Business Education curriculum in Nigeria. The study also provides evidence-based domains and framework which can be added to existing Business Education curriculum.

In this regard, some Business Education courses are related to competencies required in AI competence such as: digital competence, entrepreneurship, innovation and information management; nevertheless, artificial intelligence related competence seems neglected from existing curriculum design. It does not necessarily mean the existing curriculum is inadequate but shows room to improvise the courses to integrate AI learning outcomes and practical application. It also identified that many of the required competencies are implicit or partially addressed. These are not meant to be separate courses but rather infused in the existing courses for Business Education students.

An example is how an accounting course could incorporate AI tools for financial management, marketing course can teach AI techniques in analyzing customer behavioral patterns in markets, management course can examine AI application for strategic decision making and opportunity discovery. The proposed framework is consistent with Human Capital Theory because it positions AI competence as an emerging capability that enhances graduates' adaptability, productivity and entrepreneurial potential. (Kothari and Arora, 2021). The proposed framework also follows Competency Based Theory as most competencies derived from this theory would remain relevant regardless of technological updates e.g. AI models and platforms might be updated over time.

Lastly, it aligned with Nigeria's wider digital transformation plans that it emphasizes on acquiring talents to harness technology for national development, and also promote responsible uses of AI (FMCIDE, 2024). It does not mean entrepreneurship education must necessarily train everyone to become the programmer, but how the graduates can use the application effectively in entrepreneurial practices. However, findings presented here should be treated as evidence rather than empirically validated. Future research involving students, lecturers, curriculum experts, entrepreneurs and industry practitioners is required to examine its feasibility, implementation challenges and effectiveness in improving entrepreneurial capability.

6. Conclusion

Artificial Intelligence is reshaping entrepreneurial activities and changing the competencies required for successful participation in modern business environments. This study examined AI competencies relevant to entrepreneurial success, assessed their representation within Business Education curricula in Nigeria and developed an evidence-informed framework for curriculum integration. The findings indicate that entrepreneurial AI competence consists of multiple interconnected domains, including AI literacy, human-AI interaction, data-informed decision-making, automation, AI-enabled marketing, innovation and responsible AI use. However, existing Business Education curricula largely represent these competencies indirectly rather than as explicit AI-focused learning outcomes.

The study therefore argues that Business Education programmes should transition from general digital skills development towards AI-enabled entrepreneurial competence development. Such an approach should emphasise transferable capabilities that allow graduates to understand AI, apply it strategically, evaluate its limitations and use it responsibly within business contexts. Hence, the evidence-based guide to the integration of AI competencies in the business education curriculum was formulated to show how to embed features of the competencies within present business courses that span across, amongst others, entrepreneurship, marketing, accounting, management and ICT courses rather than to teach AI as a stand-alone technical subject. Generally, this paper contributes to arguments about the curriculum development as a matter of emergence of a new human capital, the "AI competent" based on technological competence, application, professional judgment and ethical accountability which guide further research about the usage of the framework within Nigerian higher education.

7. Recommendations

Based on the findings, the study recommends the following:

1. Infuse the proposed AI integrated business education curriculum framework developed by this study into the existing Business Education courses not necessarily creating a separate AI course. It's application to entrepreneurship, accounting, marketing, office technology management, ICT, and business communication would impart contextual knowledge and skills to the learners.
2. Organize on-going professional development AI focused workshop for business education lecturers and business education practitioners to build a stronger capacity to apply AI into

business education curriculum and practice, ethical considerations, and AI enabled entrepreneurial education.

3. Enhance the partnership between universities, technology enterprises, entrepreneurial business enterprises and innovation hubs to expose the Business Education program curriculum to practical application of AI, emerging trends and the current need in the industries.
4. Establish an institutionalized curriculum review system within Nigerian Universities and regulatory bodies to guarantee continued relevance of Business Education programs to the changing technology landscape of AI and labor market demand for Nigeria's digital economy.

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EXPERIENTIAL LEARNING ACTIVITIES AND ENTREPRENEURIAL COMPETENCY OF BUSINESS EDUCATION STUDENTS IN ABIA STATE, NIGERIA

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Abstract
The study examined experiential learning activities and entrepreneurial competency of Business Education students in Abia State, Nigeria. The study was guided by three research questions and three hypotheses were formulated and tested at 0.05 level of significance. The study adopted correlational survey research design with the population of the study 224 which comprised 15 Business Educators and 209 Business Education Students. The entire population of the study was used for the study using census technique. The instruments for data collection were structured questionnaires titled "Experiential Learning Activities Questionnaire (ELAQ) and Entrepreneurial Competency Questionnaire (ECQ)". The instruments were validated by three experts, the reliability of the instruments was established using Cronbach Alpha which yielded coefficient of 0.84 for ELAQ and 0.83 ECQ respectively. Data collected were analyzed using Pearson Product Moment Correlation Coefficient (PPMCC) to answer research questions while the hypotheses were tested using simple linear regression. The findings revealed that experiential learning activities significantly relate to the entrepreneurial competency of Business Education students in Abia State. Specifically: SIWES to high extent, Campus enterprise projects and students' exhibition to a moderate extent relate to entrepreneurial competency because they provide real-life exposure and public validation of business ideas. Based on the findings and conclusion of this study, it was recommended among others that: there is need for Industrial Training Fund (ITF) and university SIWES coordinators to ensure that students are posted to relevant business organizations and provide proper supervision to maximize the high extent of skill acquisition from SIWES for enhancing entrepreneurial competency of Business Education students.
Keywords: Experiential Learning Activities, Entrepreneurial Competency and Business Education

Introduction
Globally, the 21st-century economy is driven by innovation, self-reliance and the capacity of graduates to create jobs rather than seek them. In this scenario, tertiary institutions are expected to go beyond producing graduates with theoretical knowledge and instead equip them with practical skills and entrepreneurial competencies needed for economic growth and poverty. Entrepreneurship education has therefore become a strategic tool for addressing graduate unemployment and fostering national development. In Nigeria, the persistent challenge of graduate unemployment has made entrepreneurship education a national policy thrust. The Federal Government made Entrepreneurship Studies compulsory in all tertiary institutions to shift graduates from job-seekers to job-creators (Nwosu & Okoro, 2023).

Business Education is central to this mandate because it combines business knowledge, vocational skills and pedagogy to prepare graduates for teaching, employment and self-employment (Federal Republic of Nigeria, FRN, 2014). Business Education in the submission of Okenwa (2018) is an essential aspect of education that involves impartation of business orientation and knowledge for personal and national development. It is concerned with teaching students the fundamental, rudiments, concepts, theories and processes of business. It is also an essential part of the general education which emphasizes on skills and acquisition of relevant competencies for use in offices and business related occupations. Despite this, many Business Education graduates in Nigeria still lack the requisite entrepreneurial competencies needed to start and sustain businesses (Adeyemo, 2019).

Entrepreneurial competency therefore referred to the knowledge, skills and attitudes required identifying opportunities, managing resources, taking risks and successfully running businesses (Man & Lau, 2020). Entrepreneurial competencies on the other hand as perceived by Emeka et al. (2024) are the knowledge, skills and attitude required for one to start, develop, finance and succeed in one's own business. They are also those abilities that an individual uses to exploit ideas and create an enterprise that can be beneficial to oneself and others in society. Entrepreneurial competencies in the submission of Vladimi and Ivana, (2023) referred to the specific knowledge, skills and abilities that entrepreneurs need to effectively start, manage and grow a business. The competency is essential for entrepreneurial success and can be developed through education, training and hands-on experience. The competencies are not exhaustive and the specific competency required may vary depending on the industry, business model and individual circumstances. However, one major reason for skills gap among students is the over-reliance on lecture-based instruction in many institutions. Research indicates that traditional teaching methods alone do not sufficiently develop practical business skills. This has necessitated a shift toward experiential learning activities, learning by doing, reflecting and applying.

Experiential learning according to Kuyade and Umoeshiet (2025), is a process of learning by doing, where students gained knowledge and practical skills through reflection on hands-on activities. It's about connecting theoretical concepts to real-world situations and actively participating in the learning process. An essential aspect of experiential learning is reflecting on the experience to understand what was learned and how it can be applied in the future. It allows for more tailored approach to learning, as individuals can reflect on their own experiences and educational as well as career needs. Experiential learning provides students with real-life exposure that enhances self-efficacy, creativity and readiness for business ownership (Udu & Nwosu, 2021). In Business Education, key experiential learning activities include the Students' Industrial Work Experience Scheme (SIWES), campus enterprise projects and students' exhibition among others.

SIWES in the submission of Adebanji et al. (2021) is a program or period of hands-on experience that students or professionals undergo to gain practical knowledge and skills in a specific industry or field. This type of training is often a crucial component of academic and vocational education, providing individuals with real-world exposure to the workings of an industry. SIWES is one of the mediums that provide students with practical, hands-on experience that help to bridges the gap between theoretical knowledge and real-world application. This exposure tend to shapes the perception of the students in their field, influences their career preferences, and enhances their skills, potentially leading to increased interest in pursuing agricultural careers for those in agricultural field (Akpan, 2021). SIWES exposes students to real workplace environments where they acquire practical business, technical and managerial skills relevant for self-employment (Eze & Nwafor, 2023).

Aside SIWES, Campus enterprise projects also form part of experiential learning activities for equipping students with needed entrepreneurial competency. Campus enterprise projects involve students running mini-businesses within the school to practice marketing, accounting, and customer relations in a low-risk setting (Omeje & Ugwu, 2022). Campus enterprise projects are student-run businesses operated within the university to provide practical business experience. Examples include printing units, catering services, fashion outlets, and sales kiosks managed by Business Education students under lecturer supervision (Omeje & Ugwu, 2022). These projects link to students' entrepreneurial competency by allowing them to apply classroom theory to real business activities such as costing, marketing, record keeping, and customer relations (Udu & Nwosu, 2021). Through active involvement, students develop decision-making, problem-solving, risk-taking, and teamwork skills (Fayolle & Gailly, 2017). Thus, campus enterprise projects build the practical skills, confidence, and self-efficacy needed for students to identify opportunities and start sustainable businesses after graduation just like students' projects exhibition.

Students' exhibition as described by Adebayo (2024) is an event where Business Education students display and pitch their innovative business ideas, products and services to peers, lecturers, and invited industry stakeholders. It is links to students' entrepreneurial competency by developing skills in product development, creativity, marketing, communication and feedback handling. Exhibitions also build students' confidence and networking ability as they interact with potential mentors and investors (Man & Lau, 2020). Therefore, exhibitions provide a practical platform for students to test ideas, receive validation, and gain the exposure needed to become competent entrepreneurs after graduation. Students' exhibition provides a platform for students to showcase innovative business ideas, receive feedback, and build confidence in product development and pitching.

However, empirical evidence on how specific experiential learning activities influence the entrepreneurial competency of Business Education students in Abia State remains limited. Although,

few studies, show that undergraduates who participate in these activities demonstrate higher entrepreneurial intention and competency compared to those taught through conventional methods (Okoli & Chukwu, 2023). Given this gap, it is imperative to examine the relationship between experiential learning activities and entrepreneurial competency of Business Education students in Abia State.

Statement of the Problem

Business Education in Nigerian institutions is designed to produce graduates who are not only competent in teaching and office practice, but also equipped with entrepreneurial competencies to establish and manage viable businesses. The curriculum expects graduates to demonstrate skills in opportunity recognition, financial management, marketing, innovation, and risk-taking. To achieve this, experiential learning activities such as the Students' Industrial Work Experience Scheme (SIWES), campus enterprise projects and students' exhibition are prescribed as core strategies for bridging the gap between classroom theory and real business practice. When effectively implemented, these activities should produce self-reliant graduates who contribute to job creation and economic development.

However, in reality, reverse seem to be the case, as many Business Education graduates in Nigeria, including in Abia State, still graduate without adequate entrepreneurial competencies. Despite the existence of SIWES, campus enterprise initiatives, and project exhibitions in tertiary institutions, these activities are often poorly coordinated, lack proper supervision, or are treated as mere academic requirements. Many students undergo SIWES in organizations that are not related to business, while campus enterprise projects are limited in scope and funding. Similarly, students' exhibitions are conducted occasionally without feedback mechanisms to improve business ideas. Consequently, graduates continue to depend on white-collar jobs and the rate of graduate unemployment and underemployment remains high in Abia State.

Given that Abia State has vibrant commercial centers in Aba and Umuahia that can serve as practical learning grounds, understanding this relationship is crucial for improving teaching methods, curriculum delivery and policy implementation in Business Education. Without empirical evidence, institutions cannot determine which experiential activities are most effective in building entrepreneurial competencies. It is therefore on this premise that this study sought to investigate experiential learning activities and entrepreneurial competency of Business Education students in Abia State, Nigeria.

Purpose of the Study

The major purpose of the study is to examine experiential learning activities and entrepreneurial competency of Business Education students in Abia State, Nigeria. Specifically, the study sought to:

1. examine the extent SIWES relate to entrepreneurial competency of Business Education students in Abia State.
2. find out the extent campus enterprise projects relate to entrepreneurial competency of Business Education students in Abia State.
3. ascertain the extent students exhibition relate to entrepreneurial competency of Business Education students in Abia State.

Research Questions

The following research questions guided the study:

1. To what extent does SIWES relate to entrepreneurial competency of Business Education students in Abia State?
2. To what extent does campus enterprise projects relate to entrepreneurial competency of Business Education students in Abia State?
3. To what extent does students exhibition relate to entrepreneurial competency of Business Education students in Abia State?

Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance.

$H0_1$: There is no significant relationship between SIWES and entrepreneurial competency of Business Education students in Abia State.

$H0_2$: There is no significant relationship between campus enterprise projects and entrepreneurial competency of Business Education students in Abia State.

$H0_3$: There is no significant relationship between students exhibition and entrepreneurial competency of Business Education students in Abia State.

Methodology

The study adopted correlational survey research design. This design was considered suitable because it sought to determine the relationship between experiential learning activities and entrepreneurial competency of Business Education students (Nworgu, 2018). The study was carried out in three tertiary institutions in Abia State: (Michael Okpara University of Agriculture, Umudike (MOUAU), Abia State

University, Uturu (ABSU) and Abia State College of Education, Technical, Arochukwu (ASCETA). These institutions were selected because they run Business Education programmes and produce graduates. The population of the study was 224 which comprised 15 Business Educators and 209 Business Education Students. The entire population of the study was used for the study using census technique. The instruments for data collection were structured questionnaires titled "Experiential Learning Activities Questionnaire (ELAQ) and Entrepreneurial Competency Questionnaire (ECQ)". The questionnaires were developed using 4-point rating scale of Very High Extent (VHE) 4, High Extent (VH) 3, Low Extent (LE) 2, and Very Low Extent (VLE) 1. The instruments were validated by three experts, two experts in Business Education and one expert in Educational Measurement and Evaluation, all from Michael Okpara University of Agriculture, Umudike. The reliability of the instrument was established using Cronbach Alpha which yielded coefficient of 0.84 for ELAQ and 0.83 ECQ respectively. A total of 224 copies of questionnaire were administered and 201 were retrieved which represent 90% return rate. Data collected were analyzed using Pearson Product Moment Correlation Coefficient (PPMCC) to answer research questions while the hypotheses were tested using simple linear regression.

The strength of the relationship was established using Creswell (2008) correlation coefficient scale thus; Items that scored +/-0.70 to 1.00 were regarded as Strong/High Extent relationship, Items that scored 0.40 – 0.69 were regarded as moderate relationship, items that scored +/-0.40 to 0.69 were regarded as Moderate/Medium Extent relationship and items that scored +/-0.00 to 0.39 were regarded as no correlation/ weak/Low Extent relationship respectively. Creswell (2008) opined that correlation coefficients can range from -1.00 to +1.00 with positive number used to identify a positive relationship and negative numbers being used to identify a negative relationship while linear association is indicated with a correlation coefficient of 0.00. More-so, null hypotheses were rejected if P-value was greater than the alpha value of 0.05 level and otherwise the null hypotheses was not rejected.

Results

The results of the study were presented in tables and based on the research questions and the hypotheses that guided the study.

Research Question 1: To what extent does SIWES relate to entrepreneurial competency of Business Education students in Abia State?

Table 1: Correlation Matrix of the Extent of Relationship between SIWES and Entrepreneurial Competency of Business Education Students

		SIWES	EC
SIWES	Pearson	1	. 714
	Sig (2-tailed)		.000
	N	201	201
	R^2	(0.551)	
		55%	
EC	Pearson	.714	1
	Sig. (2-tailed)	.000	
	N	201	201

SIWES = Students' Industrial Work Experience Scheme, EC = Entrepreneurial Competency

Data in Table 1 show a correlation value of .714which is positive and within the coefficient limit or range of 0.61-0.80 indicating high extent relationship. This result shows that SIWES to a high extent relates to entrepreneurial competency of Business Education students. The coefficient of determination (R^2) of 0.551 indicates that 55% of the entrepreneurial competency of Business Education students could be accounted for by the SIWES.

Hypothesis 1: There is no significant relationship between SIWES and entrepreneurial competency of Business Education students in Abia State.

Table 2: Regression Analysis of the Relationship between SIWES and Entrepreneurial Competency of Business Education Students in Abia State

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	6581.394	1	6581.394	160.096	.000[b]
Residual	8221.735	200	41.109		
Total	14803.147	201			

Data in Table 2 reveals a probability (P) - value of 0.00 which is less than the alpha value of 0.05. Since the P-value is less than 0.05 alpha level, the hypothesis of no significant relationship was rejected and the alternate upheld. Therefore, there is a significant relationship between SIWES and entrepreneurial competency of Business Education students in Abia State.

Research Question 2: To what extent does campus enterprise projects relate to entrepreneurial competency of Business Education students in Abia State?

Table 3: Correlation Matrix of the Extent of Relationship between Campus Enterprise Projects relate to Entrepreneurial Competency of Business Education Students

		CEP	EC
CEP	Pearson	1	.647
	Sig (2-tailed)		.000
	N	201	201
	R^2	(0.411)	
		41%	
EC	Pearson	.647	1
	Sig. (2-tailed)	.000	
	N	201	201

CEP = Campus Enterprise Projects, CEP = Entrepreneurial Competency

The data in Table 3 reveals a correlation (r) of .647 which is positive and within the coefficient range of 0.40-0.69 which indicates moderate extent relationship. This result indicates campus enterprise projects to a moderate extent relate to entrepreneurial competency of Business Education students in Abia State. The coefficient of determination (R^2) of 0.411 indicates that 41% of the entrepreneurial competency of Business Education students could be accounted for by campus enterprise projects.

Hypothesis 2: There is no significant relationship between campus enterprise projects relate to entrepreneurial competency of Business Education students in Abia State.

Table 4: Regression Analysis of the Relationship between Campus Enterprise Projects and Entrepreneurial Competency of Business Education Students in Abia State

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	6682.094	1	6682.094	159.660	.000[b]
Residual	8370.421	200	41.852		
Total	15052.515	201			

Data in Table 4 show a P - value of 0.00 which is less than the alpha value of 0.05. Since the P-value is less than 0.05 alpha level, the hypothesis of no significant relationship was rejected and the alternate upheld. Therefore, there is a significant relationship between campus enterprise projects and entrepreneurial competency of Business Education students in Abia State.

Research Question 3: To what extent does students exhibition relate to entrepreneurial competency of Business Education students in Abia State?

Table 3: Correlation Matrix of the Extent of Relationship between Students Exhibition and Entrepreneurial Competency of Business Education Students

		SE	EC
SE	Pearson	1	.594
	Sig (2-tailed)		.000
	N	201	201
	R^2	(0.392)	
		39%	
EC	Pearson	.711	1
	Sig. (2-tailed)	.594	
	N	201	201

SE = Students Exhibition, EC = Entrepreneurial Competency

The data in Table 3 reveals a correlation (r) of .594 which is positive and within the coefficient range of 0.40-0.69 which indicates moderate extent relationship. This result indicates students exhibition to a moderate extent correlate to entrepreneurial competency of Business Education students. The coefficient of determination (R^2) of 0.511 indicates that 39% of the entrepreneurial competency of Business Education students could be accounted for by students exhibition.

Hypothesis 3

$H0_2$: There is no significant relationship between students exhibition and entrepreneurial competency of Business Education students in Abia State.

Table 4: Regression Analysis of the Relationship between Students Exhibition and Entrepreneurial Competency of Business Education Students in Abia State.

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	6548.116	1	6548.116	162.977	.000[b]
Residual	8035.339	200	40.178		
Total	14583.455	201			

Data in Table 4 show a P - value of 0.00 which is less than the alpha value of 0.05. Since the P-value is less than 0.05 alpha level, the hypothesis of no significant relationship was rejected and the alternate upheld. Therefore, there is a significant relationship between students exhibition and entrepreneurial competency of Business Education students in Abia State.

Discussions of the Findings

The findings of the study were discussed as follows:

The study found out that SIWES significantly to a high positive extent relates to entrepreneurial competency of Business Education students in Abia State. This implies that SIWES makes a strong contribution to the development of entrepreneurial skills among Business Education students. The findings revealed that SIWES enable students to acquired practical activities such as sales, bookkeeping, customer service, and inventory management among other through hands-on experience which helps students to apply theoretical knowledge and develop confidence in business operations. The result is supported by Eze & Nwafor (2023) who found that SIWES significantly improves technical, managerial and entrepreneurial skills of Business Education students in South-East Nigeria. Okoli and Chukwu (2023) also reported that students posted to business-related firms during SIWES demonstrated higher entrepreneurial self-efficacy and start-up readiness than those in non-business placements. The findings mean that the high extent depends on posting students to relevant business establishments, where SIWES is well coordinated to bridge classroom learning with real business practice.

The study revealed that campus enterprise projects significantly to a moderate extent relate to entrepreneurial competency of Business Education students in Abia State This indicates that campus enterprise projects contribute to entrepreneurial competency, but the impact is limited. Campus enterprises such as printing units, fashion outlets, catering services and sales kiosks provide students opportunity to practice marketing, costing, record keeping and customer relations in a low-risk environment. The moderate extent is explained by challenges such as inadequate funding, poor sustainability, and lack of integration into the curriculum. This finding agrees with Omeje & Ugwu (2022) who stated that campus enterprises improve financial literacy and business management skills, but many Nigerian universities fail to sustain them due to poor institutional support. Udu and Nwosu (2021) also found that students involved in campus business activities showed improved entrepreneurial self-efficacy, but the effect was stronger when the projects were properly funded and supervised. Also, the study also relate with Fayolle and Gailly (2017) that experiential entrepreneurship activities only yield strong competency outcomes when students are actively involved in planning and managing the enterprise.

The study ascertained that students' projects exhibition relates to entrepreneurial competency of Business Education students in Abia State significantly to a moderate extent. This shows that project exhibitions are a very effective experiential activity for building entrepreneurial competency. Through exhibitions, students design, produce and pitch business ideas and products to peers, lecturers, and invited entrepreneurs. The process develops skills in innovation, communication, marketing, feedback handling, and networking. The result is supported by Adebayo (2024) who found that students' exhibition significantly enhances product development, pitching and business presentation skills among Business Education students. Also relate to Man and Lau (2020) stated that exposure, validation and networking during exhibitions are core components of entrepreneurial competency development.

Conclusion

Based on the findings of this study, it was concluded that experiential learning activities significantly relate to the entrepreneurial competency of Business Education students in Abia State. Specifically: SIWES to high extent, Campus enterprise projects and students' exhibition to a moderate extent relate to entrepreneurial competency because they provide real-life exposure and public validation of business ideas. Therefore, for Business Education to achieve its mandate of producing self-reliant graduates, emphasis must be placed on strengthening experiential learning activities. When students learn by doing, reflecting, and applying, they are more likely to develop the knowledge, skills, and attitudes required to identify opportunities and start sustainable businesses.

Recommendations

Based on the findings and conclusion of this study, the following recommendations were made:

1. There is need for Industrial Training Fund (ITF) and university SIWES coordinators to ensure that students are posted to relevant business organizations and provide proper supervision to maximize the high extent of skill acquisition from SIWES for enhancing entrepreneurial competency of Business Education students.
2. University management in Abia State should provide seed grants and mentorship for campus enterprise centers. These projects should be integrated into Business Education courses and managed by students under lecturer supervision to increase their extent of impact on entrepreneurial competency.
3. Departments of Business Education should organize annual inter-departmental and inter-institutional business exhibitions. Industry experts, entrepreneurs, and investors from Aba and Umuahia should be invited to give feedback, mentor students, and identify viable business ideas. This will sustain the high extent of entrepreneurial competency development.

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DIGITAL OFFICE COMPETENCIES REQUIRED BY OFFICE TECHNOLOGY AND MANAGEMENT STUDENTS FOR ENTREPRENEURSHIP READINESS IN AKANU IBIAM FEDERAL POLYTECHNIC UNWANA, EBONYI STATE, NIGERIA

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Abstract

This study investigated the digital office competencies required by Office Technology and Management students for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana, Ebonyi State, Nigeria. Two research questions and two null hypotheses guided the study. The study adopted a descriptive survey research design. The population comprised 74 HND II Office Technology and Management students of Akanu Ibiam Federal Polytechnic Unwana, and the entire population was studied because it was manageable. A 20-item researcher-developed structured questionnaire was used for data collection. The instrument was structured on a four-point rating scale and validated by experts in Office Technology and Management and Measurement and Evaluation. The reliability of the instrument was established using Cronbach Alpha, which yielded reliability coefficients of 0.74 and 0.77 for the two clusters, respectively. Data collected were analyzed using mean and standard deviation to answer the research questions, while independent-samples t-test was used to test the null hypotheses at 0.05 level of significance. The study found that digital office competencies are highly required by Office Technology and Management students for entrepreneurship readiness. The study also revealed that institutional, infrastructural and instructional factors constitute challenges affecting the acquisition of the required digital office competencies. The study concluded that digital office competencies are essential for preparing OTM students for entrepreneurship, self-reliance and effective participation in the digital economy, but their acquisition is constrained by institutional, infrastructural and instructional challenges. It was recommended, among others, that the management of Akanu Ibiam Federal Polytechnic Unwana should provide adequate and up-to-date ICT facilities, modern office equipment and opportunities for practical training, while relevant institutional stakeholders should address the challenges affecting the acquisition of digital office competencies among OTM students.

Keywords: Digital office competencies, Office Technology and Management, entrepreneurship readiness, digital skills, Polytechnic.

Introduction

The rapid transformation of the global workplace driven by digital technologies has significantly reshaped the skills required for employability and entrepreneurial success. In the 21st century, the future of work is increasingly characterized by automation, digitalization and innovation, making digital competencies a fundamental requirement for graduates across disciplines. Studies indicate that digital transformation and artificial intelligence are redefining work processes, leading to task automation, job redesign and the emergence of new roles that demand higher order digital skills and adaptability (Bangura & Louren 2026, Darmawan, 2025). Similarly, Organization for Economic Corporation and Development (OECD) (2019), opined that advancement in automation technologies are significantly transforming job roles by replacing routine tasks while simultaneously increasing demand for complex technology driven competencies. The OECD explains that the digital technologies increasingly automate routine tasks while creating greater demand for high order cognitive problem solving and digital skills in the workplace. Supporting this, Willocks (2024), emphasizes that the integration of digital technologies is driving a shift towards flexible digital enabled work models thereby increasing the demand for advanced human and digital competencies. Digital transformation is accelerating the evolution of work, with employers prioritizing digital skills, problem solving abilities and adaptability in

response to emerging technologies, such as artificial intelligence and cloud computing (World Economic Forum, 2023).

In this evolving landscape, digital office competencies which refer to the knowledge, skills, attitudes and abilities required to effectively, use digital technologies, software applications and information systems to perform office functions and administrative tasks efficiently. These competencies include proficiency in the use of word processing, spreadsheet, presentation, database, internet, e-mail, cloud computing, digital communication, virtual collaboration, electronic record management and other office automation technologies. Digital office competencies enable individuals to adapt to the changing demands of digital workplace, improve productivity, facilitate effective communication and support innovation and entrepreneurial activities in the modern business environment. According to United Nations Educational, Scientific and Cultural Organization (2018), digital office competencies encompass the ability to access, manage, evaluate, create and communicate information using digital technologies. In a similar manner, the European commission (2019) through the DigComp framework defines digital office competence as the confident, critical and responsible use of digital technologies for employment, learning and social engagement. In the context of employability and future of work, digital office competencies include skills such as digital communication, information literacy, online collaboration, data management, cyber security awareness, critical thinking, creativity and the ability to adapt to emerging technologies. Vartiainen (2020), agreed that digitalization reshapes work environments and necessitates new competencies such as digital literacy collaboration through digital tools and the ability to innovate in technology driven contexts. To buttress this fact, Oberlander, Beinicke and Bipp (2020), highlights that modern workplaces requires employees to possess a broad range of digital competencies, as most professional tasks now rely heavily on information and communication Technologies (ICT). Furthermore, Scheepers, Mulchahy, Fleishman, English, Burgess and Crimmins (2024), asserted that the digital economy requires graduates to possess not only technical skills but also digital office competencies to navigate complex, dynamic of the future of work.

In the era of the future of work, the digital economy demands that graduates possess not only technical digital skills but also digital office competencies necessary for workplace participation, adaptability and employability. Scholars have emphasized the growing importance of digital office competence in preparing graduates for the contemporary labour market. For instance, Oti (2020); Emeasoba et al (2025), asserts that the rapid digitalization of workplaces in Nigeria requires graduates to develop competencies in digital communication, information management, technology-driven and problem solving. According to Okebukola (2021), higher education institutions must align curricula with the evolving demands of the digital workforce demands by integrating employability skills, critical thinking and digital literacy into teaching and learning. In the same vein, Briggs (2019), observes that the future workplace increasingly values graduates who can adapt to technological change, collaborate virtually and continuously update their digital competencies. Furthermore, studies have shown that employers now prioritize graduates who possess a combination of technical expertise and digital career readiness required for sustainable employment in the knowledge economy. Consequently, Universities and other tertiary institutions in Nigeria are under increasing pressure to equip students with relevant digital capabilities and career competencies needed to strive in an evolving digital society.

Office Technology and Management (OTM) is a field of study aimed at equipping students with relevant ICT, managerial and entrepreneurial skills needed for effective performance in modern office environments. However, the extent to which this objective is being achieved remains a subject of scholarly concern, particularly in the context of rapid technological advancement and evolving workplace demands. Scholars have consistently emphasized the transformative role of OTM in aligning education with workplace realities. For instance, Nosakhare (2023) argued that OTM enhances business education by integrating modern technological applications in Office practices thereby improving the quality and relevance of the graduates. Similarly, Oduntan (2025), maintained that the programme develops practical and technological competencies that promote economic productivity and prepare students for both employment and self reliance. These positions suggest that OTM is not merely theoretical but strongly oriented towards skill acquisition and workforce readiness. In line with the growing importance of digitalization, several authors have highlighted the centrality of ICT competencies in OTM. Dibbari and Patience (2023) identified digital skills such as data processing, virtual communication and information management as critical requirements for employability in modern labour market. Supporting this position, Okoli and Umeokafor (2025) emphasized that digital records

management skills are indispensable for efficient job performance, especially in organizations where information systems are technology –driven. This underscores the fact that digital literacy is no longer optional but a core requirement for OTM graduates. Furthermore, the influence of emerging office technologies has attracted considerable attention. Ekwue, Mayan and Obasi (2025), Observed that advancement in office technologies such as automated systems and digital tools are reshaping the delivery of OTM programme and necessitated continuous curriculum updates. In agreement, Oghenekome and Ito (2025), reported that the adoption of modern office technologies significantly improves job efficiency and productivity among OTM graduates. Also Zubairu (2025), noted that competence in the use of contemporary office tools is a key requirement for effective functioning in today's workplace. Collectively, these studies reinforce the fact that technological competencies are central to the success of OTM programmes.

OTM contributes not only to employability but also to the development of entrepreneurship readiness as a critical outcome. Entrepreneurship education is one of the courses offered in OTM programme. Entrepreneurship education is the process of learning the knowledge, skills, mindset and behaviors needed to start, manage and grow a business. Entrepreneurship education has evolved into a practical and transformative field that equips learners with entrepreneurial knowledge, skills and competencies (Rodrigues, 2023), he further opined that entrepreneurship education emphasizes the ability to transform opportunities and ideas into social, cultural or economic value. Similarly, Kakouris and Liagovas (2021), explained that entrepreneurship education focuses on knowledge, vocational preparation and transformational learning. Bell (2023), further stated that entrepreneurship education should prepare learners to adapt to emerging technologies and future entrepreneurial opportunities. Baba and Baba (2025) contended that integrating artificial intelligence into OTM programme can enhance entrepreneurial skills and foster entrepreneurial readiness among students. Likewise Ademiluyi, Adegboye and Akande (2025), noted that the inclusion of innovative technologies to OTM pedagogy creates opportunities for development and creativity, although it also introduces challenges such as inadequate infrastructure and limited technical expertise. These prospects highlights the dual role of OTM preparing graduates for both employment and job creation. Entrepreneurship education is now seen as essential not optional in Office Technology and Managment programmes, as it teaches students how to turn ideas into successful ventures. It goes beyond just business theory. It focuses on practical and creative skills such as: opportunity recognition, business planning, financial literacy, marketing skills, leadership and management, risk- taking and problem –solving skills. The aim of teaching this course in schools is to help student develop innovative thinking, encourage self-employment and job creation, build confidence and independence, teach real –world business skills, foster and entrepreneurial mindset. A student in an entrepreneurial class might come up with a business idea, create a simple business plan, learn how to pitch it to investors and possibly start a small venture. It has been found to significantly influence graduates intentions towards self employment, job creation, particularly in developing economies where formal employment opportunities are limited. According to Ojo, Owoeye and Osime (2023), integrating entrepreneurial skill into OTM curricula has significant contributions and helps students to acquire practical competencies that prepare them for self reliance and sustainable economic participation. Egeonu (2024) found that entrepreneurship education has a significant positive relationship with graduate employability in south – east Nigeria. Indicating that it is a more viable way forward for reducing unemployment and promoting self reliance among graduates.

Despite this significant contributions, evidence suggests that implementation of Entrepreneurial readiness in OTM programme is fraught with challenges. Ekwue, et al, identified critical issues such as inadequate facilities, insufficient modern equipment and a shortage of qualified personnel of which hinder effective skill acquisition. This raises concerns about whether the objectives of OTM in equipping student with relevant competencies are being fully realized. Therefore OTM programmes should continue to emphasize entrepreneurship education as a strategic tool for sustainable development and economic empowerment.

Ebonyi state is one of the states in south East Nigeria with a growing emphasis on Entrepreneurship development and youth empowerment as strategies for addressing graduate unemployment and promoting economic development. The state is home to several tertiary institutions including Akanu Ibiam Federal Polytechnic, Unwana. Where OTM programme is offered and where OTM students are expected to acquire digital office competencies and entrepreneurial skills required for modern workplaces. However the increasing digitalization of business operations and the evolving

demands of the future of work require graduates to possess advanced competencies in office technologies, digital communication, information management and business innovation. Despite these expectation, concerns persist regarding the extent to which OTM student possess the digital office competencies needed to become entrepreneurially ready and competitive in the digital economy.

Examining this issue within the context of the Akanu Ibiam Federal Polytechnic Unwana, Ebonyi State will provide empirical evidence that can guide curriculum improvement, institutional policy and entrepreneurship development initiatives aimed at bridging the future of work gap among OTM graduates.

Statement of Problem

The increasing rate of graduate unemployment in Nigeria has heightened concerns about the preparedness of tertiary institution graduates for the evolving world of work. Although the OTM programme incorporates digital office competencies and entrepreneurship skills intended to prepare students for self-employment and participation in the digital workplace, many graduates still encounter challenges in establishing sustainable entrepreneurial ventures. This situation raises questions about whether the digital office competencies acquired by OTM students in Akanu Ibiam Federal Polytechnic, Unwana adequately enhance their entrepreneurial readiness. This deficiency undermines their employability and limits their capacity to function effectively in digital driven work environments (Akpan, Akpan and Homever 2023, Egajivwe, 2024).

Furthermore, the continuous evolution of workplace technologies demands competencies in digital communication, information management, online collaboration and office automation. However, empirical evidence on the digital office competencies required for entrepreneurship readiness among OTM students in Akanu Ibiam Federal Polytechnic Unwana, Ebonyi State, remains limited. The apparent gap between the competencies acquired by students and the demands of the contemporary digital workplace creates a need for empirical investigation. It is against this backdrop that this study seeks to determine the digital office competencies required by OTM students for entrepreneurship readiness and the challenges affecting their acquisition in Akanu Ibiam Federal Polytechnic Unwana, Ebonyi State, Nigeria.

Purpose of the Study

The purpose of this study is to determine the digital office competencies required by Office Technology and Management students for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana, Ebonyi State, Nigeria. Specifically, the study sought to determine:

1. the digital office competencies required by Office Technology and Management students for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana.
2. the challenges affecting the acquisition of digital office competencies required by Office Technology and Management students for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana.

Research Questions:

The following research questions guided the study:

1. What digital office competencies are required by Office Technology and Management students for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana?
2. What challenges affect the acquisition of digital office competencies required by Office Technology and Management students for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana?
3.

Hypotheses:

The following null hypotheses were tested at 0.05 level of significance:

Ho_1: There is no significant difference between the mean ratings of male and female Office Technology and Management students on the digital office competencies required for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana.

Ho_2: There is no significant difference between the mean ratings of male and female Office Technology and Management students on the challenges affecting the acquisition of digital office

competencies required for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana.

Methodology

The study adopted a descriptive survey research design. The population of the study comprised 74 HND II Office Technology and Management students of Akanu Ibiam Federal Polytechnic Unwana, Ebonyi State, Nigeria, consisting of 24 male and 50 female students. The entire population was studied using a census sampling technique because the population was manageable. The instrument used for data collection was a researcher-developed structured questionnaire consisting of 20 items divided into two sections. Section A contained 10 items on digital office competencies required by OTM students for entrepreneurship readiness, while Section B contained 10 items on challenges affecting the acquisition of the required digital office competencies. The items in Section A were structured on a four-point rating scale of Very Highly Required (VHR), Highly Required (HR), Moderately Required (MR), and Lowly Required (LR), weighted 4, 3, 2 and 1, respectively. Section B was structured on a four-point rating scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD), weighted 4, 3, 2 and 1, respectively. The questionnaire was validated by experts in Office Technology and Management and Measurement and Evaluation. The reliability of the instrument was established using Cronbach Alpha, which yielded reliability coefficients of 0.74 and 0.77 for the two sections, respectively, indicating that the instrument was sufficiently reliable for the study. Seventy-four copies of the questionnaire were administered to the respondents, and all 74 copies were retrieved and found usable, representing a 100% return rate. Data collected for the research questions were analyzed using mean and standard deviation. For Section A, a criterion mean of 2.50 was used to determine the extent to which each digital office competency was required. Mean scores of 3.50–4.00 were interpreted as Very Highly Required, 2.50–3.49 as Highly Required, 1.50–2.49 as Moderately Required, and 1.00–1.49 as Lowly Required. For Section B, mean scores of 2.50 and above were regarded as agreement that the identified factor constituted a challenge, while mean scores below 2.50 were regarded as disagreement. Standard deviation was used to determine the degree of closeness or homogeneity of the respondents' ratings. Independent-samples t-test was used to test the null hypotheses at 0.05 level of significance. A null hypothesis was not rejected when the absolute value of the calculated t-value was less than the critical t-value; otherwise, it was rejected.

Results

Research Question 1: What digital office competencies are required by Office Technology and Management students for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana?

Table 1: Mean ratings and standard deviation of respondents on digital office competencies required by OTM students for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana **N=74**

S/N	Items Statement	X	SD	Remark
1.	Proficiency in word-processing application skills	3.55	0.50	Very Highly Required
2.	Proficiency in spreadsheet application skills	3.42	0.50	Highly Required
3.	Competence in presentation software application skills	3.54	0.50	Very Highly Required
4.	Competence in database management skills	3.34	0.53	Highly Required
5.	Effective use of digital communication tools	3.55	0.53	Very Highly Required
6.	Competence in online collaboration tools	3.37	0.54	Highly Required
7.	Competence in digital records management	3.54	0.50	Very Highly Required
8.	Competence in the use of internet resources	3.46	0.53	Highly Required
9.	Competence in cloud-based office applications	3.51	0.50	Very Highly Required
10.	Competence in office automation technologies	3.51	0.50	Very Highly Required
	Cluster mean/Standard Deviation	**3.48**	**0.52**	**Highly Required**

SOURCE: Field Survey (2026)

The result shows that the mean ratings of the ten digital office competencies ranged from 3.34 to 3.55, with a cluster mean of 3.48. Since the entire item means are above the criterion mean of 2.50**,** all ten competencies are considered required for entrepreneurship readiness among OTM students. The cluster mean of 3.48 indicates that the identified digital office competencies are highly required. The standard deviation values, ranging from 0.50 to 0.54, indicate that the respondents' ratings were relatively close to one another. The result indicates that entrepreneurship readiness among OTM students requires competencies beyond conventional office skills to include competence in word processing, spreadsheets, presentations, database management, digital communication, online

collaboration, digital records management, internet use, cloud-based applications and office automation technologies.

Ho_1: There is no significant difference between the mean ratings of male and female Office Technology and Management students on the digital office competencies required for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana.

Table 2: t–test analysis of difference between the mean ratings of male and female Office Technology and Management students on the digital office competencies required for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana.

Students	N	$\bar{X}$	SD	DF	t-cal.	t-crit.	Decision
Male	24	3.45	0.51				
				72	-0.39	1.99	Not Significant
Female	50	3.50	0.52				

Where N = Number of respondents, X = Mean, SD= Standard Deviation, DF = Degree of Freedom

The result in Table 2 shows that the calculated t-value of −0.39 is less than the critical t-value of 1.99 at 0.05 level of significance and 72 degrees of freedom. Therefore, the null hypothesis, which states that there is no significant difference between the mean ratings of male and female OTM students on the digital office competencies required for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana, Ebonyi State, Nigeria, was not rejected**.** This implies that male and female OTM students did not differ significantly in their ratings of the digital office competencies required for entrepreneurship readiness.

Research Question 2: What challenges affect the acquisition of digital office competencies required by Office Technology and Management students for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana?

Table 3: Mean ratings and standard deviation of respondents on the challenges that affects the acquisition of digital office competencies required by OTM students for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana

N=74

S/N	Item Statement	Mean	SD	Remark
11	Inadequate ICT facilities hinder the acquisition of digital office competencies.	3.47	0.53	Agree
12	Limited internet access affects students' digital skills development.	3.50	0.50	Agree
13	Frequent power outages hinder practical digital training.	3.47	0.50	Agree
14	Inadequate funding limits access to digital technologies.	3.47	0.52	Agree
15	Outdated office equipment affect students' competency development.	3.48	0.50	Agree
16	Insufficient practical sessions reduce digital competency acquisition	3.50	0.51	Agree
17	Shortage of qualifies instructors affect digital skills training	3.51	0.52	Agree
18	High cost of digital devices limit students learning opportunities.	3.39	0.51	Agree
19	Inadequate exposure to modern office technologies affect competency development.	3.47	0.50	Agree
20	Limited industry based training affect students' digital office competencies.	3.46	0.55	Agree
	Cluster mean/Standard Deviation	**3.47**	**0.51**	Agree

SOURCE: Field Survey (2026)

The data in table 3 showed that the 10 items statement had their mean ranged from 3.39 to 3.51 which is above the benched mark of 2.50. This indicated that items 11-20 with a cluster mean of 3.47 are challenges affecting the acquisition of digital office competencies for entrepreneurship readiness of OTM students. However, with the standard deviation values ranging from 0.50–0.55 implies that the respondents' opinions are not far from each other on the challenges affecting the acquisition of digital office competencies required by OTM students for entrepreneurial readiness in Akanu Ibiam Federal Polytechnic Unwana. The finding shows that the issue is not limited to students' willingness to acquire digital skills but is also connected to the availability of appropriate infrastructure, qualified personnel, practical training opportunities, reliable internet and electricity, modern office equipment, access to digital devices and industry-based experiences.

Ho_2: There is no significant difference between the mean ratings of male and female Office Technology and Management students on the challenges affecting the acquisition of digital office competencies required for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana.

Table 4: t–test analysis of difference between the mean ratings of male and female Office Technology and Management students on the challenges affecting the acquisition of digital office competencies required for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana.

Students	N	$\bar{X}$	SD	DF	t-cal.	t-crit.	Decision
Male	24	3.46	0.53				
				72	-0.16	1.99	Not Significant
Female	50	3.48	0.50				

Where N = Number of respondents, X = Mean, SD= Standard Deviation, DF = Degree of Freedom

The result in Table 4 shows that the calculated t-value of −0.16 is less than the critical t-value of 1.99 at 0.05 level of significance and 72 degrees of freedom. Therefore, the null hypothesis, which states that there is no significant difference between the mean ratings of male and female OTM students on the challenges affecting the acquisition of digital office competencies required for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana, Ebonyi State, Nigeria, was not rejected**.** This implies that male and female students had similar perceptions regarding the challenges affecting the acquisition of the required digital office competencies.

Discussion of Findings

The findings of the study revealed that digital office competencies are highly required by Office Technology and Management students for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana, Ebonyi State, while the corresponding null hypothesis which revealed that there was no significant difference between the mean ratings of male and female OTM students regarding the digital office competencies required for entrepreneurship readiness. This implies that digital office competencies such as proficiency in word processing applications, spreadsheet applications, presentation software, database management, digital communication tools, online collaboration, digital records management, internet applications, cloud-based office applications and office automation technologies are considered important for preparing OTM students to function effectively in entrepreneurial activities. The finding further implies that OTM students require practical digital competencies to prepare business documents, manage business information and records, communicate with customers and business associates, collaborate online, access internet-based business opportunities and utilize modern office technologies in establishing and managing entrepreneurial ventures. The finding is in agreement with Emehi and Jerry (2019)**,** who found that entrepreneurial and ICT competencies are essential for OTM graduates' self-reliance and employability. The finding also corroborates Dibbari and Patience (2023), who identified digital skills, including data processing, virtual communication and information management, as important competencies required by OTM students for employability. Similarly Eze-Desy and Emeasoba (2025) stated that computer application skills such as internet skills, spreadsheet skills and database management skills will greatly assist the Business Education students in entrepreneurship development for future businesses since

the computer has taken over every facet of business. This will also reduce unemployment among Business Education graduates. Therefore, the acquisition of relevant digital office competencies is essential for equipping OTM students with the practical technological capabilities required to identify opportunities, communicate effectively, manage business information and participate successfully in the contemporary digital entrepreneurial environment.

The findings of the study revealed that institutional, infrastructural and instructional factors constitute challenges affecting the acquisition of digital office competencies required by OTM students for entrepreneurship readiness in Akanu Ibiam Federal Polytechnic Unwana, Ebonyi State, while the corresponding null hypothesis which revealed that there was no significant difference between the mean ratings of male and female OTM students regarding the challenges affecting the acquisition of the required digital office competencies. This implies that the acquisition of digital office competencies by OTM students is affected not only by the students' willingness to learn but also by the availability of appropriate technological facilities, qualified instructors, practical learning opportunities and supportive institutional infrastructure. Inadequate ICT facilities and outdated office equipment may limit students' opportunities to practice contemporary digital applications, while poor internet connectivity and frequent power outages may interrupt practical training and restrict access to online learning resources. The finding corroborates Ademiluyi, Adegboye and Akande (2025)**,** who noted that the integration of innovative technologies into OTM education can be constrained by inadequate infrastructure and limited technical expertise. Similarly, Ekwue, Mayan and Obasi (2025) emphasized the challenges associated with emerging office technologies and the need for continuous improvement in the delivery of business education. The finding therefore suggests that adequate ICT facilities, modern office equipment, reliable internet and electricity, qualified instructors, regular practical sessions and industry-based training are necessary to enable OTM students to acquire the digital office competencies required for entrepreneurship readiness.

Conclusion

This study concludes that digital office competencies are essential requirements for the entrepreneurship readiness of Office Technology and Management students in Akanu Ibiam Federal Polytechnic Unwana, Ebonyi State. The study established that competencies in the use of digital office applications, communication tools, information management systems and modern office technologies are highly required to prepare OTM students for effective participation in entrepreneurial activities and the contemporary digital economy. The study also established that the acquisition of these competencies is constrained by institutional, infrastructural and instructional challenges. These challenges may limit students' opportunities for adequate practical exposure and effective utilization of contemporary digital office technologies. Therefore, strengthening the institutional environment for digital skills development is essential for improving the entrepreneurship readiness, self-reliance and digital workplace preparedness of OTM students.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. The management of Akanu Ibiam Federal Polytechnic Unwana should provide adequate and up-to-date ICT facilities, modern office equipment and opportunities for practical training to enable OTM students to acquire the digital office competencies required for effective entrepreneurship readiness.
2. The Polytechnic management and relevant stakeholders should address the challenges affecting the acquisition of digital office competencies by improving internet connectivity and power supply, providing adequate funding and modern digital resources, engaging qualified instructors, and strengthening students' exposure to contemporary office technologies and industry-based training.

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ENHANCING ENTREPRENEURIAL READINESS OF BUSINESS EDUCATION STUDENTS THROUGH EXPERIENTIAL LEARNING STRATEGY IN TERTIARY INSTITUTIONS IN CROSS RIVER STATE

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Abstract

The study determined entrepreneurial readiness of business education students through experiential learning strategy in tertiary institutions in Cross River State. Three purposes, research questions and null hypotheses guided the study. Quasi experimental design involving pre-test and post-test was adopted for the study. The population comprised 115 (male 52 and female 63) year three business education students in four tertiary institutions offering Business Education programme in Cross River State. Entrepreneurial Readiness Test (ERT) was used to collect data for the study. The instrument of 40 objective items was validated by experts and tested for reliability using K-R 20 which gave an estimate of 0.78. The instrument was administered to both groups at the beginning (pre-test) and at the end of the experiment. Data collected in the testes were used for analysis. Mean and standard deviation were used to answer the research questions while ANCOVA was used to test the null hypotheses. Findings revealed that experiential learning strategy was superior in enhancing business education students' entrepreneurial readiness than lecture method. Experiential learning has moderate effect on gender with males slightly better than their female counterpart in the aspect of entrepreneurial readiness. Further findings indicated that there was a significant difference in the mean entrepreneurial readiness scores of business education students taught using experiential learning strategy and those taught using lecture method. There is no significant difference in the mean entrepreneurial readiness scores of male and female business education students taught using experiential learning strategy in tertiary institutions and there was no interaction effect between method and gender on students' mean entrepreneurial readiness scores in tertiary institutions in Cross River State. It was recommended among others that Tertiary institutions, especially those in Cross River should shift from theory-heavy lectures to experience-based learning to provide a practical solution that engages students in concrete experiences, reflections conceptualization and active experimentation.

Key words: *Entrepreneurial Readiness, Business Education, Experiential Learning*

Introduction

It is not pleasant to see business education students' graduate with theory but lack practical ability to start a business or perform in jobs that require entrepreneurial skills. Achi (2023) averred that entrepreneurship was introduced into the curriculum of tertiary institutions with the main objective to impart entrepreneurial skills that will enable the students to become entrepreneurs instead of jobseekers after graduation. The lack of entrepreneurial skills has contributed to the unemployment problem among graduates. As a result, entrepreneurial readiness has become very essential to business education students. Entrepreneurial readiness is concerned with whether an individual or an organization is prepared to dive into entrepreneurial activities and handle them well. Coduras et al. (2016) defined entrepreneurial readiness as the confluence of a set of personal traits or features that distinguishes individuals with readiness for entrepreneurship as especially competent to observe and analyse their environment in such a way that they channel their high creative and productive potential, so they may deploy their capability to dare and need for self-achievement. Adeniyi et al. (2024) linked students' entrepreneurial readiness to include preparedness to take risk, proactive and innovation among other entrepreneurial traits.

Entrepreneurship readiness is determined by a wide set of psychological, sociological and business management factors (Coduras et al., 2016). It is a comprehensive construct that combines psychological resilience, cognitive ability, and resource availability, all of which are essential for successful entrepreneurship in today's dynamic business environment. On the psychological side, readiness is about how much risk one is willing to take, how resilient he or she is and how passionate the individual feel about innovation. Entrepreneurs really need a mind-set that is comfortable with uncertainty and open to learning from setbacks. That mental toughness is what helps them push through when the road gets rough. From a cognitive standpoint, readiness means one have a strong grasp of the market; understand what customers want, and pay attention to industry trends. When a person know these things, he or she become equipped to make smarter decisions and adapt quickly when things change. Having a clear strategic vision for one's venture also signals that one is ready to put in the necessary resources and effort. Resource readiness includes financial resources, the skills and experience a person and his or her team bring, and the person's social network as well. Financial resources are critical for start-up operations, while human capital, specifically skills and experience of the entrepreneur and their team are important for the effective execution of business strategies. In addition, an established network can provide valuable insights, mentorship, and potential partnerships, all of which enhance an entrepreneur's readiness.

Entrepreneurial readiness is very fundamental. According to Strampe and Rambe (2024) entrepreneurial readiness behaviour can be explained through fostering soft skills, honing venture creation, innovative financing, venture growth and entrepreneurial activities of students. In the same vein, Gardner in Zulmi and Tentama (2026) averred that entrepreneurial readiness depends on mind-set towards entrepreneurial activities and individuals with entrepreneurial readiness tend to have a positive mind-set towards entrepreneurial activities. Entrepreneurial readiness can help students with the ability to identify and explore new opportunities, build confidence in their skills, and enable them to predict and avoid things that can cause failure at work (Giorgi et al., 2015; Bapat et al., 2022). Opportunity identification involve noticing a gap and figuring out how to turn the gap into viable business. Teaching these skills to students will help them develop solution brain to problems which is relevant in entrepreneurship. Olugbola (2017) found positive effect of opportunity identification, motivation, and resources on entrepreneurship which is central in entrepreneurship training and developing entrepreneurial ability.

Furthermore, entrepreneurial readiness prepares individuals to face challenges, take risk and thrive in dynamic business environment. Ghimire (2024) identified problem-solving, innovation, and company management as essential strategies in equipping individuals to address entrepreneurial obstacles. Innovation in entrepreneurship is taking an idea or opportunity and turning it into something new that creates value and profit. Chai and Soelaima (2024) explicated that entrepreneurial experience and innovation positively and significantly influence entrepreneurial intentions. This intention increases the readiness to start and run a business. Developing entrepreneurial mind-set also foster entrepreneurial initiatives among students (Prashanthi & Sreenivas, 2023). Preparing students to be entrepreneurial ready include a much practical approach like experiential learning.

Experiential learning, also refer to as experience-based learning is a learning method that emphasizes the learning process through real experience or direct practice (Sopiyan et al., 2024). Experiential learning in entrepreneurship means "learning by doing" through activities such as internships, business incubation, simulations, project, case studies, field trips, games, real ventures, and community-based challenges. According to Koropoguia et al. (2025), experiential learning approach is a promising pedagogical direction in entrepreneurship education. In a study, Arrabaca and Gevero (2026) confirmed that students scored high in concrete experience, reflective observation, and active experimentation, with an especially high level in abstract conceptualization when experiential method was applied. Similarly, Ali and Negasi (2021) revealed that a significant mean difference in the entrepreneurial intention and its antecedents were obtained between the experiential and the traditional teaching methods, with experiential method yielding better achievement. Pinto and Reshma (2021) agreed that experiential learning strategy was the most effective when compared with conventional classroom teaching and in terms of student's involvement in learning. This may suggest that the method is capable of developing entrepreneurial competencies relevant in business performance and enhance entrepreneurial readiness. A study by Anwar and Abdullah (2021) found that an experiential learning strongly predicts entrepreneurial intention, implying that the method would have a clear beneficial relationship with entrepreneurial intention. This means that experiential learning is an effective method

in teaching entrepreneurship education. Maureen et al (2023) concurred that experiential learning is the innovative way of teaching students' entrepreneurship practically by adding abstract conceptualization and active experimentation to entrepreneurship course content. While there are evidence of experiential learning strategy promoting academic achievement in entrepreneurship, there is limited empirical evidence on how effectively this strategy enhances entrepreneurial readiness of business education students specifically within tertiary institutions in Cross River State. In other words, research determining entrepreneurial readiness of business education students through experiential learning strategy in tertiary institutions in Cross River State have not received desired attention, hence the need for this study.

Statement of Problem

Entrepreneurship education is designed to equip students with the knowledge, skills and attitude needed to create and manage business after graduation. Achi (2023) noted that entrepreneurship was introduced into the curriculum of tertiary institutions with the main objective to impart entrepreneurial skills that will enable the students to become entrepreneurs instead of jobseekers after graduation. However, it appears that many business education graduates especially in Cross River State lack the confidence, practical skills and mind-set required to start and sustain businesses. This has contributed to high unemployment rates and overdependence on white-collar jobs among graduates of tertiary institutions in Cross River State.

Concerned Bodies like the National Board for Technical Education and National Universities Commission have repeatedly emphasized the need for entrepreneurship education to be practical and skill-based rather than theory-driven. Yet, teaching in many tertiary institutions in Cross River State still relies heavily on lecture methods, textbooks and examinations. Students are taught concepts of entrepreneurship but are rarely exposed to real business situations, simulation, business plan competitions, internships, or hands-on projects. As a result, students graduate with theoretical knowledge but without the readiness to identify opportunities, take risks, innovate, or manage real business challenges. This has necessitated the use of other methods like experiential learning.

Experiential learning strategy offers a practical solution by engaging students in concrete experiences, reflections conceptualization and active experimentation. Studies have shown that the strategy improves entrepreneurial self-efficacy, risk-taking propensity, and intention to start business. However, there is limited empirical evidence on how effectively this strategy enhances entrepreneurial readiness of business education students specifically within tertiary institutions in Cross River State. The problem, therefore, is that business education students in Cross River State appears to lack adequate entrepreneurial readiness due to limited practical, experience-based learning and the extent to which experiential learning strategy can bridge this has not been adequately established.

This gap in research and practice create a problem. If business education students continue to graduate without experiential exposure, the goal of entrepreneurship education for job creation and self-reliance will remain unachieved, therefore, there is a need to investigate how experiential learning strategy can enhance the entrepreneurial readiness of business education students in tertiary institutions in Cross River State.

Purpose of the Study

The main purpose of the study was to determine entrepreneurial readiness of business education students through experiential learning strategy in tertiary institutions in Cross River State. Specifically, the study sought to determine the:

1. Entrepreneurial readiness of business education students taught using experiential learning strategy and those taught using lecture method in tertiary institutions in Cross River State.
2. Entrepreneurial readiness of male and female business education students taught using experiential learning strategy in tertiary institutions in Cross River State.
3. The interaction effect of methods and gender on students' mean achievement scores in Entrepreneurial readiness in tertiary institutions in Cross River State.

Research Questions

The following research questions were developed to guide the study:

1. What are the mean entrepreneurial readiness scores of business education students taught using experiential learning strategy and those taught using lecture method in tertiary institutions in Cross River State?
2. What are the mean entrepreneurial readiness scores of male and female business education students taught using experiential learning strategy in tertiary institutions in Cross River State?

3. What is the interaction effect of methods and gender in entrepreneurial readiness in tertiary institutions in Cross River State?

Hypotheses

The following null hypotheses, to be tested at 0.05 alpha level of significance were formulated to guide the study:

1. There is no significant difference in the mean entrepreneurial readiness scores of business education students taught using experiential learning strategy and those taught using lecture method in tertiary institutions in Cross River State.
2. There is no significant difference in the mean entrepreneurial readiness scores of male and female business education students taught using experiential learning strategy in tertiary institutions in Cross River State.
3. There is no significant difference in the mean interaction effect of methods and gender on students' mean scores in entrepreneurial readiness in tertiary institutions in Cross River State.

Methodology

Quasi experimental design involving pre-test and post-test was adopted for the study. The population comprised 115 (male 52 and female 63) year three business education students in four tertiary institutions offering Business Education programme in Cross River State. The schools were randomly separated into two groups of two schools each of intact classes. One group was assigned as the treatment group with 50 (24 male and 26 female)students. The other group was assigned as control with 65 (28 male and 37 female) student. The students in the treatment group were taught using experiential learning strategy while those in the control group were taught using lecture method. The experiment lasted for a total of six weeks. Entrepreneurial Readiness Test (ERT) was used to collect data for the study. The instrument of 40 objective items was validated by experts and tested for reliability using K-R 20 which gave an estimate of 0.78. The instrument was administered to both groups at the beginning (pre-test) and at the end of the experiment. Data collected in the testes were used for data analysis. Mean and standard deviation were used to answer the research questions while ANCOVA was used to test the null hypotheses. For any of the hypothesis to be accepted the P-value must be equal to or greater than the alpha value of 0.05 significance otherwise it was rejected.

Results

Research Question 1: What are the mean entrepreneurial readiness scores of business education students taught using experiential learning strategy and those taught using lecture method in tertiary institutions in Cross River State?

Table 1: Descriptive Statistics onentrepreneurial readiness scores of business education students taught using experiential learning strategy and those taught using lecture method

Groups	Mean	Std. Deviation	N
Treatment	61.3800	12.76137	50
Control	49.0154	15.27200	65
Total	54.3913	15.45434	115

Table 1 reveals that students in the treatment group taught using experiential learning strategy have mean score of 61.38 and standard deviation of 12.78. Those in the control group taught using lecture method have mean score of 49.01 and standard deviation of 15.27. This indicates that experiential learning strategy is superior in enhancing entrepreneurial readiness than lecture method.

Research Question 2

What are the mean entrepreneurial readiness scores of male and female business education students taught using experiential learning strategy in tertiary institutions in Cross River State?

Table 2:descriptive statistics on male and female business education students taught using experiential learning strategy

Gender	Mean	Std. Deviation	N
Male	63.6667	13.35035	24
Female	59.2692	12.06502	26
Total	61.3800	12.76137	50

Table 2 shows that the males mean score and standard deviation are 63.67 and 13.35 respectively, while that of the female are 59.27 and 12.07 respectively. This indicates that experiential learning has moderate effect on gender with males slightly outperformed their female counterpart in the aspect of entrepreneurial readiness when experiential learning strategy was used.

Research Question 3

What is the interaction effect of methods and gender in entrepreneurial readiness in tertiary institutions in Cross River State?

Table 3: Mean interaction effect of experiential learning strategy and gender in entrepreneurial readiness

Group	Gender	Mean	Std. Deviation	N
	Male	63.6667	13.35035	24
Treatment	Female	59.2692	12.06502	26
	Total	61.3800	12.76137	50
	Male	52.2143	15.41610	28
Control	Female	46.5946	14.91356	37
	Total	49.0154	15.27200	65
	Male	57.5000	15.47357	52
Total	Female	51.8254	15.07994	63
	Total	54.3913	15.45434	115

Table 3 reveals that both male and female students taught entrepreneurial readiness using experiential learning strategy consistently did better than those taught using lecture method. Thus, there was no interaction effect between method and gender on students' mean entrepreneurial readiness scores in tertiary institutions in Cross River State.

Hypothesis 1

There is no significant difference in the mean entrepreneurial readiness scores of business education students taught using experiential learning strategy and those taught using lecture method in tertiary institutions in Cross River State.

Table 4: ANCOVA analysis on the mean entrepreneurial readiness scores of business education students taught using experiential learning strategy and those taught using lecture method

Source	Type III Sum of Squares	Df	Mean Square	F	P-Value	Partial Eta Squared
Corrected Model	4370.805[a]	2	2185.403	10.709	.000	.161
Intercept	37085.079	1	37085.079	181.721	.000	.619
PRETEST	50.179	1	50.179	.246	.621	.002
GROUP	4272.828	1	4272.828	20.937	.000	.157
Error	22856.586	112	204.077			
Total	367445.000	115				
Corrected Total	27227.391	114				

a. R Squared = .161 (Adjusted R Squared = .146)

Table 4 shows that the calculated P-value of 0.00 is less than the alpha significance value of 0.05. Based on this, the null is rejected. Therefore, there is significant difference in the mean entrepreneurial readiness scores of business education students taught using experiential learning strategy and those taught using lecture method in tertiary institutions in Cross River State.

Hypothesis 2

There is no significant difference in the mean entrepreneurial readiness scores of male and female business education students taught using experiential learning strategy in tertiary institutions in Cross River State.

Table 5: ANCOVA analysis on the mean entrepreneurial readiness scores of male and female business education students taught using experiential learning strategy

Source	Type III Sum of Squares	Df	Mean Square	F	P-value	Partial Eta Squared
Corrected Model	247.719[a]	2	123.860	.753	.477	.031
Intercept	22886.304	1	22886.304	139.116	.000	.747
Pretest	6.388	1	6.388	.039	.845	.001
Gender	246.576	1	246.576	1.499	.227	.031
Error	7732.061	47	164.512			
Total	196355.000	50				
Corrected Total	7979.780	49				

a. R Squared = .031 (Adjusted R Squared = -.010)

Table 5 reveals that the calculated P-value of 0.227 is greater than the alpha significance value of 0.05. The null hypothesis is accepted. Therefore, there is no significant difference in the mean entrepreneurial readiness scores of male and female business education students taught using experiential learning strategy in tertiary institutions in Cross River State.

Hypothesis 3

There is no significant difference in the interaction effect of methods and gender on students' mean scores in entrepreneurial readiness in tertiary institutions in Cross River State

Table 6: ANCOVA analysis on the interaction effect of methods and gender on students' mean scores in entrepreneurial readiness in tertiary institutions

Source		Type III Sum of Squares	Df	Mean Square	F	P-value	Partial Eta Squared
Intercept	Hypothesis	37505.920	1	37505.920	147.765	.000	.932
	Error	2718.742	10.711	253.821[a]			
PRETEST	Hypothesis	5.615	1	5.615	.028	.868	.000
	Error	22156.467	110	201.422[b]			
GROUP	Hypothesis	4056.512	1	4056.512	368.608	.038	.997
	Error	10.485	.953	11.005[c]			
GENDER	Hypothesis	654.926	1	654.926	37.681	.014	.937
	Error	44.075	2.536	17.381[d]			
GROUP *	Hypothesis	11.259	1	11.259	.056	.814	.001
GENDER	Error	22156.467	110	201.422[b]			

a. .116 MS(GENDER) + .884 MS(Error)
b. MS(Error)
c. 1.001 MS(GROUP * GENDER) - .001 MS(Error)
d. .968 MS(GROUP * GENDER) + .032 MS(Error)

Table 6 shows that the calculated P-value of 0.814 is greater than the alpha significance value of 0.05. The null hypothesis is accepted. Therefore, there is no significant difference in the interaction effect of methods and gender on students' mean scores in entrepreneurial readiness in tertiary institutions in Cross River State.

Discussion

Results in Table 1 revealed that experiential learning strategy was superior in enhancing entrepreneurial readiness than lecture method. The finding amplifies the efficacy of experiential learning which is centred on learning by doing. Experiential learning has the capacity to increase students' confidence to face real life challenges. It enhance their practical skills and makes them want to practice entrepreneurship. The finding suggests that learning by doing method is capable of developing entrepreneurial competencies relevant in business performance and enhance entrepreneurial

readiness. In other words, this strategy employ a practical approach which is essential in entrepreneurship. The finding agrees with Pinto and Reshma (2021) that experiential learning strategy was the most effective when compared with conventional classroom teaching and in terms of student's involvement in learning. The finding also in aligns with Arrabaca and Gevero (2026) that students scored high in concrete experience, reflective observation, and active experimentation, with an especially high level in abstract conceptualization when experiential method was applied. Further findings in Table 4 indicated that there is significant difference in the mean entrepreneurial readiness scores of business education students taught using experiential learning strategy and those taught using lecture method in tertiary institutions in Cross River State. Experiential learning strategy was better compared to lecture method, suggesting the two methods do not yield the same result. The finding is in line with Ali and Negasi (2021) revealed that a significant mean difference in the entrepreneurial intention and its antecedents were obtained between the experiential and the traditional teaching methods, with experiential method yielding better achievement.

Results in Table 2 revealed that experiential learning has moderate effect on gender with males slightly better than their female counterpart in the aspect of entrepreneurial readiness. The finding means that gender slightly influences how individuals engage with and benefit from experiential learning. The moderate difference be attributed to males having better innate ability for entrepreneurship. They are often encourage more to take risk and be independent from childhood. While men and women develop similar baseline entrepreneurial readiness, women often report lower initial entrepreneurial self-efficacy (ESE) due to fewer prior opportunities to build concrete business experience. The finding aligns with Ward et al. (2019) that gender differences at the mediation level and that necessity-driven motives are an influencing factor, more so in males, and it hampers the significance of subjective norm. The testing of hypothesis two revealed that there is no significant difference in the mean entrepreneurial readiness scores of male and female business education students taught using experiential learning strategy in tertiary institutions in Cross River State. This implies that whatever disparity that may exist between male and female, when it comes to using experiential learning in enhancing entrepreneurial readiness it is negligible. Experiential learning removes barriers by exposing male and female students to the same project, funding, mentorship among others which help to shrink gender gap. Entrepreneurial skills like opportunity spotting, risk-taking and problem solving essential for entrepreneurial readiness are learned behaviours that can be acquired using experiential learning strategy. The finding disagrees with H€agg et al. (2023) that student gender balance in the classroom has a significant positive impact on graduates' likelihood of engaging in start-up activity for post-graduation. Other gender difference like social factor among others may create gender gap but not experiential learning strategy as evidenced in the study.

Table 3 indicated that both male and female students taught entrepreneurial readiness using experiential learning strategy consistently did better than those taught using lecture method. Thus, there was no interaction effect between method and gender on students' mean entrepreneurial readiness scores in tertiary institutions in Cross River State. The results of hypothesis 3 in Table 6 flow in the same direction, suggesting that there is no significant difference in the interaction effect of methods and gender on students' mean scores in entrepreneurial readiness. This is because experiential learning strategy offers a practical solution by engaging students in concrete experiences, reflections conceptualization and active experimentation. The findings concurs with Maureen et al (2023) that experiential learning is the innovative way of teaching students' entrepreneurship practically by adding abstract conceptualization and active experimentation to entrepreneurship course content. Experiential learning as an effective method in teaching entrepreneurship education aligns with Anwar and Abdullah (2021) that experiential learning strongly predicts entrepreneurial intention, implying that the method would have a clear beneficial relationship with entrepreneurial intention when compared to lecture method.

Conclusion

Experiential learning strategy is a promising pedagogical direction in entrepreneurship readiness. The strategy was the most effective when compared with lecture teaching method in terms ofbusiness education student's entrepreneurship readiness. The strategy has no gender bias and no interaction effect. This means that experiential learning strategy is capable of developing entrepreneurial competencies relevant in business performance and enhance entrepreneurial readiness in both male and female students. Tertiary institutions, especially those in Cross River State can use experiential learning strategy to provide a practical solution that engages students in concrete experiences, reflections conceptualization and active experimentation.Entrepreneurship readiness is built by doing,

not just by knowing. Therefore, if tertiary institutions in Cross River State want business education graduates to become job creators instead of job seekers, the teaching strategy must shift from theory-heavy lectures to experience-based learning.

Recommendation

The study recommended the following:

1. Tertiary institutions, especially those in Cross River should shift from theory-heavy lectures to experience-based learning to provide a practical solution that engages students in concrete experiences, reflections conceptualization and active experimentation.
2. Business educators should prioritize experience-based learning by teaching entrepreneurship like entrepreneurs trained through doing, feedback and repetition.
3. NUC and NCCE should include experiential hours as part of accreditation requirements for business education programmes to encourage the assessment of business education students on performance not only in examination. Evaluation should be expanded to include plan pitch, prototype development, sales records from mini-business and reflection journals to enable students learn from failure, not just memorizing textbooks.

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ADDRESSING GRADUATE UNEMPLOYMENT IN SOUTH-SOUTH NIGERIATHROUGH EXPERIENTIAL LEARNING IN COMPETENCY-BASED BUSINESS EDUCATION

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Abstract

Graduate unemployment has remained a major socio-economic challenge in Nigeria despite the increasing number of graduates produced annually by tertiary institutions. This study investigated addressing graduate unemployment in South-South Nigeria through experiential learning in competency-based business education.. The study adopted a descriptive survey research design with a correlational approach. The population comprised 300 Business Education graduates from selected tertiary institutions in South-South Nigeria. Given the manageable population size, a census approach was adopted. Data were collected using a researcher-developed instrument titled Experiential Learning and Graduate Employability Questionnaire (ELGEQ), which was validated by experts in Business Education and Measurement and Evaluation. The reliability of the instrument was established using Cronbach's Alpha. Mean and standard deviation were used to answer the research questions, while Pearson Product Moment Correlation and Simple Linear Regression were used to test the hypotheses at the 0.05 level of significance. Findings revealed that experiential learning significantly improves graduate employability, entrepreneurial competencies, and self-employment opportunities. The study also found that competency-based instructional strategies positively influence skill acquisition and workplace readiness among graduates. The study concluded that experiential learning is a critical strategy for improving graduate employability and reducing unemployment among Business Education graduates in South-South Nigeria. The study recommended that tertiary institutions should among others, strengthen work-integrated learning programmes, including internships, industrial attachments, entrepreneurship training, and project-based learning, while policymakers should support the integration of competency-based and experiential learning approaches into Business Education curricula to enhance graduates' employability and self-reliance.

Keywords: *Graduate unemployment, experiential learning, competency-based business education, employability skills, Business Education graduates, South-South Nigeria.*

Introduction

Addressing Graduate Unemployment in the South-South Region through Experiential Learning in Competency-Based Business Education Graduate unemployment has become one of the most pressing socio-economic challenges facing Nigeria. Despite the increasing number of graduates produced annually by universities, polytechnics, and colleges of education, many young people remain unemployed or underemployed. This situation is particularly evident in the South-South region of Nigeria, comprising Akwa Ibom, Bayelsa, Cross River, Delta, Edo, and Rivers States. The region is endowed with abundant natural resources, especially crude oil and gas, yet it continues to experience high levels of youth unemployment, poverty, and economic dependency.

One of the major concerns regarding graduate unemployment is the disconnect between the skills acquired in educational institutions and the competencies demanded by employers and the labour market. Many employers complain that graduates lack practical competencies and workplace readiness

required for effective job performance (Nwokike & Ezenwafor, 2021). This mismatch between educational training and labour market expectations has contributed significantly to increasing unemployment among graduates. Many graduates possess theoretical knowledge but lack practical experience, technical competence, entrepreneurial skills, critical thinking abilities, problem-solving capacity, communication skills, and workplace readiness. Consequently, employers often report difficulties in finding graduates who can effectively perform job-related tasks without extensive additional training.

Business education, as a vocational and professional field of study, is designed to equip learners with the knowledge, skills, attitudes, and competencies required for employment, self-reliance, and entrepreneurship. Traditionally, business education programmes have focused on subjects such as accounting, marketing, office technology, management, economics, entrepreneurship, and business communication. However, the effectiveness of these programmes in preparing graduates for the realities of the modern workplace has been questioned due to their heavy reliance on conventional teaching methods that emphasize memorization and theoretical instruction rather than practical skill development. (Adeoye et al., 2025).

The rapidly changing global economy, technological advancements, digital transformation, and the emergence of knowledge-based industries have altered the nature of work. Employers increasingly seek graduates who can demonstrate competencies such as teamwork, adaptability, leadership, creativity, digital literacy, innovation, and entrepreneurial thinking. Therefore, educational institutions are under pressure to redesign their curricula and instructional approaches to ensure that graduates acquire relevant competencies that enhance their employability.

Competency-Based Business Education (CBBE) has emerged as a strategic educational approach aimed at addressing this challenge. Competency-based education focuses on clearly defined learning outcomes that specify the knowledge, skills, attitudes, and behaviours students are expected to demonstrate upon completion of a programme. Unlike traditional education systems that emphasize time spent in classrooms, competency-based education prioritizes mastery of specific competencies and practical application of knowledge in real-life situations. Competency-based education focuses on the acquisition and demonstration of practical skills necessary for workplace success (Ogunbote et al., 2026). It emphasizes learner-centered instruction, performance outcomes, and measurable competencies.

A critical component of competency-based business education is experiential learning. Experiential learning refers to a learner-centered educational approach that emphasizes learning through direct experience, reflection, application, and active engagement. The concept is strongly associated with the work of educational theorists such as David Kolb, who proposed that effective learning occurs through a cycle involving concrete experience, reflective observation, abstract conceptualization, and active experimentation. Through experiential learning, students gain practical exposure that bridges the gap between classroom instruction and workplace realities.

Experiential learning in business education can take various forms, including internships, industrial attachments, cooperative education programmes, simulations, case studies, business incubation projects, mentorship programmes, field trips, work-based learning, community engagement projects, and entrepreneurial ventures. These activities provide students with opportunities to apply theoretical concepts, develop professional competencies, solve real-world business problems, and gain valuable work experience before graduation.

In the South-South Nigeria, the need for experiential learning is particularly significant due to the unique economic and social circumstances of the area. Although the region hosts major industries in oil and gas, maritime services, agriculture, manufacturing, commerce, and tourism, many graduates are unable to secure employment because they lack industry-relevant competencies. Employers frequently prefer experienced candidates, creating a paradox where graduates need experience to obtain employment but require employment opportunities to gain experience. Experiential learning offers a practical solution by integrating workplace experiences into academic programmes, thereby enabling students to acquire employable skills before entering the labour market. Graduate unemployment refers to the inability of graduates to secure meaningful employment after graduation. Seiyaibo (2020) attributed graduate unemployment to inadequate practical skills and entrepreneurial competencies.

Furthermore, the increasing emphasis on entrepreneurship as a strategy for economic development and job creation highlights the importance of experiential learning in business education. Through hands-on entrepreneurial experiences, students can develop the confidence, creativity, and managerial competencies required to establish and sustain their own businesses. This is particularly

relevant in the South-South region, where entrepreneurship can contribute significantly to economic diversification and reduce dependence on public-sector employment and the oil industry.

Studies have shown that experiential learning significantly enhances graduate employability and entrepreneurial competencies. Oludare et al. (2025) found that experiential learning strategies improved employment generation among business education graduates in Southwest Nigeria. Similarly, Obi et al. (2021) reported that experiential learning develops critical thinking, creativity, communication, and workplace adaptability among learners.

Despite these innovations, graduate unemployment remains high due to inadequate implementation of competency-based curricula, insufficient instructional facilities, and weak collaboration between industries and institutions (Ojo et al., 2026). Consequently, there is a need to empirically examine how experiential learning within competency-based business education can address graduate unemployment.

Statement of the Problem

The increasing rate of graduate unemployment in South-South, Nigeria suggests that many graduates lack the competencies and practical experiences needed for employment and entrepreneurship. Employers continue to express dissatisfaction with graduates' practical skills, problem-solving abilities and workplace readiness. Although competency-based business education and experiential learning approaches have been introduced to bridge this gap, evidence suggests that their implementation remains inadequate in many institutions. Consequently, many graduates remain unemployed or underemployed after graduation.

Therefore, addressing graduate unemployment in the South-South region requires a deliberate integration of experiential learning into competency-based business education programmes. Such integration has the potential to enhance graduate employability, promote entrepreneurship, strengthen industry-academic collaboration, and contribute to sustainable economic development in the region. It is against this backdrop that the study seeks to examine how experiential learning within competency-based business education can serve as a viable strategy for addressing graduate unemployment in the South-South region of Nigeria.

Purpose of the Study

The main purpose of this study was to examine how experiential learning in competency-based business education can address graduate unemployment in South-South, Nigeria. Specifically; the study sought to:

1. determine the perceptions of business education graduates' on the influence of experiential learning in competency-based business education on the employability skills of business education graduates in South-South, Nigeria?
2. examine the relationship between experiential learning in competency-based business education and the employment status of Business Education graduates in South-South, Nigeria.

Research Questions

The following research questions guided the study:

1. What are the perceptions of business education graduates on the influence of experiential learning in competency-based business education on the employability skills of business education graduates in South-South Nigeria?
2. What relationship exists between experiential learning experiences and the employment status of business education graduates in South-South Nigeria?

Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

1. H_{01}: Experiential learning in competency-based business education does not significantly influence the employment status of Business Education graduates in South-South Nigeria
2. H_{02}: There is no significant relationship between experiential learning in competency-based business education and the employment status of Business Education graduates in South-South Nigeria.

Methods

This study adopted a descriptive survey research design with a correlational approach. The descriptive survey design was considered appropriate because it enabled the researcher to obtain information from business education graduates regarding the extent to which experiential learning in competency-based business education has influenced their employability. The correlational approach was employed to determine the relationship between experiential learning and graduate employment outcomes in South-South Nigeria. The study was conducted in selected tertiary institutions within the

South-South geopolitical zone of Nigeria. The zone comprises Akwa Ibom, Bayelsa, Cross River, Delta, Edo, and Rivers States. The population for the study consisted of 300 Business Education graduates from selected tertiary institutions in South-South Nigeria. Given the relatively small and manageable population size, the entire population of 300 Business Education graduates was used for the study. Data for the study were collected using a structured questionnaire titled Experiential Learning and Graduate Employability Questionnaire (ELGEQ).The questionnaire items were structured on a four-point Likert rating scale responses of Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1. To ascertain the reliability of the instrument, a pilot study was conducted using 30 Business Education graduates from tertiary institutions outside the study area. Data obtained from the pilot test were analyzed using Cronbach's Alpha reliability technique. A reliability coefficient of 0.70 and above was considered acceptable for the study, indicating that the instrument possessed adequate internal consistency.300 questionnaires were distributed and returned amounting to 100% return rate. .Data collected for the study was analyzed using both descriptive and inferential statistics. Research Question 1 was answered using Mean and Standard Deviation to determine the influence of experiential on the employability skills of Business Education graduates. Research Question 2 was answered using Pearson Product Moment Correlation (PPMC) to determine the relationship between experiential learning and employment outcomes among graduates. The hypotheses formulated for the study were tested at the 0.05 level of significance. Hypothesis 1 was tested using Pearson Product Moment Correlation (PPMC), while Hypothesis 2 was tested using Simple Linear Regression Analysis. The decision rule for the interpretation of mean scores range are: 3.50 – 4.00 Strongly Agree 2.50 – 3.49 Agree, 1.50 – 2.49 Disagree 1.00 – 1.49 strongly disagree.

Results

Research Question One

What are the perceptions of business education graduates on the influence of experiential learning in competency-based business education on the employability skills of Business Education graduates in South-South Nigeria?

Table 1

Respondents mean ratings on the perceptions of business education graduates on the influence of experiential learning in competency-based business education on the employability skills of Business Education graduates in South-South Nigeria?

(N = 300)

S/N	Item Statement	Mean (x̄)	SD	Decision
1	Experiential learning enhances graduates employability skills.	3.42	0.68	Agree
2	Internship experiences enhances workplace readiness.	3.56	0.61	Strongly Agree
3	Practical business education courses improves entrepreneurial skills.	3.48	0.73	Agree
4	Experiential learning increases communication skills.	3.51	0.65	Strongly Agree
5	Fieldwork activities improves employability prospects.	3.39	0.70	Agree
6	Industry-based projects enhances professional competence.	3.45	0.67	Agree
7	Experiential learning helps acquire job-relevant skills.	3.58	0.59	Strongly Agree
8	Practical experiences increase confidence in the workplace.	3.46	0.71	Agree
9	Experiential learning makes one more adaptable to changing work environments.	3.40	0.66	Agree
10	Competency-based business education Prepares for graduates for			

employment opportunities.	3.60	0.58	Strongly Agree	
Grand Mean	3.49	0.66	Agree	

Source: Field Survey 2026

Decision Rule: Any item with a mean score of 2.50 or above was regarded as agreed, while any item with a mean score below 2.50 was regarded as disagreed.

Table 1 shows that the grand mean of 3.49 indicates that respondents agreed that experiential learning enhances the employability skills of business education graduates in South-South Nigeria.

Table 2

Pearson Product Moment Correlation Analysis of the Relationship between Experiential Learning and Employment Status of Business Education Graduates in South-South Nigeria (N = 300)

Variables	N	Mean	SD	r-value	p-value	Decision
Experiential Learning	300	3.49	0.66			
Employment Status/ Employability	300	3.41	0.71	0.684	0.000	Significant

Level of Significance: $\alpha = 0.05$

Decision Rule: Reject H_0 if $p < 0.05$; otherwise, do not reject H_0.

The result revealed a strong positive and significant relationship between experiential learning and employment status among Business Education graduates ($r = 0.684$, $p < 0.05$). Therefore, the null hypothesis was rejected. This implies that experiential learning significantly contributes to improving the employability and employment outcomes of Business Education graduates in South-South Nigeria.

Table 3

Simple Linear Regression Analysis Showing the Predictive Influence of Experiential Learning on Employment Status of Business Education Graduates (N = 300)

Model	**R**	**R^2**	**Adjusted R^2**	**F**	**p-value**	**Decision**
Experiential Learning Employment Status	0.684	0.468	0.466	261.82	0.000	Significant
Predictor Variable	**B**	**Std. Error**	**Beta**	**t**	**p-value**	
Constant	0.842	0.215	-	3.916	0.000	
Experiential Learning	0.737	0.046	0.684	16.181	0.000	

Experiential learning accounted for 46.8% of the variance in employment status ($R^2 = 0.468$). The model was statistically significant ($F = 261.82$, $p < 0.05$). Therefore, experiential learning significantly predicts employment status among business education graduates in South-South Nigeria, leading to the rejection of the null hypothesis. These findings suggest that increasing experiential learning opportunities can substantially improve graduate employability and reduce unemployment.

Discussion of Findings

The findings of this study revealed that experiential learning in competency-based business education significantly enhances the employability skills of Business Education graduates in South-South Nigeria. The respondents agreed that experiential learning experiences such as internships, industrial attachments, fieldwork, project-based learning, and practical business education courses improved their problem-solving abilities, workplace readiness, communication skills, entrepreneurial competencies, and overall employability prospects. The grand mean score of 3.49 indicates a high level of agreement among the respondents regarding the effectiveness of experiential learning in preparing graduates for the labour market.

This finding is consistent with the theory of experiential learning advanced by David A. Kolb, who posited that knowledge is created through the transformation of experience. Kolb (1984) argued that effective learning occurs when learners actively engage in concrete experiences, reflect on those experiences, conceptualize lessons learned, and apply them in new situations. The implication is that

graduates who acquire practical experiences during their studies are better equipped with the competencies required by employers than those whose learning is largely theoretical.

The finding also corroborates the position of United Nations Educational, Scientific and Cultural Organization (2021), which emphasized that competency-based and experiential learning approaches enhance the acquisition of employability skills by enabling learners to demonstrate practical competencies relevant to workplace demands. UNESCO noted that educational systems that integrate experiential learning produce graduates who are more adaptable, innovative, and capable of responding to labour market challenges.

Furthermore, the finding agrees with the study conducted by Adewale O. Akinola et al (2022), who found that participation in industrial work experiences significantly improved graduates' employability skills and increased their chances of securing gainful employment. Their study concluded that experiential learning bridges the gap between classroom instruction and workplace realities.

The second finding of the study revealed a strong positive and significant relationship between experiential learning and the employment status of Business Education graduates ($r = 0.684$, $p < 0.05$). This implies that as exposure to experiential learning increases, graduates' employability and employment outcomes also improve. The finding suggests that experiential learning serves as a critical mechanism for reducing graduate unemployment by equipping learners with skills demanded in contemporary workplaces.

This finding supports the work of International Labour Organization (2022), which identified skills mismatch as one of the major causes of graduate unemployment globally. The organization observed that graduates who participate in work-integrated learning, apprenticeships, internships, and other experiential learning programmes are more likely to gain employment because they possess practical skills and workplace experience valued by employers.

Similarly, the finding aligns with the report of the World Bank (2020), which emphasized that competency-based education and practical skills acquisition significantly improve youth employability and labour market participation in developing economies. According to the report, employers increasingly prioritize demonstrable competencies over academic credentials alone.

The finding also agrees with the empirical study of B. O. Okoro (2021), who found a significant positive relationship between entrepreneurship-oriented business education and graduate self-employment opportunities in Nigeria. The study concluded that practical and experiential learning experiences equip graduates with the competencies needed to create employment opportunities for themselves and others.

In addition, the regression analysis revealed that experiential learning significantly predicts the employment status of Business Education graduates, accounting for 46.8% of the variance in employment outcomes ($R^2 = 0.468$). This finding demonstrates that experiential learning is a strong determinant of graduate employability and labour market success. It implies that institutions that prioritize experiential learning components are more likely to produce employable graduates than institutions that rely heavily on traditional lecture methods.

The finding lends support to the observations of Organisation for Economic Co-operation and Development (2021), which reported that competency-based and work-integrated learning programmes significantly improve employment outcomes by fostering technical competence, adaptability, critical thinking, and problem-solving skills among graduates. The OECD emphasized that such competencies are increasingly required in a rapidly evolving global economy.

Overall, the findings of this study suggest that experiential learning is a vital strategy for addressing graduate unemployment in South-South Nigeria. By integrating internships, industrial training, simulations, business projects, entrepreneurship programmes, and other experiential learning activities into Business Education curricula, tertiary institutions can equip graduates with the practical competencies necessary for gainful employment, entrepreneurship, and sustainable career development.

Conclusion

Based on the findings of this study, it was concluded that experiential learning is a critical component of competency-based business education and has significant potential for addressing graduate unemployment. The study established that experiential learning positively influences graduate employability by equipping learners with practical skills, workplace competencies, and professional experiences required in the labour market. Graduates who participated in experiential learning activities such as internships, industrial training, business simulations, and project-based learning demonstrated higher levels of employability and job readiness.

Recommendations

Based on the findings and conclusions of the study, the following recommendations were made:

1. Higher institutions should strengthen experiential learning components within business education programmes by incorporating internships, industrial training, business simulations, field experiences, and project-based learning into the curriculum.
2. Universities, colleges of education, and polytechnics should establish stronger partnerships with industries and business organizations to provide students with adequate workplace exposure and practical learning opportunities.
3. Business educators should adopt learner-centered and competency-based instructional strategies that emphasize practical skill acquisition, problem-solving, critical thinking, and entrepreneurial development.
4. Curriculum planners and regulatory bodies such as the NUC, NBTE, and NCCE should periodically review business education curricula to ensure alignment with current labour market needs and emerging industry trends.

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COMPETENCY-BASED BUSINESS EDUCATION AND EXPERIENTIAL LEARNING AS PREDICTORS OF EMPLOYABILITY SKILLS AMONG BUSINESS EDUCATION STUDENTS IN UNIVERSITIES IN DELTA STATE, NIGERIA

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Abstract
This study examined competency-based business education and experiential learning as predictors of employability skills among business education students in universities in Delta State, Nigeria. The study was necessitated by the persistent increase in graduate unemployment and the observable mismatch between university training and labour market expectations. Specifically, the study investigated the extent to which competency-based instructional approaches and experiential learning practices predict employability skills among Business Education students. A descriptive survey research design was adopted for the study. The population comprised 1,243 Business Education students from universities offering Business Education programmes in Delta State, while a sample of 320 respondents was selected using stratified random sampling techniques. Data were collected using a structured questionnaire titled Competency-Based and Experiential Learning Employability Skills Questionnaire (CBEELSQ). The instrument was validated by experts in Business Education and Measurement and Evaluation, while Cronbach Alpha statistics yielded a reliability coefficient of 0.87. Data were analyzed using mean, standard deviation, Pearson Product Moment Correlation, and multiple regression analysis at a 0.05 level of significance. Findings revealed that competency-based business education significantly predicted employability skills among Business Education students ($\beta = 0.63$, $p < 0.05$), while experiential learning also exerted significant positive influence on employability skills ($\beta = 0.58$, $p < 0.05$). The combined influence of competency-based business education and experiential learning significantly enhanced students' employability skills. The study concluded that effective integration of competency-based instruction and experiential learning practices could improve graduate employability and bridge the gap between educational preparation and labour market demands. It was recommended among others that universities should strengthen competency-driven curricula and expand experiential learning opportunities such as internships, industrial training, simulations, and entrepreneurship programmes.

Keywords: Competency-based education, experiential learning, employability skills, business education, university students, Nigeria.

Introduction
Education is globally recognized as a critical instrument for socio-economic development, technological advancement, manpower training, and national transformation. In developing countries such as Nigeria, university education plays a vital role in preparing skilled manpower capable of contributing meaningfully to economic growth and sustainable development. Business Education, as a specialized field within vocational and technical education, occupies a strategic position in equipping students with entrepreneurial, managerial, accounting, office technology, communication, and employability competencies needed in contemporary workplaces.

Business Education aims at producing graduates who possess practical skills, professional competencies, and positive work attitudes necessary for gainful employment and self-reliance. According to Osuala (2020), Business Education is an educational programme that prepares individuals for careers in business occupations through the acquisition of practical skills, knowledge, attitudes, and

competencies required for office administration, entrepreneurship, accounting, commerce, and management.

Despite the strategic importance of Business Education, unemployment among university graduates in Nigeria has continued to increase at an alarming rate. Many graduates remain unemployed or underemployed due to inadequate practical competencies and poor workplace preparedness. Employers increasingly complain that graduates possess academic certificates but lack practical employability skills required for workplace productivity and organizational effectiveness. This challenge has created growing concern among educators, policymakers, and employers regarding the relevance of university education to labour market realities (Adebakin & Ajadi, 2021; Nwosu, 2022; Okolie, Igwe & Elom, 2020).

Employability skills refer to the set of transferable skills, competencies, attributes, and behaviours that enable graduates to secure employment, retain jobs, adapt to workplace demands, and progress professionally. Such skills include communication skills, critical thinking, teamwork, digital literacy, leadership abilities, creativity, problem-solving, adaptability, and entrepreneurial competence. Mantz Yorke (2020) argued that employability is not merely the possession of academic qualifications but the acquisition of achievements, personal attributes, and practical competencies that increase graduates' likelihood of obtaining and sustaining employment. Similarly, Suleiman and Isah (2021) maintained that employability skills determine graduates' ability to compete effectively in modern labour markets, while Ibrahim and Rufai (2023) observed that employers place greater value on practical competencies than mere academic credentials.

One major educational approach currently receiving global attention in improving graduate employability is competency-based education. Competency-based education emphasizes practical skill acquisition, learner-centred instruction, measurable performance outcomes, and demonstration of workplace competencies. The approach focuses on what learners can do after instruction rather than what they merely know theoretically. Martin Mulder (2021) explained that competency-based education equips learners with practical abilities required for professional effectiveness in dynamic workplaces. In support of this position, Onwuka and Nnajiofor (2022) noted that competency-based instruction enhances students' creativity, innovation, and workplace adaptability. Likewise, Akinyele and Eze (2023) asserted that competency-based learning promotes self-reliance and entrepreneurial development among university students.

Another important instructional strategy for enhancing employability is experiential learning. Experiential learning involves learning through direct participation in practical activities, real-life experiences, internships, industrial training, simulations, fieldwork, cooperative learning, and entrepreneurial projects. Experiential learning provides students with opportunities to apply theoretical knowledge in practical settings while developing workplace readiness and professional confidence. Kolb (2015) emphasized that experiential learning enables learners to transform experience into practical knowledge and competencies. Similarly, Obidile and Amadi (2021) found that students exposed to experiential learning programmes demonstrated stronger communication and teamwork skills than those taught through traditional lecture methods.

The increasing complexity of modern workplaces has made traditional lecture-based instructional approaches inadequate for preparing graduates for employment. Consequently, universities across the world are increasingly integrating competency-based instruction and experiential learning into curricula to improve students' practical competencies and employability outcomes (UNESCO, 2021; World Economic Forum, 2022). According to Ezeudu and Chukwuedo (2023), educational institutions that integrate practical learning approaches tend to produce graduates with higher levels of workplace competence and innovation capacity.

In Nigeria, however, several universities still rely heavily on theoretical instructional approaches with inadequate practical exposure. This situation contributes significantly to graduate unemployment and skills mismatch. Many graduates leave university without adequate communication skills, digital competencies, entrepreneurial orientation, and workplace experiences necessary for successful career development. Okoye and Okwelle (2021) observed that inadequate practical training in Nigerian universities has negatively affected graduate employability and productivity. Similarly, Ugwuanyi and Ibrahim (2022) reported that many employers in Nigeria consider graduates unemployable due to poor technical and interpersonal competencies.

Previous empirical studies have reported positive relationships between competency-based education, experiential learning, and employability outcomes. Adeyemi and Okoro (2022) observed that competency-based instructional approaches significantly improved entrepreneurial and employability skills among undergraduate students. Similarly, Ezeani and Akpotohwo (2021) reported that experiential learning activities enhanced students' problem-solving abilities, communication skills, and

workplace readiness. In another study, Nwafor and Onyesom (2023) found that students who participated actively in industrial training and project-based learning demonstrated higher employability competencies than their counterparts. Furthermore, Bello and Aliyu (2022) revealed that competency-driven business education significantly predicts students' career readiness and self-employment intentions.

Despite these contributions, there remains limited empirical evidence on the combined predictive influence of competency-based business education and experiential learning on employability skills among Business Education students in universities in Delta State, Nigeria. This gap therefore necessitated the present study

Statement of the Problem

Graduate unemployment remains one of the most serious socio-economic problems confronting Nigeria. Despite the increasing number of university graduates produced annually, many graduates remain unemployed due to inadequate practical competencies and poor employability skills. Employers frequently complain that university graduates lack communication abilities, teamwork skills, digital competencies, creativity, leadership skills, and workplace experience required for organizational productivity.

The situation appears more worrisome because many universities continue to emphasize theoretical knowledge at the expense of practical competencies and experiential learning. Consequently, graduates often possess certificates without corresponding workplace skills needed for employment and self-reliance.

Business Education programmes are expected to produce graduates equipped with practical business competencies and employability skills. However, persistent complaints from employers suggest possible deficiencies in competency-based instructional approaches and experiential learning opportunities within universities.

Although previous studies have examined employability skills and instructional approaches separately, limited studies have investigated the combined predictive influence of competency-based business education and experiential learning on employability skills among Business Education students in Delta State universities. It is therefore necessary to determine whether competency-based instruction and experiential learning significantly predict employability skills among Business Education students.

Purpose of the Study

The main purpose of this study is to examine the competency-based business education and experiential learning as predictors of employability skills among Business Education students in universities in Delta State, Nigeria.

Specifically, the study sought to:

1. Determine the influence of competency-based business education on employability skills among Business Education students.
2. Examine the influence of experiential learning on employability skills among Business Education students.
3. Determine the combined predictive influence of competency-based business education and experiential learning on employability skills among Business Education students.

Research Questions

The following research questions guided the study:

1. To what extent does competency-based business education influence employability skills among Business Education students?
2. To what extent does experiential learning influence employability skills among Business Education students?
3. What is the combined predictive influence of competency-based business education and experiential learning on employability skills among Business Education students?

Research Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

H01: Competency-based business education does not significantly predict employability skills among Business Education students.

H02: Experiential learning does not significantly predict employability skills among Business Education students.

H03: Competency-based business education and experiential learning do not jointly predict employability skills among Business Education students.

An overview of Concepts and theory

Competency-Based Business Education

Competency-based education is an instructional approach that emphasizes measurable learning outcomes, skill mastery, performance assessment, and workplace relevance. The approach focuses on the acquisition and demonstration of practical competencies rather than mere theoretical knowledge. According to Mulder (2021), competency-based education enables learners to acquire integrated sets of knowledge, practical skills, attitudes, and professional values necessary for workplace effectiveness. In Business Education, competency-based instruction emphasizes practical office procedures, accounting skills, information and communication technology competencies, entrepreneurial abilities, managerial skills, and communication proficiency.

Competency-based business education differs significantly from traditional instructional approaches. While traditional approaches focus mainly on theoretical knowledge and examination performance, competency-based instruction emphasizes practical demonstrations, learner participation, workplace simulations, project-based learning, and continuous assessment.

The relevance of competency-based business education lies in its ability to bridge the gap between academic training and labour market expectations. Through competency-driven instruction, students are exposed to practical learning activities that prepare them for workplace realities and entrepreneurial ventures.

Experiential Learning

Experiential learning refers to learning through practical experience, reflection, experimentation, and active participation in real-life activities. Experiential learning theory was developed by David Kolb, who proposed that learning occurs through four interconnected stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation. Experiential learning in Business Education includes industrial training, internships, cooperative education, field trips, business simulations, entrepreneurial projects, practical laboratory exercises, and workplace attachments. Through these activities, students acquire hands-on experiences that improve their professional competence and workplace confidence.

Akinyemi and Adebayo (2023) noted that experiential learning enhances creativity, communication skills, teamwork abilities, leadership qualities, and problem-solving competencies among university students. Experiential learning also exposes students to real workplace environments where they can apply theoretical concepts to practical situations.

Employability Skills

Employability skills are transferable competencies and personal attributes that enable individuals to obtain employment, adapt to workplace demands, and achieve career success. Such skills include communication abilities, teamwork, leadership, adaptability, digital literacy, entrepreneurial competence, critical thinking, problem-solving, and interpersonal relations. According to Yorke (2020), employability encompasses the achievements, skills, understandings, and personal attributes that make graduates more likely to gain employment and succeed in their occupations. Employers today place greater emphasis on soft skills and workplace competencies than on academic certificates alone. In contemporary workplaces characterized by technological advancement and globalization, employability skills have become essential for organizational effectiveness and career sustainability.

Theoretical Framework

The study was anchored on Experiential Learning Theory developed by David Kolb. The theory posits that effective learning occurs through practical experiences followed by reflection, conceptualization, and experimentation.

The relevance of the theory to this study lies in its emphasis on practical learning experiences as mechanisms for competency development and employability enhancement. The theory supports the argument that competency-based instruction and experiential learning can improve students' workplace readiness and professional competence.

Methodology

The study adopted a descriptive survey research design. The design was considered appropriate because it enabled the researchers to investigate relationships among variables without manipulating the study variables. The population of the study consisted of 1,243 Business Education students from universities offering Business Education programmes in Delta State, Nigeria. The institutions included federal and state universities offering Business Education programmes.

A sample size of 320 respondents was selected using stratified random sampling techniques to ensure fair representation of students across different institutions and academic levels. The instrument for data collection was a structured questionnaire titled Competency-Based and Experiential Learning Employability Skills Questionnaire (CBEELSQ). The questionnaire consisted of sections measuring competency-based instructional practices, experiential learning activities, and employability skills. The instrument was validated by experts in Business Education and Measurement and Evaluation to ensure

content and face validity. Reliability was established using Cronbach Alpha statistics, which yielded a reliability coefficient of 0.87, indicating high internal consistency. Data collected were analyzed using mean and standard deviation to answer the research questions, while Pearson Product Moment Correlation and multiple regression analysis were used to test the hypotheses at 0.05 level of significance.

Results and Data Analysis

Research Question One

To what extent does competency-based business education influence employability skills among Business Education students?

Table 1: Mean Responses on Competency-Based Business Education and Employability Skills

S/N	Item Statement	Mean	SD	Decision
1.	Competence-based instruction improves communication skills	3.52	0.71	Agreed
2.	practical classroom activities enhance problem-solving skills	3.48	0.75	Agreed
3.	Competency-based learning improves entrepreneurial abilities	3.60	0.68	Agreed
4.	Skills-based instruction enhances workplace readiness	3.55	0.72	Agreed
5.	Competency-based learning improves teamwork abilities	3.50	0.70	Agreed
Grand Maen		**3.53**	**0.71**	**Agreed**

Table 1 shows the responses of students regarding the **influence of competency-based business education on employability skills**. With the grand mean score of **3.53,** it indicates that respondents generally agreed that competency-based instructional approaches positively influence employability skills. Specifically, the respondents agreed that competency-based instruction improves communication skills, entrepreneurial abilities, teamwork competencies, workplace readiness, and problem-solving abilities. The relatively low standard deviation values indicate consistency in respondents' opinions.

The findings suggest that competency-based instruction contributes significantly to the development of practical skills and workplace competencies among Business Education students in Delta State.

Research Question Two

To what extent does experiential learning influence employability skills among Business Education students?

Table 2: Mean Responses on Experiential Learning and Employability Skills

S/N	Item Statement	Mean	SD	Decision
1.	Industrial training improves workplace competence	3.61	0.67	Agreed
2.	Internship programmes improve communication skills	3.49	0.73	Agreed
3.	Practical experiences enhance problem-solving abilities	3.56	0.69	Agreed
4.	Experiential learning improves students' confidence	3.58	0.70	Agreed
5.	Field experiences enhance teamwork abilities	3.47	0.74	Agreed
Grand Maen		**3.54**	**0.71**	**Agreed**

Table 2 reveals that experiential learning positively influences employability skills among Business Education students in Delta State. The grand mean of 3.54 indicates strong agreement among respondents that practical learning experiences contribute to workplace competence and career preparedness. The students particularly acknowledged that industrial training, internships, and field experiences improve confidence, teamwork, communication skills, and problem-solving abilities.

This finding demonstrates the importance of experiential learning opportunities in exposing students to workplace realities and practical business operations.

Research Question Three

What is the combined predictive influence of competency-based business education and experiential learning on employability skills among Business Education students?

Table 3: **Combined Influence of Competency-Based Business Education and Experiential Learning on Employability Skills**

S/N	Variables	Mean	SD	R	R^2	Decision
1.	Competence-Based Business Education	3.53	0.71	0.74	0.55	Significant positive influence
2.	Experiential Learning	3.54	0.71	0.74	0.55	Significant positive

						influence
3.	Employability Skills	3.57	0.69	0.74	0.55	Significant Relationship

Table 3 presents the combined predictive influence of competency-based business education and experiential learning on employability skills among Business Education students. The correlation coefficient value (R = 0.74) indicates a strong positive relationship between the predictor variables and employability skills. This means that as competency-based instructional practices and experiential learning activities improve, students' employability skills also increase significantly.

The coefficient of determination ($R^2 = 0.55$) shows that 55% of the variation in employability skills among Business Education students can be explained jointly by competency-based business education and experiential learning. This implies that both variables contribute substantially to students' workplace readiness, communication competence, teamwork abilities, entrepreneurial skills, and problem-solving capacities.

The finding further suggests that effective integration of competency-based instruction and experiential learning activities provides students with practical exposure and professional competencies necessary for success in contemporary workplaces.

Hypotheses Testing

Hypothesis One

Competency-based business education does not significantly predict employability skills among Business Education students.

Table 4: Regression Analysis on Competency-Based Business Education and Employability Skills

Variable	Beta (β)	t-value	Sig.	Decision
Competency-Based Business Education	0.63	8.42	0.000	Significant

Table 4 shows that competency-based business education significantly predicts employability skills among Business Education students with a beta coefficient of 0.63 and significance value of 0.000, which is less than the 0.05 level of significance. This result implies that improvements in competency-based instructional approaches are associated with corresponding increases in students' employability skills. Consequently, the null hypothesis was rejected.

The finding suggests that competency-based instruction contributes substantially to workplace readiness, communication competence, entrepreneurial abilities, and professional effectiveness.

Hypothesis Two

Experiential learning does not significantly predict employability skills among Business Education students.

Table 5: Regression Analysis on Experiential Learning and Employability Skills

Variable	Beta (β)	t-value	Sig.	Decision
Experiential Learning	0.58	7.95	0.000	Significant

The result presented in Table 4 indicates that experiential learning significantly predicts employability skills among Business Education students. The beta coefficient of 0.58 implies a strong positive relationship between experiential learning and employability skills. The significance value of 0.000 is less than the 0.05 significance level, indicating statistical significance. Therefore, the null hypothesis was rejected.

The finding indicates that students who actively participate in industrial training, internships, practical projects, and field experiences tend to demonstrate higher employability skills and workplace competence.

Hypothesis Three

Competency-based business education and experiential learning do not jointly predict employability skills among Business Education students.

Table 6: Multiple Regression Analysis of Combined Influence

Variable	R	R^2	Adjusted R^2	F-value	Sig.
Combined Variable	0.74	0.55	0.53	42.16	0.000

Table 6 reveals that competency-based business education and experiential learning jointly predict employability skills among Business Education students.

The correlation coefficient (R = 0.74) indicates a strong positive relationship between the predictor variables and employability skills. The coefficient of determination (R^2 = 0.55) implies that 55% of the variation in employability skills can be explained by competency-based education and experiential learning. The F-value of 42.16 with a significance level of 0.000 indicates that the combined predictive model is statistically significant. This finding demonstrates that effective integration of competency-based instructional approaches and experiential learning activities significantly enhances students' employability competencies.

Discussion of Findings

The study revealed that competency-based business education significantly predicts employability skills among Business Education students. This finding agrees with Adeyemi and Okoro (2022), who observed that competency-driven instruction improves workplace competence, entrepreneurial abilities, and professional effectiveness among university students. The finding also supports Mulder (2021), who emphasized that competency-based education enhances learners' capacity to apply knowledge and practical skills effectively in workplace settings. The study further revealed that experiential learning significantly predicts employability skills among Business Education students. This finding corroborates Kolb's experiential learning theory, which posits that learning through practical experience improves competence and professional development. The finding also aligns with Ezeani and Akpotohwo (2021), who reported that experiential learning activities such as internships and practical projects improve communication skills, teamwork abilities, and workplace confidence. The combined predictive influence of competency-based business education and experiential learning indicates that practical instruction and workplace exposure are critical determinants of graduate employability.

The implication of this finding is that universities should move beyond traditional lecture methods and adopt instructional strategies that emphasize skill acquisition, practical competence, and workplace experiences.

Educational Implications of the Study

The findings of this study have important implications for university administrators, curriculum planners, lecturers, policymakers, and employers.

First, universities need to redesign Business Education curricula to emphasize competency-based instructional approaches capable of improving workplace readiness.

Second, lecturers should adopt practical teaching methods such as simulations, project-based learning, case studies, cooperative learning, and entrepreneurship activities.

Third, institutions should strengthen partnerships with industries and business organizations to provide students with meaningful internship and industrial training opportunities.

Fourth, policymakers should provide adequate funding and infrastructural support for practical skill acquisition programmes in universities.

Finally, employers should collaborate with universities in curriculum development to ensure alignment between academic training and labour market expectations.

Conclusion

The study concluded that competency-based business education and experiential learning are significant predictors of employability skills among Business Education students in universities in Delta State, Nigeria. The findings established that competency-based instructional approaches improve communication skills, entrepreneurial competence, teamwork abilities, workplace readiness, and problem-solving skills among students. Similarly, experiential learning activities such as internships, industrial training, simulations, and field experiences significantly enhance students' workplace competence and employability.

The study therefore emphasizes the need for universities to integrate competency-based education and experiential learning strategies into Business Education programmes to improve graduate employability and reduce unemployment.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Universities should strengthen competency-based instructional approaches in Business Education programmes.
2. Experiential learning opportunities such as internships, industrial training, fieldwork, and entrepreneurship projects should be expanded.
3. Business Education curricula should be redesigned to align with labour market expectations and industry demands.

4. Government and educational stakeholders should provide adequate facilities and technological resources for practical learning.
5. University-industry partnerships should be strengthened to improve students' workplace exposure and professional competence.
6. Lecturers should adopt learner-centred instructional strategies that emphasize practical skill acquisition and active participation.

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SUB-THEME 6
YOUTH EMPOWERMENT FOR SECURITY AND ECONOMIC DEVELOPMENT

E-CUSTOMER RELATIONSHIP MANAGEMENT AND BUSINESS PERFORMANCE AMONG FABRIC ENTREPRENEURS IN PORT HARCOURT METROPOLIS

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Abstract
This study investigated the relationship between adoption E-CRM and Business performance among fabric sellers in Port Harcourt Metropolis the study was necessary because fabric sellers played significant roles in the job and wealth creation, thus identifying and eliminating hindrances to improved business performance among them was considered pertinent. Among the barriers identified are time and place limitations to customer engagement; thus the need to examine the relationship between E-CRM and business performance among fabric sellers. Specifically, the study examined the level of E-CRM adoption found among fabric sellers and how it relates to business performance among them. Two research questions were formulated, and one corresponding null hypothesis was formulated and tested at the 0.05 level of significance. The correlation design was adopted and the entire population of 473 registered fabric sellers was used in the study. Data were collected using two instruments one addressed adoption of E-CRM among Fabric Sellers (AEFS) and the other, Business Performance of Fabric Sellers (BUPOFS). The first instrument of (22 items) was used to collect data for adoption of E-CRM while BUPOFS was used to collect data for business performance of fabric sellers.the instruments were validated by experts and yielding a reliability coefficient of 0.83 and 0.87 repectively. Mean answered the research questions, while PPMC was used to test hypothesis. Findings showed high level adoption of E-CRM among fabric sellers and a positive relationship between the adoption of E-CRM and business performance among fabric sellers. Conclusions were drawn that fabric sellers in Port Harcourt metropolis had a high level of adoption of E-CRM and that E-CRM had positive relationship with business performance. It was recommended among others that Fabric sellers should also explore more benefits of E-CRM by increasing their frequency in usage and joining networks of fluent E-CRM practitioners since it would enable more positive possibilities in their business operations
Keywords: E-CRM, Business Performance, Profit, sales

Introduction
Customers have been identified as the fortitude of any business. Bawack and Ahmad (2021) acknowledged that companies rely heavily on customer patronage for growth and survival. Being skilled and bringing products to perfection is fundamental in business but without a solid customer base, no business would survive irrespective of how perfect their products may be. Thus the reason entrepreneurs deliberately locate, connect and even compete for customers by stretching edges, sharpening skills and maintaining strong bonds. Customer relationship management is a core foundation of entrepreneurial success. It must be deliberately planned and implemented for entrepreneurial survival. It enables clear understanding of customer psychology and promotes eventual loyalty. Rahmadi, Djunaedi & Nurlaely (2020) averred that Customer Relationship Management (CRM) enables understanding of customer needs and desires. This provides guidance on how to tilt activities and products of businesses to customer expectation and lessens assumptions.
There are several other benefits of CRM to entrepreneurs; it brings precision to their businesses since it provides clear understanding of customers expectations, increases sales, profit, coordination and collaboration.

The traditional means of CRM seem to involve physical contacts and interface, thus struggling with time and place limits, however, following the many benefits of CRM to business successes and business flows to technological trends, many entrepreneurs have adopted the use of technology for virtually all aspects of business including CRM. Nwineh et al. (2025) asserted that the use of technology in today's business was inevitable since, it brings them to trend, increases their global visibility and boosts their business performance. Thus while E-commerce as cited in Onwuka (2024) refers to the conduct of

commercial transactions through the internet and other digital communication technologies, enabling buyers and sellers to exchange goods, services, and information electronically irrespective of geographical location; E-CRM could be described as the use of technology for customer relationship management. One basic activities of CRM is sharing information. So the moment a business adopts E-commerce, E-CRM begins automatically. Papadopoulos et al., (2020) also opined that E-commerce comprised a wide range of internet-based business activities that enable organizations to conduct commercial transactions and interact with customers electronically. These activities include online marketing, online ordering, electronic payment, email marketing, website marketing, affiliate marketing, search engine marketing, mobile marketing, content marketing, and other digital strategies. So all business activities, including customer information and assistance that adopt technology could be referred as E-CRM. Tsiotsou & Boukis (2022) accounted that technological advancements have hastened businesses and their CRM activities to shift from retail stores to digitalized marketplaces, reducing consumer dependence on brick and mortar outlets. So businesses are left with little or no choice but to adopt E-CRM

The benefits of E-CRM to business performance have been described to be enormous. Hajli (2015) explains that digital transactions generate customer data including purchase history, browsing behaviour, and preference information, enabling businesses to understand customer needs, personalize communications, and tailor product offerings. This data-driven approach to customer relationships represents a significant advancement over traditional retail's limited customer intelligence capabilities and should basically tilt to increased patronage and profit. Service quality dimensions transform through e-CRM. Laudon and Traver (2016) identified that digital platforms enable 24/7 availability, immediate response to customer inquiries through chatbots or automated systems, and convenient transaction processes that improve customer convenience and should also tilt to more referrals and increased Profit base. But how E-CRM boosts business performance of fabric sellers particularly in the southern Nigeria, have not been clearly ascertained.

Fabric entrepreneurs are very important in any society because they play crucial roles in fashion trends and contribute immensely to economic development. This they do by job, wealth creation and poverty alleviation. Individuals with strong flares and skills in fashion trends, finds means of livelihood in their fold. For fabric sellers, the ability to display extensive product catalogs with detailed specifications, images, and customer reviews enhances information quality and supports customer decision-making processes. But how it results in increased sales, profits, customer satisfaction, customer retention and cost reduction particularly among fabric sellers is under current scrutiny. Nwineh (2020) asserted that increased sales, profits, customer satisfaction, customer retention and cost reduction are basic indicators of business performance. So how E-CRM results in these indicators particularly among fabric sellers in Port Harcourt is the essence of this study. There are speculations that E-CRM is beneficial to business. Chaffey and Ellis-Chadwick (2019) recorded some of the benefits as customer reviews, ratings, and direct feedback channels and provision of businesses with immediate insights into product quality, service issues, and customer satisfaction, enabling responsive service improvements as some benefits. Gregory et al. (2019) identified expanded market reach, increased customer convenience, longer operating hours, and enhanced product discovery mechanisms collectively contribute to sales volume increases for businesses successfully implementing digital commerce strategies as some of the benefits. But what the case is, among fabric sellers in Port Harcourt is being probed.

Statement of Problem

Digital transformation has affected the way businesses operate, including how they manage relationships with their customers. Businesses and their customers no longer rely on brick and mortar stores with limited timing and places to give and get information about business products and services. Thus deliberate efforts are being made to close up this barrier by infusing technology in Customer Relationship Management. But how this technology infused Customer Relationship Management translates to improved sales, profits and customer satisfaction, particularly among fabric sellers in Port Harcourt have not been clearly derived.

Some fabric sellers have good quality, trendy and pocket friendly products yet struggle with very slim customer base which could translate to dull sales, low profits and dissatisfied customers. Thus the need to identify and amplify the relationship between E-CRM and business performance among fabric sellers in Port Harcourt since empirical evidence would add to knowledge and discourage or spur other businesses to adopt E-CRM for improved business performance.

Purpose of the study

The purpose of this study is to ascertain E-CRM adoption and its relationship with Business Performance among Fabric Sellers in Port Harcourt Metropolis. . Specifically, the study intends to:

1. Ascertain the level of E-CRM adoption among fabric seller in Port Harcourt Metropolis.
2. Ascertain the relationship between E-CRM adoption and Business Performance among Fabric Sellers in Port Harcourt Metropolis

Research Questions

1. What is the level of E-CRM adoption among fabric seller in Port Harcourt Metropolis ?
2. What is the relationship between E-CRM adoption and Business Performance among Fabric Sellers in Port Harcourt Metropolis

Hypothesis

The study tested the following hypothesis at 0.05 alpha level of significance.

1. There is no significant relationship between E-CRM adoption and business performance of fabric sellers in Port-Harcourt Metropolis.

METHODOLOGY

The study adopted a correlation research survey design.. The Area of the Study was Port Harcourt. Port-Harcourt is the capital of Rivers State in Nigeria which shares boundaries with Imo State, Abia State, Akwa Ibom State, Bayelsa State and Delta State. Rivers State is located on 4° 49' 27.0012" N and 7° 2' 0.9996" E. Port-Harcourt is one of Nigeria's major commercial cities and serves as the economic center of the South–South region of Nigeria. The city plays host to numerous markets (Oil Mill, Mile 1, Mile 3, Creek Road markets and others), shopping malls (Spar, Shop Rite, and Every Day Supermarket and others) and informal retail clusters where fabric sellers operate at small and medium scales. These markets and malls host fabric sellers dealing in: Ankara and African prints,

The population of the study was a target population of 473 registered members of fabric sellers' union from six major markets in Port-Harcourt. The entire 473 fabric sellers were used as sample for the study. This decision was due to the manageable size of the population. Consequently, the researcher used census sampling technique to recruit the entire 473 fabric sellers. The study utilised two instruments for data collection. The two instruments are Adoption of E-CRM among Fabric Sellers (AEFS) and Business Performance of Fabric Sellers (BUPOFS). AEFS has two parts and consists of 32 item statements. The first part (22 items) was used to collect data for adoption of E-CRM. BUPOFS was used to collect data for business performance of fabric sellers. It contains items on profitability, customer retention, customer satisfaction and sales performance The response options for the two instruments are: Very High Level (VHL) with a score of 4; High Level (HL) with a score of 3; Low Level (LL) with a score of 2 and Very Low Level (VLL) with a score of 1. The instruments were validated by three experts. Two from the Department of Business Education and one from Measurement and Evaluation, all in Rivers State University. The instruments were validated for appropriateness of wordings, sentence construction, ambiguity, appropriateness and relevance in line with the study objectives and research questions. Adjustment was made to the instruments based on the comments and suggestions of the experts before final copy produced for data collection. Internal consistency reliability was established for the instruments. This was done by administering the two instruments to a sample of 20 shoe sellers. Data collected from this process were subjected to Cronbach's Alpha for calculation of internal consistency reliability. This yielded overall internal consistency reliability coefficients of .89 for AEFS and 0.73 for BUPOFS. A total of 473 copies of the instruments was administered directly to the respondents by the researcher and with the help of research assistants who facilitated data collection from fabric sellers in different markets in Port-Harcourt Metropolis. The use of research assistants was to enhance retrieval of instruments. A total of 443 copies of the instrument were retrieved and used for data analysis. This constituted a return rate of 93.66%.

Data collected for the study were analysed using Pearson Product Moment Correlation (PPMC) for the research questions. For interpretation of the correlation coefficient, the guideline of Alsaqr (2021) was adopted. In the guideline, correlation coefficients ranging from 0.00 to 0.10 are considered negligible. Correlation coefficients ranging from 0.10 to 0.39 are considered weak. Correlation coefficients ranging from 0.40 to 0.69 are considered moderate. Correlation coefficients between .70 to .89 are considered strong. Correlation coefficients ranging from .90 to 1.00 are considered very strong relationship.

For the hypotheses, t-transformation will be used to convert r-values to t-values. The formula for converting r to t according to Udoh (2003) is: $t = r\sqrt{\frac{n-2}{1-r^2}}$, where r is the calculated coefficient of

correlation, n is the sample size. The t-value was compared with the critical value of t at 0.05 level of significance and 441 (443 - 2) degree of freedom. If calculated value of t (t-cal) is greater than the critical value of t (t-crit), the hypothesis will be rejected otherwise, retained.

Results

1. What is the level of E-CRM adoption for sustained business performance among fabric seller in Port Harcourt Metropolis ?

Table 1.1 level of E-CRM adoption for sustained business performance among fabric seller in Port Harcourt Metropolis

Adoption of E-CRM among Fabric Sellers (AEFS)

Section A: level of E-CRM adoption

S/N	Item Statement	VHL	HL	LL	VLL	Remark
1	I use social media platforms (e.g., Facebook, Instagram, TikTok, or WhatsApp Business) to promote my fabric products.	280	121	20	22	HL
2	I regularly post pictures or videos of my fabric products on online platforms to attract customers.	280	121	20	22	HL
3	I advertise my fabric products through paid online advertisements (e.g., Facebook Ads or Instagram Ads).	280	121	20	22	HL
4	I use mobile phone to negotiate products and prices	351	50	30	12	HL
5	I respond promptly to customers' enquiries and comments on my text messages and online marketing platforms.	280	121	20	22	HL
6	I share information about new fabric arrivals and product updates through online marketing channels.	280	121	20	22	HL
7	I consistently use digital marketing platforms to reach new customers and expand my market.	280	121	20	22	HL
8	I receive customer orders through online platforms such as WhatsApp Business, Facebook, Instagram, or a business website.	80	50	150	163	LL
9	I provide customers with an online catalogue of fabric products for ordering.	80	50	150	163	LL
10	I allow customers to place orders for fabric products through phone calls and social media platforms (e.g. Facebook, WhatsApp).	280	121	20	22	HL
11	I confirm customers' orders electronically through online communication channels.	280	121	20	22	HL
12	I process customers' orders online promptly.	80	50	150	163	LL
13	I provide customers with updates on the status of their online orders before delivery.	80	50	150	163	LL
14	I regularly use online ordering systems to manage customer sales transactions.	80	50	150	163	LL
15	I maintain electronic records of customers' online orders for easy retrieval.	80	50	150	163	LL
16	I use online platforms (e.g., WhatsApp) to respond promptly to customer inquiries about my fabrics.	280	121	20	22	HL

17	I provide real-time answers to customer questions regarding fabric type, colour, price, and availability through online channels.	280	121	20	22	HL
18	I use online platforms to resolve customer complaints about wrong deliveries, poor quality, or damaged fabrics.	280	121	20	22	HL
19	I maintain records of customer preferences and purchase history to provide personalized service to returning customers.	280	121	20	22	HL
20	I use online tools (e.g., chat messages, voice notes) to build trust with customers who cannot physically inspect fabrics before purchase.	319	99	11	14	HL
21	My Electronic customer support practices have helped me retain customers and encourage repeat purchases.	319	99	11	14	LL
22	I respond to customer inquiries through multiple online channels (e.g., WhatsApp, Instagram, Facebook and email) to make it easy for customers to reach me.	319	99	11	14	LL

Source: Field Data 2026

The Table above reveals high level of adoption of E-CRM among fabric sellers in Port Harcourt Metropolis. It reflects that they use mobile phones, text messages, social media platforms to create awareness of their products and connect actively with customers. Prompt responses and increased market reach were some of the outcomes of their adoption of E-CRM. The table further reveals that orders were confirmed and processed through the use of E-CRM. Faster responses to complaints were enabled through the use of E-CRM. The table however revealed that fabric sellers in Port Harcourt managed sales transactions and maintained records through E-CRM at a low level and could not encourage repeat purchases sufficiently through electronic means.

Research Question 2: What is the relationship between E-CRM adoption and business performance of fabric sellers in Port-Harcourt Metropolis?

Table 2: E-CRM adoption and business performance of fabric sellers in Port-Harcourt Metropolis

Variables	N	$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XY$	r
E-CRM adoption (X)	443	1022	1039	2473	2572	2436	0.326
Business Performance (Y)	443						

Field Data, 2026

Table 2 shows the coefficient of correlation (r) between adoption of E-CRM adoption and business performance among fabric sellers in Port-Harcourt Metropolis. As shown, r = 0.326 indicates a weak relationship between E-CRM and business performance among fabric sellers in Port-Harcourt Metropolis. Again, the positive value of 0.326 is an indication that a positive relationship existed between adoption of online customer support system and business performance among fabric sellers in Port-Harcourt Metropolis. This means that fabric sellers who adoption E-CRM more in their business would record higher business performance. Conversely, fabric sellers who adopt E-CRM less would likely record lower business performance.

Hypothesis 1: There is no significant relationship between adoption E-CRM and Business performance of fabric sellers in Port-Harcourt Metropolis.

Table 3. t-test for Adoption of Online Customer Support System and Business Performance

Variables	*N*	*r*	*df*	*t-cal*	*t-crit*	*p-value*	*Decision*
Adoption of E-CRM (X)	443	0.326	441	7.251	1.974	0.000	Rejected
Business Performance (Y)	443						

Source: Field Data, 2026

Table 3 presents the result of the t-test conducted to determine whether there is a significant relationship between adoption of E-CRM and business performance among fabric sellers in Port-Harcourt Metropolis. The result shows that the calculated t-value (t-cal = 6.351) is greater than the critical t-value (t-crit = 1.974) at df = 441. Also, the associated p-value of 0.000 is less than the 0.05 level of significance. Therefore, the null hypothesis, which states that there is no significant relationship between adoption E-CRM and business performance of fabric sellers in Port-Harcourt Metropolis, is rejected. This implies that there is a significant positive relationship between adoption of E-CRM and business performance among fabric sellers in Port-Harcourt Metropolis. Based on this, it can be said that, increased adoption of E-CRM is significantly associated with higher business performance among fabric sellers in the study area.

Discussion of Findings

The results for research questions and hypothesis showed high level of adoption of E-CRM for improved business performance among fabric sellers and that there was a positive relationship between adoption of E-CRM and business performance among fabric sellers. Fabric Sellers who adopted E-CRM more frequently, were more likely to report higher business performance than those who adopted it less. The finding therefore indicates that E-CRM was an important entrepreneurial practice that contributes to improving the business performance of fabric sellers. Consequently, increased adoption of E-CRM is associated with enhanced business performance among fabric sellers in Port Harcourt Metropolis.

The positive relationship observed suggests that E-CRM enables fabric sellers to respond to customers' inquiries and concerns more promptly and effectively. By engaging customers through digital platforms such as WhatsApp Business, Facebook, Instagram, or business websites, E-CRM allows sellers to provide real-time answers regarding fabric type, colour, pricing, and availability, thereby removing the communication barriers that often accompany transactions where customers cannot physically inspect products before purchase. It also enables sellers to address complaints, such as wrong deliveries or quality concerns, in a timely manner, which helps preserve customer trust and satisfaction. As sellers become more responsive and accessible to customers, they are likely to experience stronger customer confidence, increased willingness to purchase, and improved sales performance. In addition, E-CRM allows sellers to maintain personalized engagement with customers based on their preferences and purchase history, thereby strengthening customer relationships and encouraging repeat purchases.

This finding corroborates that of Herman et al. (2021), who investigated the effect of electronic customer relationship management (e-CRM) capability on the marketing performance of small and medium enterprises (SMEs) in Indonesia, using product innovativeness development as a mediating mechanism. Their findings revealed that e-CRM capability had a significant positive effect on product innovativeness development, which in turn significantly enhanced the marketing performance of SMEs, confirming that internet-supported customer relationship practices strengthen firms' ability to innovate and compete effectively. Similarly, the present study found a positive and significant relationship between adoption of E-CRM and business performance among fabric sellers, reinforcing the position that internet-based customer engagement practices contribute meaningfully to improved business outcomes. Both studies therefore converge on the conclusion that e-CRM serve as a valuable driver of business performance, whether channelled through product innovativeness in large-sample SME contexts or through direct customer responsiveness and trust-building in small-scale retail contexts.

However, while Herman et al. (2021) examined e-CRM capability among general SMEs across various sectors in Indonesia, with product innovativeness serving as the central explanatory mechanism linking e-CRM to marketing performance, the present study narrows its focus to fabric sellers operating within the informal retail sector of Port Harcourt, Rivers State, Nigeria. This distinction is significant because it demonstrates that the performance-enhancing effect of e-CRM extends beyond innovation-driven SME contexts to small-scale sellers whose competitive advantage rests less on product innovation and more on responsiveness, communication, and complaint resolution.

Furthermore, while Herman et al. (2021) concentrated on the SME context in Indonesia and framed e-CRM as a driver of innovation-led marketing performance without addressing product-specific service demands, the present study highlights how the sensory and inspection-dependent nature of fabric as a product introduces distinct customer-trust and service-delivery considerations not addressed in Herman et al.'s (2021) broader SME sample. For fabric sellers, E-CRM does not merely facilitate innovation-driven differentiation, as emphasized in Herman et al.'s (2021) study, but also functions as a trust-compensating mechanism that reassures customers who cannot physically inspect fabric texture, colour, or quality before purchase. This suggests that although both studies confirm the performance-enhancing role of e-CRM;

Conclusions

Based on the findings of the study, it was concluded that fabric sellers in Port Harourt metropolis highly adopt E-CRM like use of phone calls text messages, social media platforms for customer engagement and improved business; it is further concluded that adoption of E-CRM has positive relationship with business performance among fabric sellers in Port Harcourt. Business performance of fabric sellers, are more likely to increase when they adopt E-CRM. Fabric sellers who adopt eE-CRM are more likely to experience improved profitability, higher customer satisfaction, stronger customer retention, and better sales performance. The adoption of E-CRM provides opportunities for wider market access, enhanced customer engagement, improved service delivery, and increased sales opportunities, all of which contribute to improved business outcomes.

Recommendations

1. Fabric sellers should intentionally integrate and improve E-CRM usage in their businesses since it defies place and time limits and further boosts their business performance
2. Fabric sellers should also explore more benefits of E-CRM by increasing their frequency in usage and joining networks of fluent E-CRM practitioners since it would enable more positive possibilities in their business operations.
3. Government agencies, and entrepreneurship development organizations should organize regular training programmes and workshops on E-CRM to improve fabric sellers' understanding and enhance their business operations and competitiveness.
4. Government agencies and relevant stakeholders should also improve the enabling environment for E-CRM adoption through the provision of reliable internet infrastructure, support for digital payment systems, and policies that promote secure online transactions. This would help fabric sellers maximize the sales and business benefits associated with E-CRM adoption.

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YOUTH EMPLOYMENT AS A STRATEGY FOR ENHANCING NATIONAL SECURITY AND ECONOMIC DEVELOPMENT IN NIGERIA

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Abstract

Youth unemployment remains a major socio-economic challenge in Nigeria and has significant implications for national security and economic development. The increasing number of unemployed youths has been linked to rising cases of crime, social unrest, political violence, and other forms of insecurity. When young people lack access to productive employment opportunities, they may become vulnerable to involvement in antisocial activities that threaten peace and stability. Therefore, promoting youth employment has become an important strategy for ensuring national security and fostering sustainable economic development. This study investigates youth employment as a strategy for enhancing national security and economic development. The study adopted a descriptive survey research design. The population of the study consisted of 12,846 respondents, from which a sample size of 474 respondents was selected using an appropriate sampling technique. Data were collected using a structured questionnaire designed by the researcher. The questionnaire served as the major instrument for gathering information on youth employment opportunities, their contribution to economic productivity, and their influence on security and social stability. The data collected were analyzed using appropriate statistical methods to determine the relationship between youth employment, security, and economic development. Findings from the study revealed that increased youth employment significantly contributes to the reduction of crime and social unrest while also improving productivity, entrepreneurship, and economic growth. The study concludes that creating sustainable employment opportunities for youths is essential for strengthening national security and promoting economic development. It recommends that government, private sector organizations, and non-governmental institutions should intensify efforts in job creation, entrepreneurship development, vocational training, and digital skill acquisition programmes to empower youths and enhance national stability.

Keywords: Youth Empowerment, National Security, Economic Development, Unemployment, Nigeria

Introduction

Nigeria, Africa's most populous nation, stands at a critical juncture where its demographic dividend risks becoming a demographic burden. With a youth population that constitutes over 60% of the national population, the country faces an escalating crisis of youth unemployment that has far-reaching implications for both national security and economic development. The phenomenon of youth unemployment in Nigeria is not merely an economic statistic; it is a complex socio-political challenge that intersects with issues of poverty, crime, insurgency, and political instability.

The relationship between youth unemployment and national security has become increasingly evident in Nigeria's contemporary experience. Across the country, from the Niger Delta militancy to the Boko Haram insurgency in the North-East, from armed banditry in the North-West to cybercrime and internet fraud in the South-West, the common denominator is the involvement of unemployed and underemployed youths. As noted by Adamu Abubakar (2025), rising rates of youth unemployment have coincided with an increase in violent crimes including armed robbery and kidnapping for ransom, as economically frustrated young people are driven to criminal activities to alleviate their financial hardships.

The scale of the challenge is staggering. According to the State of the Nigerian Youth Report 2025, published by Plan International Nigeria in collaboration with ActionAid Nigeria, approximately 80 million young Nigerians, representing 53 per cent of the youth population, are unemployed. Each year, about 1.7 million graduates enter the labour market, but opportunities remain scarce (Plan International Nigeria & ActionAid Nigeria, 2025). This figure, while contested by official National Bureau of Statistics data which places youth unemployment at 6.5 per cent under revised methodology, underscores the

severity of the crisis when underemployment, informal employment, and discouraged workers are taken into account (National Bureau of Statistics, 2024).

The security implications of this situation are profound. The frustration-aggression theoretical framework, originally propounded by John Dollard and his colleagues in 1939, provides a compelling explanation for the link between unemployment and insecurity. According to this theory, economic deprivation and unmet expectations create frustration, which may manifest as aggression, directed either toward the state or toward fellow citizens (Dollard et al., 1939). In the Nigerian context, this frustration has manifested in various forms of criminality, including banditry, kidnapping for ransom, armed robbery, political thuggery, and terrorism (Ihekoromadu et al., 2025).

Economic development, too, is severely constrained by youth unemployment. A nation that fails to productively engage its youthful population forfeits the economic dividends that come with a demographic advantage (Adamu Abubakar, 2025). The loss of potential productivity, the erosion of human capital, and the diversion of resources toward security spending all undermine economic growth. Conversely, when youths are productively employed, they contribute to economic productivity, entrepreneurship, innovation, and the expansion of the tax base.

This study, therefore, investigates youth employment as a strategy for enhancing national security and economic development in Nigeria. It seeks to empirically examine the relationship between youth employment opportunities and outcomes in security and economic development, using a descriptive survey research design. The study is motivated by the urgent need to generate evidence-based recommendations for policymakers, private sector actors, and civil society organizations working to address Nigeria's youth employment challenge.

Youth Unemployment and Socioeconomic Challenges in Nigeria

Conceptual Clarification

Youth: The concept of youth varies across cultural and institutional contexts. The United Nations defines youth as persons between the ages of 15 and 24 years, while the African Youth Charter extends the definition to include persons between 15 and 35 years. In Nigeria, the National Youth Policy defines youth as persons aged 18 to 29 years. For the purposes of this study, youth refers to persons between the ages of 18 and 35 years, consistent with the African Youth Charter and the realities of the Nigerian labour market.

Youth Employment: Youth employment refers to the engagement of young people in productive activities that generate income and contribute to economic output. It encompasses both formal wage employment and self-employment, including entrepreneurship and informal sector activities. Productive youth employment implies not just any job, but decent work that provides adequate income, social protection, and opportunities for personal development.

National Security: National security traditionally refers to the protection of a nation's sovereignty, territorial integrity, and citizens from external and internal threats. However, contemporary conceptualizations of national security have expanded to include economic security, human security, and social stability. In the Nigerian context, national security encompasses the protection of lives and property, the maintenance of law and order, the prevention of insurgency and terrorism, and the promotion of social cohesion(Adamu Abubakar, 2025).

Economic Development: Economic development refers to the sustained, concerted actions of policymakers and communities that promote the standard of living and economic health of a specific area. It encompasses not only economic growth (increase in GDP) but also improvements in human development indicators, reduction in poverty and inequality, and structural transformation of the economy.

Theoretical Framework

This study is anchored on two complementary theoretical perspectives: The Frustration-Aggression Theory and the Human Capital Theory.

Frustration-Aggression Theory: Propounded by John Dollard and his colleagues in 1939, the frustration-aggression theory posits that when individuals are prevented from achieving their goals, they experience frustration, which may lead to aggressive behaviour (Dollard et al., 1939). In the context of youth unemployment, the theory suggests that when young people are unable to secure employment despite their education and aspirations, the resulting frustration may manifest in criminal activities, political violence, or other forms of antisocial behaviour. This theoretical perspective has been extensively applied to explain the nexus between youth unemployment and insecurity in Nigeria (Ihekoromadu et al., 2025; Adamu Abubakar, 2025).

Human Capital Theory: Developed by Gary Becker and Theodore Schultz in the 1960s, human capital theory posits that investment in education, training, and health enhances the productive capacity of individuals and contributes to economic growth (Becker, 1964). In the context of youth employment, the theory implies that when young people are productively employed, their skills and capabilities are utilized for economic production, contributing to national development. Conversely, unemployment represents a waste of human capital and a loss of potential economic output.

Youth Unemployment and National Security

The nexus between youth unemployment and national security in Nigeria is well-documented in the literature. A study by Adamu Abubakar (2025) found that criminal activities such as banditry, kidnapping for ransom, armed robbery, telephone snatching, and political thuggery are prevalent among unemployed youths and have a negative impact on Nigeria's national security. The study, which adopted a descriptive survey of qualitative data, concluded that youth unemployment and economic hardship are socio-economic issues that challenge Nigeria with far-reaching implications for national security.

The security implications of youth unemployment are particularly evident in the various insurgency and militancy movements that have plagued Nigeria. The Boko Haram insurgency in the North-East, the Niger Delta militancy in the South-South, and the armed banditry in the North-West all share a common feature: the exploitation of unemployed and frustrated youths by criminal and terrorist organizations. As noted by Ihekoromadu et al. (2025), the Boko Haram sect exploits widespread youth unemployment and a high prevalence of illiteracy in Nigeria to perpetrate their terrorist acts. The Director General of the Institute for Peace and Conflict Resolution (IPCR), Dr. Joseph Ochogwu, has similarly linked Nigeria's growing insecurity to a weak economy and rising youth unemployment, stating that idle youths are being pushed into banditry and other crimes (Daily Trust, 2026).

Youth Employment and Economic Development

The relationship between youth employment and economic development is symbiotic. On the one hand, economic development creates employment opportunities for youths; on the other hand, youth employment contributes to economic development. When young people are productively employed, they contribute to economic output, pay taxes, and participate in consumption, all of which stimulate economic growth.

Moreover, youth employment promotes entrepreneurship and innovation. Young people are often more willing to take risks, adopt new technologies, and pursue innovative ideas. When they are empowered with the resources and opportunities to start businesses, they can become job creators rather than job seekers, contributing to the expansion of the economy. A study by Owan et al. (2026) found that graduate attitude, educational qualification, and marital status were significant predictors of job creation among Nigerian corps members, highlighting the importance of psychological and demographic factors in entrepreneurship.

Youth Empowerment Programmes in Nigeria

Successive Nigerian governments have implemented various programmes aimed at addressing youth unemployment and promoting youth empowerment. These include the National Directorate of Employment (NDE), the National Youth Service Corps (NYSC), the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), the YouWin! Programme, the N-Power Programme, and more recently, the 3 Million Technical Talent (3MTT) Programme and the Nigerian Youth Academy (NiYA).

While these programmes have achieved some level of success, their overall impact has been limited by implementation challenges, inadequate funding, poor coordination, and lack of sustainability. The National Directorate of Employment's Renewed Hope Employment Initiative (RHEI) Phase I, implemented in 2024, reportedly trained 32,886 unemployed Nigerians, with 4,683 resettled with business start-up support. Phase II reportedly trained a further 33,692 beneficiaries in market-driven skills, though as of mid-2025, none had been formally resettled, and 4,651 trainees were still owed outstanding stipends (ThisDay, 2026). This situation, attributed to the non-release of the 2025 capital budget, illustrates the gap between policy intent and implementation reality.

More recent initiatives have shown promise. The Federal Ministry of Youth Development reported that 14,509 youths were trained in digital skills (exceeding the target of 10,000), 97,212 were engaged in mentorship and career development (exceeding the target of 80,000), and 5,023 were trained in crime reduction and peace-building (more than double the target of 2,500) (Voice of Nigeria, 2025). The NYSC has equipped 58,933 corps members with various digital skills in the last two years, and 385,461 Corps members participated in the Skill Acquisition and Entrepreneurship Development (SAED) programme between June 2023 and the second quarter of 2025 (Voice of Nigeria, 2025). These

results suggest that with adequate funding and effective implementation, youth empowerment programmes can achieve significant impact.

Method

Research Design

This study adopted a descriptive survey research design. This design was considered appropriate because it allows for the collection of data from a large sample of respondents to describe the characteristics, attitudes, and perceptions of the population with respect to youth employment, national security, and economic development. The descriptive survey design is particularly suitable for studies that seek to establish relationships between variables and to describe the current state of affairs in a given context.

Population of the Study

The population of the study consisted of 12,846 respondents drawn from the six geopolitical zones of Nigeria. The population included unemployed youths, employed youths, youth entrepreneurs, youth corps members, civil servants, private sector employees, and community leaders. The inclusion of diverse categories of respondents was intended to ensure that the study captures a wide range of perspectives on youth employment, security, and economic development.

Sample Size and Sampling Technique

A sample size of 474 respondents was selected from the population of 12,846. The sample size was determined using the Taro Yamane formula for determining sample size from a finite population:

$n = N / (1 + Ne^2)$

Where:

n = sample size

N = population size (12,846)

e = level of significance (0.05)

1 = constant

Applying the formula:

$n = 12,846 / (1 + 12,846(0.05)^2)$

$n = 12,846 / (1 + 32.115)$

$n = 12,846 / 33.115$

$n = 387.9 \approx 388$

To account for potential non-response and to ensure adequate representation, the sample size was increased to 474 respondents. The multi-stage sampling technique was used to select the respondents.

Stage One: In the first stage, three states were randomly selected from each of the six geopolitical zones, making a total of eighteen states.

Stage Two: In the second stage, local government areas were randomly selected from each of the selected states.

Stage Three: In the third stage, respondents were selected using simple random sampling from the selected local government areas.

Instrument for Data Collection:

Data were collected using a structured questionnaire designed by the researcher. The questionnaire was titled "Youth Employment, National Security, and Economic Development Questionnaire (YENSEDQ)." It consisted of four sections:

Section A: Demographic information of respondents (age, gender, educational qualification, employment status, etc.)

Section B: Youth employment opportunities and their contribution to economic productivity

Section C: Youth employment and its influence on security and social stability

Section D: Challenges facing youth employment and suggestions for improvement

The questionnaire used a five-point Likert scale (Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree) for sections B, C, and D. The instrument was validated by three experts in the fields of public administration, economics, and security studies. A pilot study was conducted with 30 respondents who were not part of the main study, and the reliability of the instrument was established using Cronbach's Alpha, which yielded a reliability coefficient of 0.82.

Data Collection Procedure

The researcher personally administered the questionnaires to the respondents with the assistance of trained research assistants. The purpose of the study was explained to the respondents, and their informed consent was obtained. Respondents were assured of the confidentiality of their responses. Out of the 474 questionnaires distributed, 452 were properly completed and returned, representing a response rate of 95.4%.

Data Analysis

The data collected were analyzed using both descriptive and inferential statistical methods. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize the demographic characteristics of respondents and their responses to the questionnaire items. Inferential statistics (Pearson Product Moment Correlation and multiple regression analysis) were used to determine the relationship between youth employment, security, and economic development. The hypotheses were tested at a 0.05 level of significance.

Results

Demographic and Psychographic Data of Respondents

Table 1: Demographic Characteristics of Respondents (n = 452)

Variable	Category	Frequency	Percentage
Age	18–25 years	156	34.5
	26–30 years	178	39.4
	31–35 years	118	26.1
Gender	Male	248	54.9
	Female	204	45.1
Educational Qualification	SSCE/NECO	68	15.0
	OND/NCE	112	24.8
	HND/B.Sc.	198	43.8
	M.Sc./Ph.D.	74	16.4
Employment Status	Unemployed	186	41.2
	Self-employed	124	27.4
	Employed (Public Sector)	82	18.1
	Employed (Private Sector)	60	13.3

Source: Field Survey, 2025

The table shows that the majority of respondents (39.4%) were in the 26–30 age bracket, followed by those aged 18–25 (34.5%) and 31–35 (26.1%). Male respondents constituted 54.9% of the sample, while females constituted 45.1%. In terms of educational qualification, the largest proportion of respondents (43.8%) held HND or B.Sc. degrees, followed by those with OND/NCE (24.8%), M.Sc./Ph.D. (16.4%), and SSCE/NECO (15.0%). Regarding employment status, 41.2% of respondents were unemployed, 27.4% were self-employed, 18.1% were employed in the public sector, and 13.3% were employed in the private sector.

Table 2: Psychographic Characteristics of Respondents (n = 452)

Psychographic Variable	Category	Frequency	Percentage
Attitude Towards Entrepreneurship	Highly positive	168	37.2
	Moderately positive	194	42.9
	Neutral	62	13.7
	Negative	28	6.2
Perception of Government Performance	Very poor	248	54.9
	Poor	138	30.5
	Fair	52	11.5
	Good	14	3.1
Willingness to Migrate	Have considered emigrating	271	60.0
	Have not considered	181	40.0
Primary Motivation for Employment	Financial independence	198	43.8
	Family support	106	23.5
	Self-fulfilment	82	18.1
	Community development	66	14.6

Source: Field Survey, 2025

The psychographic data reveal important insights into the mindset of Nigerian youths. A significant majority (80.1%) expressed positive attitudes towards entrepreneurship, with 37.2% being highly positive and 42.9% moderately positive. This suggests a strong entrepreneurial spirit among Nigerian youths that could be harnessed for economic development. However, perceptions of government performance were overwhelmingly negative, with 85.4% rating it as poor or very poor. This aligns with the findings of Afrobarometer (2025), which reported that only 2% and 6% of Nigerian youth say the government is doing well on inflation control and job creation, respectively. The data also show that 60% of respondents have considered emigrating, a trend that has tripled since 2017

(Afrobarometer, 2025). This brain drain poses a significant threat to Nigeria's future productivity and development.

Youth Employment Opportunities and Economic Productivity

Table 3: Youth Employment Opportunities and Economic Productivity

Item	Mean	SD	Decision
Youth employment increases national productivity	4.32	0.78	Agree
Employed youths contribute to tax revenue generation	4.18	0.82	Agree
Youth entrepreneurship stimulates economic growth	4.45	0.71	Agree
Youth employment reduces dependency ratio	4.27	0.76	Agree
Employed youths contribute to community development	4.11	0.85	Agree
Youth employment enhances innovation and creativity	4.38	0.74	Agree

Source: Field Survey, 2025

The results show that respondents generally agreed that youth employment contributes to economic productivity. The highest mean score was for the item "Youth entrepreneurship stimulates economic growth" (mean = 4.45), followed by "Youth employment enhances innovation and creativity" (mean = 4.38) and "Youth employment increases national productivity" (mean = 4.32). These findings suggest that respondents recognize the positive economic contributions of youth employment.

Youth Employment and National Security

Table 4: Youth Employment and National Security

Item	Mean	SD	Decision
Youth unemployment is a major cause of crime in Nigeria	4.51	0.68	Strongly Agree
Youth employment reduces involvement in criminal activities	4.43	0.72	Agree
Employed youths are less likely to be recruited by terrorist groups	4.29	0.79	Agree
Youth employment reduces political thuggery and violence	4.36	0.75	Agree
Youth empowerment programmes reduce social unrest	4.22	0.81	Agree
Youth employment enhances community peace and stability	4.15	0.84	Agree

Source: Field Survey, 2025

The results indicate strong agreement among respondents that youth unemployment is a major cause of crime in Nigeria (mean = 4.51) and that youth employment reduces involvement in criminal activities (mean = 4.43). Respondents also agreed that employed youths are less likely to be recruited by terrorist groups (mean = 4.29) and that youth employment reduces political thuggery and violence (mean = 4.36). These findings provide empirical support for the theoretical proposition that youth employment is a critical factor in enhancing national security.

Relationship Between Youth Employment, Security, and Economic Development

Table 5: Correlation Matrix

Variable	Youth Employment	Security	Economic Development
Youth Employment	1.00		
Security	0.68	1.00	
Economic Development	0.72	0.61	1.00

Correlation is significant at the 0.01 level (2-tailed).

Source: Field Survey, 2025

The correlation analysis reveals significant positive relationships between youth employment and security ($r = 0.68$, $p < 0.01$), between youth employment and economic development ($r = 0.72$, $p < 0.01$), and between security and economic development ($r = 0.61$, $p < 0.01$). These findings indicate that higher levels of youth employment are associated with improved security and enhanced economic development.

Regression Analysis

Table 6: Regression Analysis Summary

Dependent Variable	R	R^2	Adjusted R^2	F	Sig.
Security	0.68	0.46	0.45	184.32	0.000
Economic Development	0.72	0.52	0.51	218.67	0.000

Source: Field Survey, 2025

The regression analysis shows that youth employment significantly predicts security ($R^2 = 0.46$, $F = 184.32$, $p < 0.001$), accounting for 46% of the variance in security outcomes. Similarly, youth employment significantly predicts economic development ($R^2 = 0.52$, $F = 218.67$, $p < 0.001$), accounting for 52% of the variance in economic development outcomes. These findings confirm that youth employment is a significant predictor of both security and economic development.

Discussion of Findings

The findings of this study provide empirical support for the proposition that youth employment is a critical strategy for enhancing national security and promoting economic development in Nigeria. The significant positive correlation between youth employment and security ($r = 0.68$) confirms the theoretical expectation that when young people are productively engaged, they are less likely to be involved in criminal activities, insurgency, and other forms of antisocial behaviour. This finding is consistent with the frustration-aggression theoretical framework, which suggests that economic deprivation and unmet expectations create frustration that may manifest as aggression (Dollard et al., 1939; Ihekoromadu et al., 2025).

The finding that youth employment significantly predicts security outcomes ($R^2 = 0.46$) and economic development outcomes ($R^2 = 0.52$) underscores the importance of prioritizing youth employment in national development strategies. These results align with the findings of Adamu Abubakar (2025), who concluded that criminal activities such as banditry, kidnapping for ransom, armed robbery, and political thuggery found among unemployed youths have a negative impact on Nigeria's national security. Similarly, Ihekoromadu et al. (2025) argued that youth unemployment in Nigeria has significant negative implications for national security and development, including increased waves of armed robbery, kidnapping, terrorism, human trafficking, cybercrimes, and militancy.

The study's finding that youth entrepreneurship stimulates economic growth (mean = 4.45) is particularly significant. It suggests that promoting youth entrepreneurship should be a central component of youth employment strategies. This is consistent with the conclusions of Owan et al. (2026), who found that graduate attitude, educational qualification, and marital status were significant predictors of job creation among Nigerian corps members. The finding that 80.1% of respondents expressed positive attitudes towards entrepreneurship further supports the potential for youth-led economic transformation.

The challenges identified by respondents—inadequate job opportunities, insufficient access to finance, poor infrastructure, lack of employable skills, and corruption—are consistent with the broader literature on youth unemployment in Nigeria. These challenges require multifaceted interventions involving government, the private sector, civil society, and international partners. The finding that 88.1% of respondents identified inadequate job opportunities as a major challenge highlights the need for aggressive job creation policies, including support for small and medium enterprises, public works programmes, and incentives for private sector employment generation.

The study's finding that youth employment enhances innovation and creativity (mean = 4.38) is particularly relevant in the context of Nigeria's digital economy. With the right skills and opportunities, Nigerian youths can become drivers of innovation in technology, agriculture, creative industries, and other sectors. The 3 Million Technical Talent (3MTT) Programme and the Nigerian Youth Academy (NiYA) represent important steps in this direction, but they need to be scaled up and sustained.

Levels of Unemployment

The study identified varying levels of unemployment across different categories of Nigerian youths, which have significant implications for policy interventions.

Table 7: Levels of Youth Unemployment by Category

Category	Unemployment Rate	Underemployment Rate	Combined Rate
Youth (15–24 years)	6.5%	12.8%	19.3%
Young Adults (25–34 years)	4.8%	15.2%	20.0%
University Graduates	12.4%	18.6%	31.0%
Secondary School Leavers	8.2%	14.3%	22.5%
Vocational Training Graduates	5.1%	9.7%	14.8%

Source: National Bureau of Statistics (2024); Plan International Nigeria & ActionAid Nigeria (2025)

The data reveal that university graduates face the highest combined unemployment and underemployment rate (31.0%), reflecting the mismatch between tertiary education outputs and labour market demands. This finding aligns with the observation that roughly 1.7 million graduates leave universities and polytechnics every year into a market that cannot absorb them (Plan International Nigeria & ActionAid Nigeria, 2025). Vocational training graduates, by contrast, face the lowest combined rate (14.8%), suggesting that skill-based education is more effective in facilitating labour market entry.

The analysis also reveals significant regional variations in unemployment levels. In the North-West and North-East, unemployment is compounded by banditry and kidnapping, which have displaced millions and destroyed livelihoods. In the South-South, environmental degradation and the decline of the oil economy have created a unique set of employment challenges. In the South-West and South-East, inflation and underemployment dominate the concerns of young people. These regional differences, as noted by the State of the Nigerian Youth Report 2025, indicate that while the problems

are national, they take unique forms in each region, and responses must be tailored rather than uniform (Plan International Nigeria & ActionAid Nigeria, 2025).

Factors Affecting Youth Empowerment

The study identified several critical factors that affect the effectiveness of youth empowerment programmes and the overall employability of Nigerian youths.

Table 8: Factors Affecting Youth Empowerment

Factor	Frequency	Percentage
Inadequate job opportunities	398	88.1
Insufficient access to finance for entrepreneurship	376	83.2
Poor infrastructure (power, roads, etc.)	358	79.2
Lack of employable skills	342	75.7
Corruption and nepotism in recruitment	324	71.7
Policy inconsistency and poor implementation	312	69.0
Inadequate vocational training programmes	298	65.9
Lack of mentorship and career guidance	276	61.1

Source: Field Survey, 2025

The most frequently cited challenge was inadequate job opportunities (88.1%), followed by insufficient access to finance for entrepreneurship (83.2%), poor infrastructure (79.2%), lack of employable skills (75.7%), and corruption and nepotism in recruitment (71.7%). These findings highlight the multifaceted nature of the youth employment challenge in Nigeria and the need for comprehensive interventions.

Inadequate Job Opportunities: The fundamental problem is the insufficient number of jobs available in both the public and private sectors. Nigeria's productive capacity has weakened significantly, as noted by Dr. Joseph Ochogwu, Director General of the Institute for Peace and Conflict Resolution, who observed that "our productive capacity is weak. If you travel across the nooks and crannies of this country, you will see youths without engagement" (Daily Trust, 2026).

Insufficient Access to Finance: Young entrepreneurs face significant barriers in accessing credit, collateral requirements, and financial services. This limits their ability to start and grow businesses, thereby perpetuating unemployment and underemployment.

Poor Infrastructure: Inadequate power supply, poor road networks, and limited internet connectivity increase the cost of doing business and constrain economic opportunities, particularly in rural areas.

Lack of Employable Skills: The educational system in Nigeria has been criticized for producing graduates whose skills do not match the demands of the labour market. The curriculum is often theoretical rather than practical, and there is insufficient emphasis on vocational training, entrepreneurship education, and digital skills (Owan et al., 2026).

Corruption and Nepotism: Recruitment processes in both the public and private sectors are often compromised by corruption and nepotism, denying qualified young people fair access to employment opportunities.

Policy Inconsistency: Frequent changes in government policies and programmes create uncertainty and undermine the effectiveness of youth empowerment initiatives. The gap between policy intent and implementation, as illustrated by the NDE's experience with outstanding stipends, is a recurring challenge (ThisDay, 2026).

Conclusion

This study investigated youth employment as a strategy for enhancing national security and economic development in Nigeria. The findings provide compelling evidence that youth employment is not merely an economic issue but a critical component of national security and development strategy. The significant positive relationships between youth employment and both security and economic development underscore the need for comprehensive and sustained efforts to create employment opportunities for Nigeria's youth.

The study concludes that creating sustainable employment opportunities for youths is essential for strengthening national security and promoting economic development. When young people are productively employed, they are less likely to be recruited into criminal activities, insurgency, and political violence. They contribute to economic productivity, innovation, and entrepreneurship, thereby driving economic growth and development. Conversely, when young people are unemployed and frustrated, they become vulnerable to exploitation by criminal and terrorist organizations, undermining national security and economic progress.

The psychographic data reveal that Nigerian youths possess a strong entrepreneurial spirit and a desire for self-improvement, but they are deeply dissatisfied with government performance and

increasingly considering emigration. This represents both a challenge and an opportunity. If properly harnessed, the energy, creativity, and ambition of Nigerian youths can be a powerful force for national transformation. If neglected, they may become a source of instability and a drain on the nation's future.

The challenge of youth unemployment in Nigeria is daunting but not insurmountable. With the right policies, adequate funding, effective implementation, and collaboration among stakeholders, Nigeria can harness the potential of its youthful population for national development. The demographic dividend that Nigeria possesses can be transformed from a potential liability into a powerful asset for economic growth and social stability.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. **Intensify Job Creation Efforts**: The federal and state governments should collaborate with the private sector to create sustainable employment opportunities for youths. This includes supporting small and medium enterprises through tax incentives, access to credit, and business development services.
2. **Promote Entrepreneurship Development**: Government and non-governmental organizations should establish and strengthen entrepreneurship development programmes that provide training, mentorship, and access to finance for young entrepreneurs. Special attention should be given to digital entrepreneurship, agribusiness, and creative industries.
3. **Expand Vocational Training and Digital Skills Acquisition**: There is an urgent need to expand vocational training programmes that equip youths with practical skills relevant to the labour market. Digital skills acquisition should be prioritized, given the growing importance of the digital economy. Programmes such as the 3MTT and NiYA should be scaled up to reach more beneficiaries.
4. **Reform the Educational System**: The educational curriculum should be reviewed to place greater emphasis on practical skills, entrepreneurship education, and digital literacy. Partnerships between educational institutions and industry should be strengthened to ensure that graduates possess the skills demanded by employers.
5. **Strengthen Youth Empowerment Institutions**: Existing youth empowerment institutions should be strengthened through adequate funding, capacity building, and improved coordination. The National Youth Service Corps, the National Directorate of Employment, and other agencies should be reformed to enhance their effectiveness.
6. **Address Corruption and Nepotism**: Government should intensify efforts to eliminate corruption and nepotism in recruitment processes. Transparent and merit-based recruitment practices should be institutionalized in both the public and private sectors.
7. **Improve Infrastructure**: Investment in infrastructure, particularly power supply, roads, and internet connectivity, is essential for job creation and economic development. Improved infrastructure will reduce the cost of doing business and stimulate private sector growth.
8. **Promote Public-Private Partnerships:** Government, private sector organizations, and non-governmental institutions should form strategic partnerships to address youth unemployment. Such partnerships can leverage the resources, expertise, and networks of different stakeholders to achieve greater impact.
9. **Monitor and Evaluate Youth Employment Programmes:** Regular monitoring and evaluation of youth employment programmes should be conducted to assess their effectiveness and make necessary adjustments. Data-driven decision-making should guide the design and implementation of youth employment policies.
10**. Foster Youth Participation in Policy Formulation**: Youths should be actively involved in the design, implementation, and evaluation of policies and programmes that affect them. Their perspectives and experiences are invaluable in developing solutions that are relevant and effective.

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INSTITUTIONAL AND PROFESSIONAL FACTORS MODERATING AI-DRIVEN PRACTICAL BUSINESS EDUCATION AND ENTREPRENEURIAL COMPETENCY DEVELOPMENT IN NIGERIA AND GHANA

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Abstract

This study determined whether institutional and professional factors moderate the relationships between AI-driven practical Business Education and entrepreneurial competency development for digital transformation among Business Education academics in Nigeria and Ghana. Anchored in Kolb's Experiential Learning Theory, the study adopted a predictive correlational design with a moderation approach. Data were collected from 38 academics using a 37-item structured questionnaire, administered online and analysed using descriptive statistics and hierarchical multiple regression. Institutional and professional factors comprised country, institution type, rank, years of experience, and specialisation. Findings show that AI-driven teaching and learning added only 1.5% to explained variance in entrepreneurial competency development after controlling for these factors, indicating limited contribution. Simulation-based and technology-enhanced instruction produces a larger 16.6% incremental contribution, although the overall change was marginally non-significant. Technology-enhanced instruction independently demonstrated a positive contribution, whereas simulation-based instruction did not. In all, institutional and professional factors did not significantly condition the relationships examined. The findings suggest that entrepreneurial competency development is more closely associated with purposeful technology-enhanced instructional practice than with AI integration or simulation-based instruction in isolation. Business Education institutions should therefore prioritise practical, competency-oriented integration of emerging technologies into entrepreneurial learning.

Keywords: Artificial intelligence; Business Education; entrepreneurial competencies; institutional factors; professional factors; simulation-based instruction; technology-enhanced instruction; teaching and learning

Introduction

The accelerated diffusion of artificial intelligence (AI) and emerging technologies is reconfiguring practical Business Education and the competencies required for participation in digital economies. AI integration in teaching and learning, simulation based instruction, and technology enhanced instruction offer avenues for shifting pedagogy beyond conventional knowledge transmission towards experiential, practical, and digitally mediated learning. This orientation is especially germane to entrepreneurial competency development, which requires learners to apply knowledge through problem solving, decision making, creativity, experimentation, and entrepreneurial action.

This study is anchored on Kolb's Experiential Learning Theory (1984), which conceives learning and competency development as a cyclical process involving concrete experience, reflective observation, abstract conceptualisation, and active experimentation. The theory provides a cogent basis for the study because AI tools, simulations, and technology mediated activities can create interactive experiences through which entrepreneurial knowledge and capabilities are acquired and applied. It also accommodates the contextual premise of the study, since institutional circumstances and professional characteristics may influence how instructional experiences are organised and translated into competency development. Contemporary scholarship illustrates the expanding

instructional utility of AI. AI enabled educational systems can analyse learning data, identify patterns of student engagement, predict learning progress, and furnish information for improving instructional design (Zhang *et al*., 2025). Generative AI is likewise gaining prominence as a support for higher education lecturers, although its productive application depends on reliability, explainability, controllability, and trustworthiness (Hennekeuser *et al*., 2025). These developments underscore that educational value derives not from technological availability alone, but from the manner in which technology is embedded within purposeful pedagogy.

Simulation-based instruction complements this practical orientation by enabling engagement with realistic educational and professional situations. Evidence from mixed reality teacher education indicates that AI generated feedback can enrich simulated learning, while human expertise remains indispensable for addressing the complexity of authentic practice (Nygren *et al*., 2025). Similarly, the competency perspective on AI literacy emphasises knowledge, skills, dispositions, and contextual application rather than mere technical familiarity (Yu, 2025). These perspectives position AI driven practical education as a potential medium for cultivating broader entrepreneurial capabilities.

The translation of these possibilities into competency development may, however, vary across institutional and professional contexts. Country may embody differences in digital infrastructure, educational policy, technological ecosystems, and AI readiness. Institution type and ownership may influence resource availability, curriculum orientation, practical training opportunities, funding, and organisational flexibility. Professional characteristics are equally consequential. Academic rank may be associated with differences in exposure, responsibility, and access to institutional resources, while years of experience may shape pedagogical adaptation to emerging technologies. Specialisation may also influence the relevance and application of AI and simulations because Business Education areas entail different practical tasks and technological demands.

This contextual question is particularly salient in Nigeria and Ghana. Although both countries confront comparable imperatives of graduate employability, entrepreneurship, and digital transformation, their higher education environments are not necessarily homogeneous. Institutional and professional factors may therefore condition the relationships between AI integration, simulation-based and technology-enhanced instruction, and entrepreneurial competency development. The present study consequently examines these factors as potential moderating conditions within AI driven practical Business Education.

Evidence concerning institutional conditions already suggests that contextual resources can shape innovation in Business Education. Okon and Ewuru (2024) examined institution - industry resourcefulness and curriculum innovation among 260 lecturers and industry representatives in Nigeria and found that institution - industry collaboration significantly contributed to curriculum innovation, accounting for 32.6% of the variance. The study establishes the relevance of institutional resourcefulness to innovation, but concentrated on collaboration and curriculum innovation rather than AI driven instruction and entrepreneurial competency development. It also did not investigate professional characteristics or their conditioning role in instructional relationships. The present study extends this line of inquiry by examining institutional and professional factors in relation to AI driven practical instructional pathways across Nigeria and Ghana.

Research on AI supported learning generally reports favourable educational outcomes. Mo *et al*. (2026), in a meta-analysis of 66 studies comprising 129 effect sizes, reported a large positive overall effect of ChatGPT applications on undergraduate learning outcomes, with Hedges' g = 1.14 and SE = 0.185. While this demonstrates the potential of AI supported learning, the analysis addressed general undergraduate outcomes rather than practical Business Education or entrepreneurial competency development. It also did not establish whether country, institutional arrangements, academic rank, experience, or specialisation alter AI related instructional relationships. Similarly, Boujmiraz *et al*. (2026), reviewing 72 studies selected from 281 records, found increasing use of machine learning, deep learning, and explainable AI for predicting student performance and supporting pedagogical intervention, but noted limited connection between predictive applications and broader educational innovation. The present study moves beyond prediction and general learning outcomes by situating AI integration within practical, competency oriented Business Education.

The importance of contextual and pedagogical conditions is reinforced by Lee *et al*. (2025), whose scoping review of 17 empirical studies found that effective AI integrated instruction depended on contextual and pedagogical considerations, despite evidence of improved content knowledge, confidence, and collaboration. Gaps in access, curricular alignment, and consistency of outcomes remained. Although conducted within K to 12 education, the review reinforces the proposition that technology does not operate independently of its instructional environment. The present study

advances this concern into higher education by examining institutional and professional conditions among Business Education academics.

Within entrepreneurship education, Yu *et al*. (2025) reviewed 50 studies and identified personalised learning, business model simulation, adaptive instruction, and decision making as prominent applications of generative AI. However, much of the evidence remained conceptual or exploratory, leaving uncertainty about effects on entrepreneurial competence. Okah (2025) found low utilisation of chatbot, ChatGPT, and Grammarly among Business Educators in Rivers State universities for improving job performance, indicating restrained practical uptake. These studies respectively revealed uncertainty about competency effects and limitations in actual utilisation, but neither examined cross national institutional and professional conditions.

More direct evidence is provided by Okon and Ikpali (2025), who found that chatbots and virtual assistants, as well as simulation and virtual reality, significantly influenced the teaching and learning of entrepreneurship education among 110 Business Education undergraduates in public universities in Cross River State. Okon, Ewuru, and Bekomson (2025) similarly found that AI based training significantly influenced the up-skilling of Business Education graduates for the future of work. Eze Desy and Emeasoba (2025) further reported positive influences of chatbots and simulations on teaching and learning in Office Technology and Management programmes in South East Nigerian polytechnics. These studies establish the instructional promise of AI and technology mediated practices. Their scope, however, remained largely confined to students or graduates, particular locations, programmes, or instructional outcomes. None examined entrepreneurial competency development for digital transformation among Business Education academics while simultaneously assessing whether institutional and professional factors condition the relevant relationships across Nigeria and Ghana.

Accordingly, the present study addresses a distinct empirical concern by integrating institutional context, professional characteristics, AI driven teaching and learning, simulation-based instruction, and technology enhanced instruction within a comparative framework. It therefore seeks to clarify not merely whether emerging instructional technologies are relevant to Business Education, but whether the relationships between these practical instructional pathways and entrepreneurial competency development are contingent upon the institutional and professional circumstances of academics in Nigeria and Ghana.

Objectives of the study

The study sought to achieve the following objectives:

1. determine the extent to which institutional and professional factors moderate the relationship between AI integration in teaching and learning and the development of entrepreneurial competencies for digital transformation among Business Education academics in Nigeria and Ghana; and
2. determine the extent to which institutional and professional factors moderate the relationship between simulation-based and technology-enhanced instruction and the development of entrepreneurial competencies for digital transformation among Business Education academics in Nigeria and Ghana.

Research questions

1. To what extent do institutional and professional factors moderate the relationship between AI integration in teaching and learning and the development of entrepreneurial competencies for digital transformation among Business Education academics in Nigeria and Ghana?
2. To what extent do institutional and professional factors moderate the relationship between simulation-based and technology-enhanced instruction and the development of entrepreneurial competencies for digital transformation among Business Education academics in Nigeria and Ghana?

Null hypotheses

1. Institutional and professional factors do not significantly moderate the relationship between AI integration in teaching and learning and the development of entrepreneurial competencies for digital transformation among Business Education academics in Nigeria and Ghana.
2. Institutional and professional factors do not significantly moderate the relationship between simulation-based and technology-enhanced instruction and the development of entrepreneurial competencies for digital transformation among Business Education academics in Nigeria and Ghana.

Method

The study adopted a predictive correlational research design with a moderation approach. The design was considered appropriate because the study determined the extent to which institutional and

professional factors moderate the relationships between AI-driven practical Business Education and the development of entrepreneurial competencies for digital transformation among Business Education academics in Nigeria and Ghana. Specifically, the study investigated whether differences in country of institution, type of university, academic position, years of teaching experience, and area of specialisation influence the relationships between AI integration in teaching and learning, simulation-based and technology-enhanced instruction, and entrepreneurial competency development.

The study involved Business Education academics in universities in Nigeria and Ghana. Data were collected using a structured (questionnaire containing 37 items. Items 1 - 5 elicited information on the respondents' institutional and professional characteristics, comprising country of institution, type of university, academic position, years of teaching experience, and area of specialisation. Items 6–17 measured AI integration in teaching and learning. Items 18–23 measured simulation-based instruction, while Items 24–29 measured technology-enhanced instruction. Items 30–37 measured entrepreneurial competencies for digital transformation. The items were rated on a four-point response scale ranging from Very Low Extent (1) to Very Great Extent (4).

The data were analysed using descriptive statistics and moderated hierarchical multiple regression analysis. The responses were first coded and composite scores were computed for AI integration, simulation-based instruction, technology-enhanced instruction, and entrepreneurial competencies for digital transformation. The institutional and professional variables were appropriately dummy-coded where necessary. For the moderation analysis, the main effects of the instructional variables and institutional and professional factors were entered into the regression model before the corresponding interaction terms. The interaction terms were created by multiplying the relevant instructional predictors by the institutional and professional factors. Moderation was determined based on the statistical significance of the interaction effects and the additional proportion of variance explained by the interaction terms, as indicated by the change in R^2 (ΔR^2). The null hypotheses were tested at the .05 level of significance.

Ethical consideration was given due attention throughout the study. Participation was voluntary, and respondents were adequately informed about the purpose of the study before providing their responses. Informed consent was obtained from the participants, and they were assured of anonymity and confidentiality. No personally identifying information was reported, and the data obtained were used strictly for academic and research purposes. Participants were also informed of their right to withdraw from the study at any stage without any penalty.

Results

Research Question 1

To what extent do institutional and professional factors moderate the relationship between AI integration in teaching and learning and the development of entrepreneurial competencies for digital transformation among Business Education academics in Nigeria and Ghana?

Table 1 presents the results for Research Question 1. The question was answered using descriptive statistics and hierarchical multiple regression. Institutional and professional factors (country, institution type, rank, years of experience, and specialisation) were entered in Block 1, followed by AI-driven teaching and AI-driven learning in Block 2.

Table 1: Hierarchical regression analysis of institutional and professional factors, AI-driven teaching, AI-driven learning, and develop of entrepreneurial competencies

Model/Variable	B	SE	β	t	P	R	R^2	ΔR^2	F change	Sig. F change
Block 1: Institutional and professional factors						.263	.069	.069	.475	.792
Country	.600	3.283	.045	.183	.856					
Institution type	-1.291	1.376	-.195	-.939	.355					
Rank	-.250	3.130	-.047	-.080	.937					
Years of experience	-1.202	2.994	-.248	-.402	.691					
Specialisation	1.094	1.195	.178	.915	.367					
Block 2: Institutional/professional factors + AI integration variables						.290	.084	.015	.250	.781
Country	.228	3.420	.017	.067	.947					
Institution type	-1.655	1.570	-.251	-1.054	.300					
Rank	-.122	3.228	-.023	-.038	.970					
Years of experience	-1.244	3.070	-.256	-.405	.688					
Specialisation	1.050	1.233	.171	.852	.401					
AI-driven teaching	.211	.357	.164	.590	.559					
AI-driven learning	-.077	.413	-.050	-.187	.853					

Note. N = 38. Dependent variable = development of entrepreneurial competencies for digital transformation. Block 1 predictors = country, institution type, rank, years of experience, and specialisation. Block 2 additionally included AI-driven teaching and AI-driven learning.

The descriptive results show mean scores of 24.11 (SD = 3.64) for entrepreneurial competency development, 19.82 (SD = 2.83) for AI-driven teaching, and 19.34 (SD = 2.36) for AI-driven learning. The institutional and professional factors accounted for 6.9% of the variance in entrepreneurial competency development (R^2 = .069). After AI-driven teaching and AI-driven learning were added, the explained variance increased to 8.4% (R^2 = .084), representing only a 1.5% additional contribution (ΔR^2 = .015). The regression coefficients indicate a weak positive relationship for AI-driven teaching (β = .164) and a weak negative relationship for AI-driven learning (β = -.050). Thus, after accounting for the institutional and professional factors, the two AI integration dimensions produced only a marginal increase in explained variance and did not materially strengthen the prediction of entrepreneurial competency development. Therefore, Institutional and professional factors moderated the relationship between AI integration in teaching and learning and entrepreneurial competency development only to a very limited extent. Their inclusion accounted for 6.9% of the variance, while adding AI-driven teaching and AI-driven learning increased the explained variance by only 1.5%.

Research question 2

To what extent do institutional and professional factors moderate the relationship between simulation-based and technology-enhanced instruction and the development of entrepreneurial competencies for digital transformation among Business Education academics in Nigeria and Ghana?

Table 2 presents the results for Research Question 2 using descriptive statistics and hierarchical multiple regression. Institutional and professional factors were entered in Block 1, followed by simulation-based instruction and technology-enhanced instruction in Block 2.

Table 2: Hierarchical regression analysis of institutional and professional factors, simulation-based instruction, technology-enhanced instruction, and development of entrepreneurial competencies

Model/Variable	B	SE	β	T	p	R	R^2	ΔR^2	F change	Sig. change	F
Block 1: Institutional and professional factors						.263	.069	.069	.475	.792	
Country	.600	3.283	.045	.183	.856						
Institution type	-1.291	1.376	-.195	-.939	.355						
Rank	-.250	3.130	-.047	-.080	.937						
Years of experience	-1.202	2.994	-.248	-.402	.691						
Specialisation	1.094	1.195	.178	.915	.367						
Block 2: Institutional/professional factors + instructional variables						.485	.235	.166	3.252	.053	
Country	1.125	3.137	.084	.359	.722						
Institution type	-1.568	1.293	-.237	-1.213	.235						
Rank	-.684	2.936	-.129	-.233	.817						
Years of experience	-.786	2.809	-.162	-.280	.782						
Specialisation	.984	1.214	.161	.811	.424						
Simulation-based instruction	-.322	.354	-.235	-.910	.370						
Technology-enhanced instruction	.794	.346	.545	2.294	.029						

Note. N = 38. Dependent variable = development of entrepreneurial competencies for digital transformation. Block 1 predictors = country, institution type, rank, years of experience, and specialisation. Block 2 additionally included simulation-based instruction and technology-enhanced instruction.

The descriptive results showed mean scores of 24.11 (SD = 3.64) for entrepreneurial competency development, 19.34 (SD = 2.66) for simulation-based instruction, and 20.26 (SD = 2.50) for technology-enhanced instruction. The institutional and professional factors accounted for 6.9% of the variance in entrepreneurial competency development (R^2 = .069). With the addition of simulation-based and technology-enhanced instruction, the explained variance increased to 23.5% (R^2 = .235), representing an additional 16.6% (ΔR^2 = .166). Within the second model, simulation-based instruction showed a weak negative relationship (β = -.235), whereas technology-enhanced instruction showed a stronger positive relationship (β = .545). Thus, after accounting for the institutional and professional factors, technology-enhanced instruction provided the more substantial contribution to entrepreneurial competency development, while simulation-based instruction contributed comparatively little. Institutional and professional factors moderated the relationship to a limited extent, with the initial model

explaining 6.9% of the variance. The addition of simulation-based and technology-enhanced instruction increased the explained variance by 16.6%, with technology-enhanced instruction providing the stronger contribution to entrepreneurial competency development.

Test of Null Hypothesis 1

Institutional and professional factors do not significantly moderate the relationship between AI integration in teaching and learning and the development of entrepreneurial competencies for digital transformation among Business Education academics in Nigeria and Ghana.

The null hypothesis was tested at the .05 level of significance using the hierarchical regression results presented in Table 3. The hypothesis was assessed by examining whether the inclusion of AI-driven teaching and AI-driven learning after controlling for the institutional and professional factors produced a statistically significant change in the explained variance in the development of entrepreneurial competencies.

Table 3: Test of the moderating influence of institutional and professional factors on the relationship between AI integration in teaching and learning and the development of entrepreneurial competencies

Model	R^2	R^2 Change	F Change	df1	df2	p-value	Decision
Institutional and professional factors	.069	.069	.475	5	32	.792	Not significant
Institutional/professional factors + AI-driven teaching and learning	.084	.015	.250	2	30	.781	Not significant

Source: Researchers' field data, 2026.

As shown in Table 3, the institutional and professional factors accounted for 6.9% of the variance in entrepreneurial competency development. After AI-driven teaching and AI-driven learning were entered into the model, the total explained variance increased marginally to 8.4%. The additional contribution attributable to AI integration was therefore 1.5% ($\Delta R^2 = .015$). This increment was not statistically significant, F change (2, 30) = .250, p = .781, which is greater than the .05 level of significance. Consequently, the null hypothesis was not rejected. Institutional and professional factors did not significantly moderate the relationship between AI integration in teaching and learning and the development of entrepreneurial competencies for digital transformation among Business Education academics in Nigeria and Ghana. The preliminary correlation analysis showed weak zero-order relationships between entrepreneurial competency development and AI-driven teaching (r = .102) as well as AI-driven learning (r = .058). Similarly, the correlations between entrepreneurial competency development and the institutional and professional factors were weak, ranging from r = -.143 for rank to r = .046 for country. These preliminary results indicate limited bivariate associations among the principal variables. The increment was not statistically significant, $\Delta R^2 = .015$, F change (2, 30) = .250, p = .781. The individual coefficient results also show that neither AI-driven teaching ($\beta = .164$, p = .559) nor AI-driven learning ($\beta = -.050$, p = .853) significantly predict entrepreneurial competency development in the presence of the institutional and professional factors. Likewise, none of the institutional and professional factors made a statistically significant unique contribution to the final model. The results presented in Table 3 were used to test Null Hypothesis 1. Since the change in explained variance associated with AI-driven teaching and AI-driven learning was not statistically significant, F change (2, 30) = .250, p = .781 > .05, the null hypothesis was retained. The study therefore found no statistically significant evidence that the institutional and professional factors moderated the relationship between AI integration in teaching and learning and the development of entrepreneurial competencies for digital transformation among the sampled Business Education academics in Nigeria and Ghana.

Null hypothesis 2

Institutional and professional factors do not significantly moderate the relationship between simulation-based and technology-enhanced instruction and the development of entrepreneurial competencies for digital transformation among Business Education academics in Nigeria and Ghana. The null hypothesis was tested using the hierarchical regression results presented in Table 4. The test focused on whether the inclusion of simulation-based and technology-enhanced instruction after controlling for country, institution type, rank, years of experience, and specialisation produced a statistically significant change in the explained variance in entrepreneurial competency development.

Table 4: Test of null hypothesis 2: Hierarchical model change for simulation-based and technology-enhanced instruction after controlling for institutional and professional factors

Model	Predictors entered	R	R^2	Adjusted R^2	ΔR^2	F change	df1	df2	P
1	Country, institution type, rank, years of experience, specialisation	.263	.069	-.076	.069	.475	5	32	.792
2	Model 1 variables + simulation-based instruction + technology-enhanced instruction	.485	.235	.056	.166	3.252	2	30	.053

Note. N = 38. Dependent variable = development of entrepreneurial competencies for digital transformation. At α = .05, the change in explained variance was not statistically significant; therefore, null hypothesis 2 was retained.

In the first model, the institutional and professional factors jointly explained 6.9% of the variance in entrepreneurial competency development (R^2 = .069), but their combined contribution was not statistically significant, F(5, 32) = .475, p = .792. When simulation-based instruction and technology-enhanced instruction were introduced in the second model, the explained variance increased from 6.9% to 23.5%, representing an additional 16.6% of the variance explained (ΔR^2 = .166). However, the F-change test for this additional contribution was not statistically significant at the .05 level, F change (2, 30) = 3.252, p = .053. Although the overall change was marginally above the conventional .05 significance threshold, the individual regression coefficients revealed that technology-enhanced instruction was a significant positive predictor (β = .545, p = .029), whereas simulation-based instruction was not a significant predictor (β = -.235, p = .370). Therefore, based on the hierarchical model-change test, the null hypothesis was retained. Institutional and professional factors did not produce a statistically significant moderating effect on the combined relationship between simulation-based and technology-enhanced instruction and the development of entrepreneurial competencies for digital transformation, as the additional variance associated with the second block did not reach the .05 level of significance (ΔR^2 = .166, p = .053). Nevertheless, the coefficient results indicate that technology-enhanced instruction maintained a significant positive independent association with entrepreneurial competency development after the institutional and professional factors was controlled.

Discussion of findings

The study examined whether institutional and professional factors condition the relationships between AI-driven practical Business Education and entrepreneurial competency development among Business Education academics in Nigeria and Ghana. AI-driven teaching and learning showed limited explanatory value. After controlling for country, institution type, rank, experience, and specialisation, they added only 1.5% to explained variance, with neither making a significant independent contribution. This contrasts with Mo et al. (2026) and Okon and Ikpali (2025), who reported positive effects of AI applications on learning and entrepreneurship education. The divergence may reflect the present study's focus on entrepreneurial competencies rather than general learning outcomes. It also extends Okah's (2025) evidence of limited practical AI utilisation among Business Educators, suggesting that AI use alone may not translate into competency development without purposeful pedagogical and practical application.

Simulation-based and technology-enhanced instruction produced a stronger pattern. Their inclusion increased explained variance by 16.6%, although the combined increment did not reach the .05 significance level. Technology-enhanced instruction nevertheless made a significant positive independent contribution, whereas simulation-based instruction did not. This accords with Eze-Desy and Emeasoba (2025) and Okon and Ikpali (2025), which reported positive instructional relevance for technology-mediated, and simulation-based practices.

The findings indicate that institutional and professional factors did not materially condition the relationships examined, while the instructional pathways differed in their contributions. Technology-enhanced instruction showed the strongest association with entrepreneurial competency development,

whereas AI integration and simulation-based instruction alone demonstrated limited independent explanatory value.

Conclusion

This study concludes that the development of entrepreneurial competencies for digital transformation in Business Education depends less on institutional and professional differences and more on the nature and pedagogical application of technology-enabled instructional practices. AI integration and simulation-based instruction, by themselves, may not be sufficient to produce meaningful competency development; rather, the instructional value of emerging technologies lies in their purposeful integration into practical, competency-oriented learning experiences. The study therefore advances the understanding that technology-enhanced instruction represents a more promising pathway for strengthening entrepreneurial competencies among Business Education academics in Nigeria and Ghana, while institutional and professional characteristics alone may not constitute decisive conditions in this relationship.

Recommendations

1. Business Education institutions should strengthen the pedagogical integration of AI by linking AI-driven teaching and learning activities directly to practical entrepreneurial tasks, problem-solving, business decision-making, and digital enterprise creation.
2. Business Education programmes should strengthen both simulation-based and technology-enhanced instruction, while ensuring that simulations are deliberately connected to authentic entrepreneurial tasks and supported by relevant digital technologies, practical platforms, and competency-oriented activities.

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THE ROLE OF EDUCATION AND SECURITY IN ECONOMIC SUSTANAIBILITY OF ENTREPRENEURSHIP IN NIGERIA: A CASE OF ENUGU STATE, NIGERIA

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Abstract

The Role of Education and Security in Economic Sustainability of Entrepreneurship in Nigeria: A Case of Enugu State, Nigeria was conducted to examine how education and security correlate with entrepreneurship development. The study adopted the field survey research design. Data were collected using structured questionnaires and personal interview. The population of the study comprised 2441 registered businesses in Enugu Metropolis. The sample size of study was three hundred and forty-three (343) entrepreneurs who owned registered businesses within the metropolis. However, simple random sampling technique was used to select 100 respondents from the simple size. Data were analysed using descriptive and inferential statistics while the hypotheses were tested using Z-Test analysis. Findings revealed that education and security positively influence entrepreneurship development with Z-value = 47.367 and t-value = 1.96 (i.e. 47.367 > 1.96), while educational and security challenges adversely affect entrepreneurship development in Enugu State with Z-value = 55.696 and t-value = 1.96 (i.e. 55.696 > 1.96). The study concluded that education and security correlate positively with entrepreneurship development while insecurity negatively correlates with entrepreneurship development. The study recommended among others, that governments should incorporate entrepreneurship education into the school curriculum at all levels and adequately fund our educational institutions to further impact on entrepreneurship development.

Keywords: Education, Security, Insecurity, Economic Sustainability, Entrepreneurship.

INTRODUCTION

Background of the Study

Education and security are critical for entrepreneurship development of any nation. Kuratko (2020) emphasizes that various entrepreneurship courses are on offer in an increasing number of tertiary institutions across the globe - from North America, Europe, Asia to Africa, as well as an increased research interest in entrepreneurship. In the United States for example, universities and colleges offer a wide range of entrepreneurship courses and programmes, thereby fostering a culture of innovation and business creation. Organizations like the Council for Entrepreneurship Development (CED) provide resources, training and networking opportunities for entrepreneurs in the technology sector. The US model encourages collaboration between educational institutions and the business community, ensuring that curricula are relevant to industry needs and that students gain practical experience through internships and other programmes. The US has a formidable security system which creates a fertile ground for entrepreneurship and thus, makes the US a global leader in entrepreneurship.

Nations in Africa are prioritizing their educational and security systems towards sustainable economic development. The South African government for instance, has recognized the importance of entrepreneurship education in basic education, with calls to integrate it more effectively into the curriculum, thereby including developing skills like business management, financial literacy and marketing alongside fostering an entrepreneurial mindset. Higher institutions in South Africa have been repositioned to equip graduates with the knowledge and skills necessary to start and manage their businesses, addressing the high rate of graduate unemployment. The South African government plays important role in maintaining law and order, addressing the root causes of crime such as poverty and inequality.

In Nigeria, education and security are critical to sustainable entrepreneurship development. The implementation of entrepreneurship education policies in higher education in 2013 and the Skills Acquisition and Entrepreneurship Department (SAED) programme for fresh graduates are quite laudable and developmental. These programmes aim at sensitizing and mobilizing young people for skill acquisition, reducing the rate of unemployment and improving youths' livelihood. These initiatives have been quite rewarding and proven to be effective towards preparing graduates for the labor market,

as there is general affirmation that entrepreneurship education has instilled confidence young graduates to face the labor market (Justina & Emmanuel, 2020). Security plays a critical role to every thriving economy. No meaningful development would take place in an insecure environment.

Statement of the Problem

Entrepreneurship drives economic expansion and development. It generates employment opportunities to nations' workforce, creates foreign earnings to different economies, etc. In recent times however, entrepreneurship in Nigeria has encountered challenges that have affected its growth and development. This is because investors had no prior knowledge of entrepreneurship and business management, lacking the adequate skills and knowledge which are acquired through education on one hand. On the other hand, Nigeria continues to grapple with varied human security issues which severely impact the lives of her citizens and business investment. Insecurity has become a serious issue in Nigeria, affecting business activities and attainment of sustainable development.

It is on this premise that the researcher sought to study the relationship between education, security and economic sustainability of entrepreneurship in Enugu State with a view to filling these identified gaps.

Objectives of the Study

The study specifically seeks to:

i. Examine the effects of education and security on entrepreneurship development in Enugu State
ii. Examine the effects of educational and security challenges on entrepreneurship development in Enugu State

Research Questions

The study seeks to answer the following questions:

i. What are the effects of education and security on entrepreneurship development in Enugu State?
ii. What are the effects of educational and security challenges barriers on entrepreneurship development in Enugu State?

Statement of Hypotheses

H_o 1: Education and security have no effects on entrepreneurship development in Enugu State

H_o 2: Educational and security challenges have no effects on entrepreneurship development in Enugu State

REVIEW OF RELATED LITERATURE

Conceptual Review

Concepts such as education, security, insecurity, entrepreneurship development among others are discussed thus:

The Concept of Education

Education is an essential component of human life as it provides the framework for human formation both informally and formally. Nlemedim et al. (2025) define education as the art of inculcating in an individual some desirable knowledge, understanding, skills, interests, attitudes and critical thinking; it encompasses teaching and learning specific skills and also something less tangible but more profound: the imparting of knowledge, positive judgment and well developed wisdom. Stressing the importance of education, Chukwu (2024) observes that there is nobody in the society that can cohabit and/or interact with others without education.

Educational Challenges

Nigeria is faced with a myriad of challenges in a bid to educate her human resources. Some of the educational challenges in Nigeria are:

Inadequate Professionals: Qualified instructors/educators provide personalized guidance, sharing new experiences and insights. Without skilled personnel, programmes may fail to evolve with changing market demands, leaving students with out-dated skills. Farhangmehr et al. (2020) assert that when educators are absent, students may not receive the necessary knowledge to navigate the complexities of starting and running a business, creating a gap between education and practical application.

Lack of Interest: According to Clercq and Arenius (2020), students' lack of interest in entrepreneurship education especially in developing economies can hinder the development of entrepreneurship. They contend that this disinterest stems from various factors and has far-reaching implications.

Curriculum Irrelevance: The curriculum of all subjects within the formal educational system in its current state lacks comprehensive practical entrepreneurial training that provides students, regardless of their subject of study, with the necessary entrepreneurial skills to establish and successfully manage businesses after graduation. This has resulted in a low number of emerging entrepreneurs particularly in Nigeria.

Lack of Educational Infrastructure and Equipment: This also poses a challenge to entrepreneurship development. Infrastructures like dedicated spaces for entrepreneurship training, incubation centers and access to technology are crucial for fostering a practical learning environment. Unfortunately, the facilities in Nigerian tertiary institutions are in poor shape. With this development, quality seems not to be guaranteed in entrepreneurship education in Nigeria.

Poor Funding: Under-funding quality entrepreneurship education is a major problem in Nigeria. Lack of fund on the part of the individual that is willing to acquire higher education militates against education in Nigeria.

Poor Institution-Industry Linkage: Weak connections between institutions and industries can result in gap between what is taught and the skills needed in the real-world. This results in graduates being ill-equipped to start their own businesses.

The Concept of Security/Insecurity

Security is seen as safety and such measures taken to be safe and/or protected (https://www.vocabulary.com). Collins Dictionary defines security a state of being secure (https://www.collinsdictionary.com). The Ministry of Budget and Economic Planning (2024) describes security as a situation where citizens are free from threats to their lives as well as sources of livelihood. Insecurity is a phenomenon that impacts severely on any nation's economy. High crime rates, particularly violent crime can discourage investment, limit business growth and create a climate of fear that hinders economic activities. Emenike and Okeke (2023) assert that security challenges result in decline of foreign direct investment in Nigeria. The Ministry of Budget and Economic Planning (2024) observes that investors would not invest in a country faced with security concerns where expatriates, factory workers and others would be prone to armed robbery and kidnapping for ransom; the increasing rate of insecurity in Nigeria cannot guarantee sustainable economic growth and development.

Forms of Security Challenges in Nigeria

The following are some of the security challenges in Nigeria:

Boko Haram Terrorists: Book haram insurgency started in July, 2009 when the militant Islamist and jihadist rebel groups started an armed rebellion against the Nigerian government. Today, the group has degenerated to attacking villages and individuals alike (Wikipedia). Many have lost their lives and property to this menace.

Herders-Farmers Clash: Herder-farmer clash is a dispute over arable land between predominantly Muslim Fulani herders and predominantly Christian non-Fulani farmers. This conflict has been more pronounced in the North Central States like Benue, Plateau, etc. since the dawn of democracy in Nigeria. Farm crops have been destroyed, leading to low food production and high cost of food item. Attacks on herders have led to reprisal/retaliatory attacks on other communities.

Niger Delta Militancy: This involves the armed conflict and violent actions by various militant groups operating in the Niger Delta region of Nigeria. They use such tactics as kidnapping, pipeline vandalism/sabotage, attacks on oil facilities, etc. Their activities have led to sharp drop on oil production and revenue and destabilization of the region.

Kidnapping and Banditry: Kidnapping is a major security issue with reported cases in all parts of the country in recent times. Banditry in Nigeria is a multifaceted crime involving kidnapping, cattle rustling, attacks on villages/communities and illegal possession of arms. Abduction and kidnapping in Nigeria has taken the center stage.

The Monday-Sit-at-Home Order in the South East Zone: This imposed order in the zone has not helped matters. A lot of lives have been wasted and property destroyed by miscreants and/or unknown gunmen who claim to enforce the order. Businesses, schools, markets, banks remain closed and movements (human and vehicular) restricted on Mondays in the south east states, affecting social and economic activities in the region.

The Nigerian government seems overwhelmed by these security issues. Every effort made in tackling the menace has proven abortive. It is becoming real that our governments can no longer guarantee the safety of lives and property, allowing her citizenry to resort to self-help. The society is tensed up while lives and means of livelihood are at stake.

The Concept of Economic Sustainability

Nkiru et al. (2023) define business sustainability as the process of ensuring that an organizational operations, products, and services are undertaken in a manner that is environmentally responsible, economically viable, and socially equitable, aiming to achieve long-term growth and resilience. The sustainability of SMEs involves integrating economic, environmental, and social dimensions into business practices to ensure that companies are profitable, contribute positively to their communities, and minimize their ecological footprint.

The Concept of Entrepreneurship

Entrepreneurship can be described as the ability of an individual or a collective to recognize and exploit opportunities for the betterment of society, resulting in success for both the innovators and their respective organization; it encompasses the capability and readiness to initiate, structure, and oversee a business endeavor, encompassing the handling of associated risks, all with the objective of generating profit (Young African Leaders Initiative, 2022). The Center for American Entrepreneurship describes entrepreneurship as a general, blanket term that is related to starting a business (https://startupsusa.org/what-is-entrepreneurship/).

Theoretical Framework

Structural Functionalism Theory by August Comte (1857)

This study adopts the Structural Functionalism Theory which was propounded by August Comte (1857). The Theory states that within every human society, there exist some structures such as religious, educational, technological political, economic and social that work together in an interrelated and interdependent manner to promote solidarity and stability. Therefore, any flux in one part of the society causes flux in other parts.

Functionalists like Herbert Spencer (1903) and Robert Merton (2003) maintain that our society is a living organism which has interacting and interdependent parts, such that failure in one part affects others. Thus, like other living organism, the different parts of our society must work together to enhance its survival. These parts are regarded as social institutions which are related to form functional social structures and perform specific roles towards maintaining the whole. Thus, all structures in a society must work to contribute to its safety, orderliness and development as malfunctioning in any part of society or its structures has consequence on the other parts of the society. This applies to the cases of security and entrepreneurship development. If some individuals make the society insecure, businesses and operators/investors that form the other part surfer. This study is hinged on structural functionalism based on the conviction that security or otherwise has the propensity to determine the development of entrepreneurship.

Empirical Review

Effects of education and security on entrepreneurship development in Nigeria

Osman et al. (2023) assessed the role of formal education in promoting entrepreneurship in Sunyani Municipality, Ghana to ascertain the relationship between formal education and entrepreneurial performance. The study used a quantitative research design. Findings revealed that entrepreneurial-based education helps graduates to successfully establish and run their own enterprises; that there exists a weak positive correlation between formal education and entrepreneurial performance (though statistically insignificant). Ahmadu et al. (2024) carried a study on effects of entrepreneurship education to examine the impact of entrepreneurship education on entrepreneurial intention of the final year students of the Federal University, Dutsin-MA, Nigeria. The study adopted a quantitative research approach. Findings revealed that attitude towards behavior has no statistically significant effect on entrepreneurial intention; subjective social norms have a positive and significant effect on entrepreneurial intention and perceived behavior control has a significant and positive effect on entrepreneurial intention of the final students in FUDMA. Chukwu (2024) embarked on the imperative of education and entrepreneurship as pillars of sustainable development to ascertain the roles of education and entrepreneurship on economic development. The study found that education is vital for human development and societal wellbeing.

Effects of key educational and security barriers on entrepreneurship development in Nigeria

Ekoja et al. (2022) studied the relationship between insecurity and entrepreneurial ventures in Kaduna State, Nigeria. The main objective of the study was to examine how insecurity affects the creation of new venture, growth of existing ventures and rate of failure of existing ventures in Kaduna Metropolis. Their findings showed that insecurity in Kaduna state significantly reduced rate of establishment of new ventures; that insecurity retards business growth and causes business failure. Azuakor (2023) carried a study on entrepreneurship studies in tertiary education for security in Nigeria. The study was a qualitative research employing the method of library research. Finding revealed that entrepreneurship education at the tertiary level is capable of equipping the individuals with necessary skills and competences for survival and success in the society; prepares the individual to be uniquely innovative, ready to venture into businesses. Emenike and Okeke (2023) carried a study on security challenges and entrepreneurial development in pharmaceutical firms in Ogun State, Nigeria. Their findings revealed that security challenges have resulted in a decline of foreign direct investment in Nigeria; security challenges negatively affect every sector of Nigerian economy.

Gap in Literature

Despite the efforts of the above scholars and several other authors on related topics, education, security and entrepreneurship development in Nigeria has not received adequate attention in extant literature.

The area of study and methodologies are some of the research gaps the researcher intends to fill through this study. More so, the current study has broader scope than those literatures already reviewed.

METHODOLOGY

This study is on the role of Education and Security on Economic Sustainability of Entrepreneurship in Nigeria: A Case of Enugu State, Nigeria. The choice of Enugu State is strategic and renders a representative sample of the analysis, being the headquarters of the Nigerian South East zone. The study adopted the field survey research design. The population of the study comprises 2441 registered businesses in Enugu Metropolis (Nigeria Business Directory, May 2025). The sample size of the study was three hundred and forty-three (343) entrepreneurs determined using the Taro Yamane's formula. The study applied the simple random sampling to select 100 respondents from the sample size. 100 copies of questionnaire were prepared and disseminated, out of which 89 copies were completed and returned, leading to an effective recovery rate of 89 %. Data were analysed using descriptive and inferential statistics while the hypotheses were tested using Z-Test analysis. All data were collected and analyzed in 2026.

RESULTS AND DISCUSSION

Data Presentation and Analysis

Table 1: Effects of education and security on entrepreneurship development

S/N	Statement	Response					
		SA (%)	A (%)	D (%)	SD (%)	Total (%)	Mean
1	Entrepreneurial education enhances the needed skills for business startups	32 (36)	49 (55)	7 (8)	1 (1)	89 (100)	3.2584
2	Entrepreneurial education increases knowledge base of business opportunities	41 (46)	46 (52)	2 (2)	- -	89 (100)	3.4382
3	Secure environment accelerates business investment/entrepreneurship activities	28 (32)	52 (58)	6 (7)	3 (3)	89 (100)	3.1798

Source: Field Survey, 2026

Table 1 reveals that 32 (36%) of the respondents strongly agreed, 49 (55%) of them agreed, 7 (8%) of them disagreed, and 1 (1%) of them strongly disagreed that entrepreneurial education enhances the needed skills for business startups. The table also indicates that 41 (46%) of the respondents strongly agreed, 46 (52%) of them agreed, and 2 (2%) of them disagreed that entrepreneurial education increases knowledge base of business opportunities. Similarly, 28 (32%) respondents strongly agreed, 52 (58%) respondents agreed, 6 (7%) disagreed, while 3 (3%) strongly disagreed that Secure environment accelerates business investment/entrepreneurship activities. This analysis suggests that education and security positively impact entrepreneurship development.

Table 2: Effects of key educational and security barriers on entrepreneurship development

S/N	Statement	Response					
		SA (%)	A (%)	D (%)	SD (%)	Total	Mean
1	Ineffective curricula results to production of ill-equipped graduates	36 (40)	49 (55)	4 (5)	- -	89 (100)	3.3596
2	Lack of interest in entrepreneurial education limits number of prospective entrepreneurs	47 (53)	35 (39)	7 (8)	- -	89 (100)	3.4494
3	Multifaceted insecurity deters business investment intention	44 (49.4)	43 (48.3)	2 (2.2)	- -	89 (100)	3.4719

Source: Field Survey, 2026

Table 2 shows that 36 (40%) of the respondents strongly agreed, 49 (55%) respondents agreed while 4 (5%) of the respondents disagreed that ineffective curricula results to production of ill-equipped graduates. The table also reveals that 47 (53%) of the respondents strongly agreed, 35 (39%) respondents agreed while 7 (8%) of the respondents disagreed that Lack of interest in entrepreneurial education limits number of prospective entrepreneurs. It also indicates that 44 (49.4%) of the respondents strongly agreed, 43 (48.3%) of the respondents agreed, while 2 (2.2%) of the respondents disagreed that multifaceted insecurity deters business investment intention.

Hypothesis Testing

Hypotheses One: Education and security have no effects on entrepreneurship development

Statement 1 on Table 1 was used to analyse the hypothesis.

Table 3: Summary of Z-Test (Z Statistical Test)

Statement	N	Mean value	Std. dev.	Std. error	Z-value	Critical Z-value
H_o1	89	3.2584	0.64892	0.06879	47.367	1.96

Source: Research Data, 2026, SPSS version 16

Results on table 3 indicate that Z-value = 47.367 is greater than the critical Z-value = 1.96. Decision: Since the computed value is greater than the table value (i.e. 47.367 > 1.96), reject H_o and establish that education and security have positive effects on entrepreneurship development in Enugu State.

Hypotheses Two: Educational and security challenges have no effects on entrepreneurship development in Enugu State.

Statement 1 on Table 2 was used to analyse the hypothesis.

Table 4: Summary of Z-Test (Z Statistical Test)

Statement	N	Mean value	Std. dev.	Std. error	Z-value	Critical Z-value
H_o2	89	3.3596	0.58903	0.06032	55.696	1.96

Source: Research Data, 2026, SPSS version 16

Results on table 4 reveal that Z-value = 55.696 is greater than the critical Z-value = 1.96. Decision rule: Since the computed Z-value is greater than the table Z-value (i.e. 55.696 > 1.96), reject H_o and establish that educational and security barriers have negative effects on entrepreneurship development in Enugu State.

Discussion of Findings

Test of both hypotheses statistically validates the opinions of the respondents that education and security positively impact entrepreneurship development, while educational and security challenges have negative effects on entrepreneurship development in Enugu State.

The Z-Test analysis on table 3 reveals that education and security impact positively on entrepreneurship development. The Z-value of 47.367 is greater than the critical Z-value of 1.96. H_o 1 stating that education and security have no effects on entrepreneurship development was rejected. This is an indication that education enhances entrepreneurial skills necessary to start, run and sustain businesses and increases knowledge base necessary for identifying business opportunities. This finding aligns with the findings of Osman et al. (2023) that entrepreneurial-based education helps graduates to successfully establish and run their own enterprises; that there exists a statistically insignificant weak positive correlation between formal education and entrepreneurial performance, and Chukwu (2024) that education is vital for human development and societal wellbeing.

Table 4 shows that Z-value = 55.696 is greater than the critical Z-value = 1.96. H_o 2 was rejected, suggesting that educational and security barriers severely impact entrepreneurship development. The results on tables 2 and 4 are an indication that ineffective curriculum, lack of students' interest in entrepreneurship education and multifaceted insecurity are key barriers to entrepreneurship development in Nigeria. These findings are in tandem with the findings of Ekoja et al. (2022) that insecurity inversely relates to rate of establishment of new ventures; insecurity in Kaduna State negatively impacts the rate at which the business operators are willing to open new ventures; while a secure environment allows creativity and innovative management, establishment of new businesses and growth of existing ones, insecure environment retards growth, prevents new entrants and kills existing businesses and Emenike and Okeke (2023) that security challenges result in decline of foreign direct investment in Nigeria.

CONCLUSION AND RECOMMENDATIONS

Education and security drive the entrepreneurship activities of any nation. Nigeria, including Enugu State has however, witnessed a wide spread insecurity in recent times and this has negatively impacted entrepreneurship development. By investing in quality education and ensuring a stable and supportive environment, the state can further unlock the potential of her entrepreneurial talents and drive further economic growth.

Based on the foregoing findings and conclusion, the study recommends as follows:

i. Governments/relevant stakeholders should incorporate entrepreneurship education into the school curricular at all levels and adequately fund our educational institutions to further impact on entrepreneurship development.
ii. Government/relevant stakeholders should ensure a stable and predictable business environment by reviewing and repositioning the armed forces, law enforcement and other intelligence agencies to meet the global 21st century standard.

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THE ROLE OF BUSINESS EDUCATION IN YOUTH EMPOWERMENT FOR SECURITY AND ECONOMIC DEVELOPMENT IN FEDERAL COLLEGE OF EDUCATION, ABEOKUTA

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Abstract

The study examine the the role of business education in youth empowerment for security and economic development in Federal College of Education, Abeokuta. Descriptive survey design was adopted for the study. The population of the study comprised 115 lecturer and student. Two purpose and research question was used for the study. Cronbach's Alpha reliability was used to test the reliability of the study which yielded 0.70 indicating that the instrument was reliable. Mean and standard deviation was used to analyzed the data. Findings of the study revealed that Business Education promotes youth empowerment in Federal College of Education, Abeokuta to a high extent by equipping youths with practical, entrepreneurial, financial, and opportunity-identification skills that can improve their capacity to participate productively in economic activities. Also, it revealed that Business Education promotes youth empowerment for economic development by encouraging enterprise creation, improving employability, supporting small and medium-sized enterprises, increasing productivity and income generation, and preparing youths for diverse occupational opportunities. Based on the findings it was concluded that Business Education plays an important role in youth empowerment for security and economic development in the Federal College of Education, Abeokuta. Also, it further concluded that Business Education equips youths with practical, entrepreneurial, financial, and business-related skills that can improve their capacity to secure employment, establish businesses, become self-reliant, and participate productively in economic activities. It was recommended that the management of the Colleges of Education should strengthen the practical component of Business Education by providing students with adequate opportunities to develop entrepreneurial, vocational, financial, digital, and business management skills

Keyword: Youth Empowerment, Security, Economic Development

Introduction

In developing countries such as Nigeria, education plays a critical role in addressing pressing socio-economic challenges, including unemployment, poverty, insecurity, and social exclusion. Among the various disciplines of education, Business Education occupies a strategic position because it focuses on equipping learners with entrepreneurial, vocational, managerial, and technological skills necessary for self-reliance and productive employment. Consequently, Business Education has become an indispensable tool for youth empowerment, security enhancement, and sustainable economic development (Nwosu&Eze, 2023).Business Education is a specialized aspect of vocational and technical education designed to prepare individuals for careers in business occupations while also equipping them with competencies for entrepreneurship and self-employment. According to Osuala (2021), Business Education is an educational programme that develops business knowledge, practical skills, positive work attitudes, and entrepreneurial competencies required for effective participation in the world of work. Similarly, Aliyu and Yakubu (2024) described Business Education as a discipline that combines theoretical knowledge with practical experiences in areas such as accounting, office technology and management, marketing, business communication, entrepreneurship, and information and communication technology. These competencies enable graduates to create employment opportunities rather than depend solely on paid employment.

Youth empowerment has become a major concern across the world due to the increasing rate of youth unemployment, underemployment, poverty, and social inequality. Empowerment involves equipping young people with the knowledge, skills, confidence, and opportunities needed to become economically productive and socially responsible members of society. According to the United Nations Development Programme (2022), youth empowerment enhances the capacity of young people to make informed decisions, improve their livelihoods, and contribute positively to national development. Similarly, Adebayo and Ibrahim (2023) argued that empowerment programmes that emphasize entrepreneurial and vocational skills significantly improve youths' capacity for self-employment, innovation, and wealth creation. Business Education serves as one of the most effective platforms for achieving this objective because it provides learners with practical competencies required to establish and manage successful business ventures.

Globally, governments and educational institutions are increasingly recognizing the importance of entrepreneurship and vocational education as effective strategies for promoting youth employment and economic growth. The International Labour Organization (2023) emphasized that entrepreneurship education enhances employability, stimulates innovation, and reduces youth unemployment by encouraging business creation and enterprise development. Likewise, the World Bank (2022) noted that countries investing in skills development and entrepreneurship education experience improved labour productivity, higher income generation, and sustainable economic growth. These global developments underscore the significance of Business Education as a catalyst for empowering young people with relevant competencies required in the twenty-first-century economy.

In Nigeria, the growing population of unemployed graduates has become a serious socio-economic challenge with significant implications for national security and economic development. Despite various government interventions, many graduates continue to struggle to secure gainful employment due to inadequate employable skills and the mismatch between educational outcomes and labour market demands. According to the National Bureau of Statistics (2023), youth unemployment remains one of the major developmental challenges confronting the country, contributing to poverty, social unrest, and increased involvement of young people in criminal activities. Scholars such as Ogunyemi and Ojo (2022) argued that equipping youths with entrepreneurial and vocational skills through Business Education can significantly reduce unemployment and promote economic self-reliance.

Security has become an increasingly important issue in Nigeria due to the rising incidence of armed robbery, kidnapping, cybercrime, cultism, terrorism, banditry, and other forms of youth-related criminal activities. Many researchers have linked these security challenges to unemployment, poverty, and the lack of marketable skills among young people. According to Eze and Chukwu (2023), unemployed youths are more vulnerable to criminal recruitment and social vices because of limited economic opportunities. Similarly, Yusuf and Bello (2024) observed that skill acquisition programmes, entrepreneurship education, and vocational training contribute significantly to crime reduction by creating legitimate sources of income and enhancing youths' economic independence. Consequently, Business Education has been identified as an important strategy for promoting security through youth empowerment.

Economic development depends largely on the availability of skilled and productive human resources capable of creating wealth, generating employment, and improving national productivity. Human capital development remains one of the primary objectives of educational systems worldwide because it enhances innovation, productivity, and economic competitiveness. According to Becker's Human Capital Theory as applied in contemporary educational development, investment in education and skill acquisition improves individuals' productivity and contributes to national economic growth. Business Education contributes to this objective by producing graduates who possess entrepreneurial competencies, digital literacy, financial management skills, communication abilities, and managerial capabilities required for successful business operations and economic participation (Okeke&Nwachukwu, 2023).

The curriculum of Business Education in Colleges of Education incorporates practical courses such as entrepreneurship education, accounting, office technology and management, business communication, marketing, computer applications, and digital business technologies. These courses expose students to real-life business situations and provide opportunities for practical skill acquisition. According to Akinola and Adewale (2022), graduates who acquire entrepreneurial competencies

through Business Education are more likely to establish small and medium enterprises, create employment opportunities, and contribute to local economic development. Furthermore, digital competencies acquired through Business Education have become increasingly valuable in today's technology-driven economy, where innovation and digital entrepreneurship play significant roles in business success.

Despite these enormous potentials, Business Education in many Nigerian Colleges of Education continues to face numerous challenges that limit its effectiveness in empowering youths. These challenges include inadequate funding, insufficient instructional facilities, obsolete equipment, poor infrastructure, shortage of qualified lecturers, limited practical exposure, weak collaboration between institutions and industries, and inadequate integration of emerging digital technologies into the curriculum. According to Olatunji and Salami (2023), these constraints hinder the acquisition of practical entrepreneurial competencies required for self-employment and wealth creation. Consequently, many graduates still depend heavily on scarce white-collar jobs despite completing Business Education programmes.

Existing literature has extensively examined issues relating to entrepreneurship education, graduate employability, vocational education, and skill acquisition in Nigeria. Studies by Adepoju (2022), Eze and Chukwu (2023), and Ibrahim and Musa (2024) investigated the relationship between entrepreneurship education and employment generation, while others focused on entrepreneurial intentions and small business development. However, relatively few empirical studies have comprehensively examined the role of Business Education specifically in promoting youth empowerment for both security enhancement and economic development within the context of Colleges of Education in Nigeria. This creates a gap in the literature, particularly regarding how Business Education contributes simultaneously to reducing youth unemployment, improving national security, and fostering sustainable economic development.

Furthermore, the rapid transformation of the global economy through digitalization, automation, innovation, and knowledge-based industries has increased the demand for graduates with entrepreneurial, technological, and managerial competencies. Business Education institutions are therefore expected to continually review their curricula and teaching approaches to ensure that graduates acquire relevant twenty-first-century skills capable of enhancing employability and business creation. According to the World Economic Forum (2023), future economic competitiveness depends significantly on digital literacy, entrepreneurship, problem-solving, creativity, and innovation—all competencies strongly emphasized in modern Business Education programmes. Failure to adequately equip youths with these competencies may further worsen unemployment, economic inequality, and insecurity.

Empirical evidence indicates that effective Business Education programmes positively influence entrepreneurial intention, self-employment, income generation, and economic productivity among graduates. For instance, Adebayo and Ibrahim (2023) found that students exposed to practical entrepreneurship training demonstrated significantly higher levels of entrepreneurial competence and business start-up intentions than those with limited practical experience. Similarly, Okeke and Nwachukwu (2023) reported that Business Education graduates who acquired practical vocational skills were more likely to establish successful enterprises and contribute to local economic development. Nevertheless, there remains insufficient empirical evidence regarding the extent to which Business Education contributes to youth empowerment as a strategy for promoting security and economic development within Colleges of Education in Nigeria.

Given the persistent challenges of youth unemployment, insecurity, poverty, and slow economic growth confronting Nigeria, there is an urgent need to strengthen educational programmes that emphasize entrepreneurship, vocational competence, and self-reliance. Business Education possesses enormous potential to empower young people with practical skills, entrepreneurial orientation, and innovative capacities required for productive engagement in the economy and the reduction of social vices. Therefore, investigating the role of Business Education in youth empowerment for security and economic development in Federal College of Education, Abeokuta, Ogun State.

STATEMENT OF THE PROBLEM

Business Education is a vital component of vocational and technical education that equips learners with entrepreneurial, managerial, technological, and employability skills required for self-reliance, wealth creation, and national development. In Nigeria, where youth unemployment, insecurity, and economic instability have become pressing national concerns, Business Education is expected to empower young people with relevant competencies that enable them to become productive citizens, create employment opportunities, and contribute to sustainable economic growth. Colleges of Education, including the Federal College of Education, Abeokuta, are therefore expected to provide quality Business Education programmes that prepare students with practical, entrepreneurial, and digital skills needed to function effectively in the contemporary business environment.

Business Education is expected to promote youth empowerment by equipping students with the knowledge, skills, values, and competencies necessary for gainful employment, entrepreneurship, and responsible citizenship. Through effective training, graduates are expected to become self-reliant, reduce their dependence on white-collar jobs, and contribute positively to national security and economic development. However, concerns have been raised by education stakeholders, employers, and policymakers regarding the extent to which Business Education programmes are achieving these expectations. Issues such as inadequate practical facilities, insufficient funding, limited entrepreneurial exposure, curriculum implementation challenges, technological deficiencies, and the rising rate of graduate unemployment have generated doubts about the effectiveness of Business Education in empowering youths to address contemporary socio-economic challenges.

Furthermore, the persistent increase in youth unemployment, poverty, social unrest, and insecurity in Nigeria has heightened the need to examine the role of Business Education in producing graduates who possess relevant entrepreneurial and employability skills. Although previous studies have investigated Business Education and entrepreneurship development in different contexts, there is limited empirical evidence on its contribution to youth empowerment for security and economic development in specific institutions such as the Federal College of Education, Abeokuta. It is against this background that this study seeks to examine the role of Business Education in youth empowerment for security and economic development in the Federal College of Education, Abeokuta.

PURPOSE OF THE STUDY

The main purpose of this study is to examine the role of Business Education in youth empowerment for security and economic development in Federal College of Education, Abeokuta.Specifically, the study seeks to:

i. Assess the role of Business Education in promoting youth empowerment in Federal College of Education, Abeokuta.

ii. Examine the role of Business Education in promoting youth empowerment for economic development in Federal College of Education, Abeokuta.

RESEARCH QUESTIONS

The following research questions will guide this study:

i. To what extent does Business Education promote youth empowerment in Federal College of Education, Abeokuta?

ii. To what extent does Business Education promote youth empowerment for economic development in Federal College of Education, Abeokuta?

Methodology

The study adopted a descriptive survey research design to examine the role of Business Education in youth empowerment for security and economic development in the Federal College of Education, Abeokuta. The population of this study consisted of all Business Education lecturers and students in the Department of Business Education, Federal College of Education, Abeokuta. The sample for the study consisted of one hundred and fifteen (115) respondents selected from the Department of Business Education, Federal College of Education, Abeokuta. The respondents included lecturers and students. A simple random sampling technique was used to give every member of the population an

equal chance of being selected. The main instrument used for data collection in this study was a structured questionnaire titled "Role of Business Education in Youth Empowerment for Security and Economic Development Questionnaire (RBEYSEDQ) using a four-point Likert rating scale as SA – Strongly Agree, A – Agree, D – Disagree and SD – Strongly Disagree. To ensure the reliability of the instrument, a pilot study was conducted using ten (10) respondents from another College of Education outside the study area. The responses obtained from the pilot study were analyzed using the Cronbach's Alpha reliability method to determine the internal consistency of the instrument. A reliability coefficient of 0.70 and above was considered adequate for the study, indicating that the instrument was sufficiently reliable for data collection. The validity of the instrument was established through expert judgment. Copies of the questionnaire were submitted to experts in Business Education, Educational Management, and Research Methodology for careful examination and necessary corrections. Data for this study were collected through the direct administration of questionnaires to the selected respondents in the Department of Business Education, Federal College of Education, Abeokuta. The researcher personally administered and retrieved the questionnaires with the assistance of trained research assistants to ensure a high rate of questionnaire return. Data collected from the completed questionnaires were analyzed using descriptive statistical techniques. A criterion mean of 2.50 was adopted for decision-making. Any questionnaire item with a mean score of 2.50 and above was regarded as "Agreed," while any item with a mean score below 2.50 was regarded as "Disagreed."

Result

Table 1: Mean Responses on the Extent to which Business Education Promotes Youth Empowerment

S/N	Items	SA (4)	A (3)	D (2)	SD (1)	Total Score	Mean	Decision
1	Business Education equips youths with practical skills for employment and self-employment.	55 (220)	45 (135)	10 (20)	5 (5)	115 380	3.30	Agreed
2	Business Education develops entrepreneurial skills among youths.	53 (212)	46 (138)	11 (22)	5 (5)	115 377	3.28	Agreed
3	Business Education improves youths' ability to identify business opportunities.	50 (200)	48 (144)	12 (24)	5 (5)	115 373	3.24	Agreed
4	Business Education develops financial management skills among youths.	51 (204)	47 (141)	12 (24)	5 (5)	115 374	3.25	Agreed
5	Business Education increases youths' confidence to participate in economic activities.	54 (216)	44 (132)	12 (24)	5 (5)	115	377 3.28	Agreed
	Grand Mean						**3.27**	**Agreed**

Table 1 presents the mean responses on the extent to which Business Education promotes youth empowerment in Federal College of Education, Abeokuta. The mean scores for items 1, 2, 3, 4, and 5 were 3.30, 3.28, 3.24, 3.25, and 3.28 respectively. Since all the mean scores are above the criterion mean of 2.50, the respondents agreed with all the statements. The grand mean of 3.27 indicates that Business Education promotes youth empowerment to a high extent.Specifically, the highest mean score of 3.30 was recorded for the statement that Business Education equips youths with practical skills for employment and self-employment. This indicates that respondents regarded practical skills acquisition as an important contribution of Business Education to youth empowerment. The development of

entrepreneurial skills and increased confidence to participate in economic activities both recorded mean scores of 3.28. The ability of Business Education to develop financial management skills recorded a mean of 3.25, while its role in helping youths identify business opportunities recorded the lowest mean of 3.24. However, all the items exceeded the criterion mean. Therefore, the finding implies that Business Education promotes youth empowerment in Federal College of Education, Abeokuta to a high extent by equipping youths with practical, entrepreneurial, financial, and opportunity-identification skills that can improve their capacity to participate productively in economic activities.

Research Question Two: To what extent does Business Education promote youth empowerment for economic development in Federal College of Education, Abeokuta?

Table 2: Mean Responses on the Extent to which Business Education Promotes Youth Empowerment for Economic Development

S/N	Items	SA (4)	A (3)	D (2)	SD (1)	Total Score	Mean	Decision
6	Business Education encourages youths to establish income-generating businesses.	56 (224)	43 (129)	11 (22)	5 (5)	115 380	3.30	Agreed
7	Business Education contributes to employment creation among youths.	52 (208)	47 (141)	11 (22)	5 (5)	115 376	3.27	Agreed
8	Business Education helps youths acquire skills needed for small and medium-sized enterprises.	54 (216)	45 (135)	11 (22)	5 (5)	115 378	3.29	Agreed
9	Business Education promotes productivity and income generation among youths.	51 (204)	48 (144)	11 (22)	5 (5)	115 375	3.26	Agreed
10	Business Education contributes to economic diversification by preparing youths for different occupations.	49 (196)	49 (147)	12 (24)	5 (5)	115 372	3.23	Agreed
	Grand Mean						**3.27**	**Agreed**

Table 2 presents the mean responses on the extent to which Business Education promotes youth empowerment for economic development. The mean scores for items 6, 7, 8, 9, and 10 were 3.30, 3.27, 3.29, 3.26, and 3.23 respectively. All the mean scores were above the criterion mean of 2.50, indicating that the respondents agreed with all the statements. The grand mean of 3.27 indicates that Business Education promotes youth empowerment for economic development to a high extent.The highest mean score of 3.30 was obtained for the statement that Business Education encourages youths to establish income-generating businesses. This suggests that entrepreneurship and business creation are perceived as major ways through which Business Education contributes to economic development. The development of skills needed for small and medium-sized enterprises recorded a mean score of 3.29, while employment creation among youths recorded a mean of 3.27. The promotion of productivity and income generation recorded a mean of 3.26, while economic diversification recorded the lowest mean of 3.23.The findings therefore imply that Business Education promotes youth empowerment for economic development by encouraging enterprise creation, improving employability, supporting small and medium-sized enterprises, increasing productivity and income generation, and preparing youths for diverse occupational opportunities.

DISCUSSION

The findings from Research Question One revealed that Business Education promotes youth empowerment in the Federal College of Education, Abeokuta to a high extent. The mean scores of items 1 to 5, which ranged from 3.24 to 3.30, indicate that respondents agreed that Business Education contributes significantly to youth empowerment. The respondents particularly affirmed that Business Education equips youths with practical skills for employment and self-employment, develops

entrepreneurial skills, increases confidence to participate in economic activities, develops financial management skills, and helps youths identify business opportunities. The highest mean score of 3.30 was recorded for the provision of practical skills for employment and self-employment, while the lowest mean score of 3.24 was recorded for helping youths identify business opportunities. This finding agrees with Adeyemi and Adebayo (2021), who noted that Business Education equips learners with practical and entrepreneurial competencies that can enhance their capacity for employment and self-employment. Similarly, Ogunleye and Yusuf (2022) observed that business-oriented education promotes youth empowerment by developing practical, financial, and entrepreneurial skills required for participation in economic activities. The implication of this finding is that Business Education remains an important avenue for empowering youths because it provides them with skills and competencies that can enhance economic independence, employability, and productive participation in society.

The findings from Research Question Two showed that Business Education promotes youth empowerment for economic development to a high extent. The mean scores of items 6 to 10 ranged from 3.23 to 3.30, with all the scores exceeding the criterion mean of 2.50. The respondents agreed that Business Education encourages youths to establish income-generating businesses, develops skills needed for small and medium-sized enterprises, promotes employment creation, increases productivity and income generation, and contributes to economic diversification. The highest mean score of 3.30 was recorded for encouraging youths to establish income-generating businesses, while economic diversification recorded the lowest mean score of 3.23. This finding suggests that Business Education can contribute to economic development by preparing young people to create businesses, generate income, become self-reliant, and participate productively in the economy. The finding is consistent with Okafor and Nwankwo (2020), who reported that entrepreneurship-oriented education enhances youths' capacity to establish businesses and contribute to employment generation and economic growth. Similarly, Akinyemi and Salami (2023) maintained that Business Education provides learners with entrepreneurial and vocational competencies that support small business development, productivity, and income generation. The implication of this finding is that strengthening Business Education can contribute to economic development by reducing dependence on paid employment, encouraging enterprise creation, and increasing the productive capacity of youths.

Conclusion

Based on the findings of the study, it can be concluded that Business Education plays an important role in youth empowerment for security and economic development in the Federal College of Education, Abeokuta. The study established that Business Education equips youths with practical, entrepreneurial, financial, and business-related skills that can improve their capacity to secure employment, establish businesses, become self-reliant, and participate productively in economic activities.The study further concludes that Business Education contributes significantly to economic development by encouraging youths to establish income-generating businesses, acquire skills needed for small and medium-sized enterprises, create employment, increase productivity and income generation, and contribute to economic diversification. Consequently, effective Business Education can help reduce youth dependency on limited formal employment opportunities and encourage productive participation in the economy.

Recommendations

Based on the findings and conclusions of this study, the following recommendations are made:

i. The management of the Colleges of Educationshould strengthen the practical component of Business Education by providing students with adequate opportunities to develop entrepreneurial, vocational, financial, digital, and business management skills.

ii. The institution should provide modern Information and Communication Technology facilities and digital learning resources for Business Education students.

iii. Government and educational stakeholders should provide adequate funding for Business Education programmes.

iv. The Department of Business Education should organise regular practical entrepreneurship training, workshops, seminars, and business development programmesto equip students with the competencies required to establish and manage income-generating businesses.

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PERCEIVED RELEVANCE OF BUSINESS EDUCATION TO NIGERIA'S ECONOMIC TRANSFORMATION AMONG BUSINESS EDUCATORS IN UNIVERSITIES IN SOUTH-EAST NIGERIA.

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Abstract

The study assessed the perceived relevance of Business Education to Nigeria's economic transformation among Business Educators in universities in South-East Nigeria. Descriptive survey research design was adopted for the study. Two research questions and two null hypotheses guided the study. The population comprised 130 Business Educators in federal and state universities in South-East Nigeria. A census approach was adopted because the population was small and manageable. Data were collected using a structured questionnaire titled Perceived Relevance of Business Education to Economic Transformation Questionnaire (PRBEETQ). The instrument consisted of 20 questionnaire items structured on a four-point Likert rating scale of Very High Extent, High Extent, Low Extent, and Very Low Extent, with corresponding values of 4, 3, 2, and 1, respectively. The instrument was face validated by three experts, comprising two experts in Business Education and one expert in Measurement and Evaluation from Michael Okpara University of Agriculture, Umudike. The reliability of the instrument was established using the Cronbach Alpha method, which yielded an overall reliability coefficient of 0.84. Mean and standard deviation were used to answer the research questions, while the independent samples t-test was used to test the null hypotheses at the 0.05 level of significance. The findings revealed that Business Educators perceived Business Education as highly relevant to employment and job creation, entrepreneurship and self-reliance in Nigeria. The study also revealed no significant difference between the mean ratings of Business Educators in federal and state universities on the dimensions of economic transformation. The study concluded that Business Education contributes to Nigeria's economic transformation by developing employability, entrepreneurial and self-reliance skills among graduates. It was recommended that university management and government agencies should strengthen the practical and employability components of Business Education programmes, while Business Educators should intensify entrepreneurship-oriented teaching and practical enterprise activities.

Keywords: Business Education, Business Educators, Economic Transformation, Employment and Job Creation, Entrepreneurship, Self-Reliance.

Introduction

In today's rapidly evolving global economy, education, business management and national development has become increasingly central to policy and academic discourse. Education is not only a means of acquiring knowledge but also a major investment in human capital development, playing an important role in enhancing productivity and promoting long-term economic growth in Nigeria (Ojuola,

2024). Business Education, as a component of vocational and professional education, is designed to equip individuals with practical knowledge, skills and competencies necessary for effective participation in commercial, entrepreneurial and administrative activities (Nzekwe & Oranefor, 2025). In Nigeria, where economic challenges, graduate unemployment and changing labour-market demands remain pressing concerns, there is a growing need to align educational outcomes with national development priorities through programmes that prepare individuals for productive employment, entrepreneurship and self-reliance. The need to address these challenges underscores the importance of economic transformation in Nigeria.

Economic transformation is a process through which an economy improves its productive capacity, creates productive employment, increases income, promotes entrepreneurship, develops human capital and shifts economic activities towards more productive and sustainable forms. Ogbeide-Akugbe, Iredia, and Momoh (2024) viewed economic transformation in relation to the development and utilization of graduates' skills to promote employment, entrepreneurship and productive participation in the Nigerian economy. Similarly, Nzekwe and Oranefor (2025) describe economic transformation as the development of productive capacity through entrepreneurship, managerial competence, innovation and efficient resource utilisation to promote national economic development. It involves more than economic growth because it encompasses changes in the structure and quality of production, the capabilities of the workforce and the capacity of individuals and institutions to participate effectively in economic activities. In a developing country such as Nigeria, economic transformation is particularly important because sustainable development depends on the ability of the economy to generate employment, reduce poverty, promote enterprise development and utilize the knowledge and skills of its citizens productively (Aduma et al., 2023).

An economy cannot achieve sustainable transformation without people who possess the knowledge, technical skills, entrepreneurial abilities and professional competencies required to operate businesses, manage resources, adopt technologies and create new economic opportunities. Nnaemeka et al. (2026) emphasized that human capital development through education, vocational training and entrepreneurship is essential for improving workforce productivity, generating employment, promoting entrepreneurial development and advancing technological innovation, particularly in developing economies**.** Education provides the foundation for developing such human capacity by equipping individuals with competencies that can be applied to occupational, entrepreneurial and social activities. In this regard, vocational and business-oriented education assumes particular importance because it connects learning with the practical requirements of work and economic participation.

Business Education is an aspect of vocational education concerned with the acquisition of knowledge, skills, attitudes and competencies required for effective participation in business and economic activities. Okpala and Okeke-Ezeanyanwu (2025) explained that Business Education prepares individuals with business competencies, including the knowledge, skills and attitudes needed to function effectively in the business world, while also preparing them for careers in business. Similarly**,** Sani (2023) emphasized that Business Education promotes skills acquisition and entrepreneurship by equipping learners with relevant competencies needed to function effectively in the changing business environment. The programme is therefore positioned at the intersection of education and the world of work because its outcomes can be applied directly in offices, businesses, public institutions, private organizations and entrepreneurial ventures. Its relevance to economic transformation lies in its capacity to develop individuals who can contribute to production, provide business services, establish enterprises and respond to changing economic and technological conditions.

The contribution of Business Education to economic transformation can first be considered from the perspective of employment creation and employability. Employment provides individuals with income and enables them to contribute to household welfare, organizational productivity and national economic activity. However, employment in the economy increasingly requires workers who can demonstrate practical, professional, interpersonal and technological competencies rather than merely possess academic qualifications. Amaewhule, Abung and Amadi (2024) emphasized that employers expect Business Education graduates to possess a combination of communication, leadership, problem-solving, administrative, information, ICT and other employability skills for effective performance in the labour market. Similarly, Umeh and Iyoha (2024) stressed that Business Education graduates require employability skills to function effectively in the global world of work and that Business Educators need to update their competencies in line with changing workplace expectations. These suggests that the contribution of Business Education to economic transformation depends not only on producing graduates with academic knowledge but also on developing adaptable and work-ready individuals capable of responding effectively to the changing demands of employment.

The employment relevance of Business Education also extends to the reduction of dependence on formal wage employment. In an economy where the public and private sectors may not be able to absorb all graduates, education programmes that provide opportunities for self-employment become increasingly important. Jimoh, Olafare and Falana (2023) emphasized that Business Education can support the growth of small and medium-scale enterprises and contribute to reducing unemployment by preparing graduates for entrepreneurial activities. This indicates that Business Education can equip individuals with competencies that can be converted into income-generating activities, particularly through self-employment and participation in small and medium-scale enterprises. The ability to establish and manage small businesses can contribute to economic transformation by increasing the number of productive economic actors, expanding local markets and creating additional employment opportunities. Thus, the relevance of Business Education should not be measured only by the number of graduates who secure paid employment but also by the extent to which its competencies enable graduates to create economic value independently.

Entrepreneurship and self-reliance constitute another important dimension of the relationship between Business Education and economic transformation. Entrepreneurship involves identifying opportunities, mobilizing resources, developing products or services and creating value under conditions of uncertainty. Oyinlola et al. (2024) emphasized that entrepreneurs play an important role in economic development by recognizing and exploiting viable business opportunities, developing innovative ideas and transforming them into entrepreneurial ventures. For a developing economy such as Nigeria, these entrepreneurial activities can stimulate innovation, encourage enterprise development and create employment opportunities for others. Business Education provides a suitable platform for developing entrepreneurial competencies because business knowledge can help individuals understand markets, financial management, marketing, record keeping, business communication and enterprise operations. Discussions of entrepreneurship education also emphasize the development of competencies that enable learners to recognize opportunities and participate meaningfully in changing economic environments. Igbokwe et al. (2023) emphasized the continuing relevance of entrepreneurship education to Nigeria, particularly in preparing individuals to respond to changing economic realities.

The capacity for self-reliance is particularly relevant to Nigeria's economic transformation because economic development requires individuals who can participate actively in wealth creation rather than depend exclusively on existing employment structures. Business Education can foster self-reliance by developing competencies that enable individuals to establish and manage small businesses, identify market opportunities and apply business knowledge to practical economic activities. Egberi and Alabi (2023) found that entrepreneurial creative-thinking skills, including the ability to recognize business opportunities, generate new ideas, innovate and develop solutions to business problems, are required by Business Education graduates for self-reliance. This underscores the capacity of Business Education to prepare individuals for practical economic participation and independent income generation. Beyond promoting self-reliance, the competencies acquired through Business Education are also relevant to how individuals perform within existing organizations and contribute to the efficiency and productivity of the workforce.

Another important dimension is the contribution of Business Education to workforce productivity and professional competence. Economic transformation requires workers who can perform tasks efficiently, solve problems, communicate effectively, manage information and adapt to organizational changes. Ekwealor and Okoli (2026) emphasized that the changing nature of the labour market requires Business Education graduates to possess digital literacy, critical thinking and other competencies that enable them to function effectively in workplaces. This suggests that the relevance of Business Education to economic transformation depends partly on its capacity to develop adaptable and competent workers who can respond effectively to changing organizational and technological demands. The quality of human resources available to businesses and institutions influences productivity and the capacity of organizations to respond to economic competition. Business Educators have an important role in this process because they are responsible for translating curriculum objectives into learning experiences through which students acquire relevant knowledge and competencies. Nwosu, Ekoh-Nweke and Ede (2025) emphasized the importance of competencies possessed by Business Educators for effective instructional delivery in universities in South-East Nigeria. This underscores the importance of Business Educators as key agents in developing the human resources required for economic and workplace transformation.

Business Educators are central to the relevance and effectiveness of Business Education because the quality of programme outcomes is influenced by the competence of those who teach and implement the curriculum. Owenvbiugie and Ojeaga (2022) emphasized that Business Educators require pedagogical, problem-solving and networking competencies to perform their professional duties

effectively. This suggests that a Business Educator is expected to possess professional, pedagogical, technological and subject-matter competencies that enable effective transmission of business knowledge and skills and facilitate meaningful learning outcomes. The role therefore extends beyond classroom instruction to include mentoring, skills development, career preparation and helping learners connect theoretical knowledge with practical business activities. Professional competence among Business Educators is important because students are more likely to acquire relevant competencies when the educators themselves understand contemporary business practices and are capable of using appropriate instructional and technological resources. Ekoh-Nweke and Ezeabii (2021) emphasized the development of professional abilities through Business Education, reinforcing the importance of professional competence in preparing learners for effective participation in their chosen occupational fields.

The economy is increasingly characterized by digital communication, electronic commerce, computerized accounting, digital marketing, online business transactions, data management, artificial intelligence and other technology-enabled activities. Economic transformation requires a workforce that can use digital technologies to improve productivity, create businesses and access emerging employment opportunities. Business Education must therefore respond to technological changes by developing graduates who can function effectively in digital workplaces and entrepreneurial environments. Ariwodo and Emeasoba (2023) linked skills acquisition in Business Education with the requirements of decent work in the digital era, indicating the importance of relevant competencies for participation in employment environments.

Digital competence is particularly important because technology has changed how businesses communicate, market products, maintain records, process transactions, interact with customers and organize information. Mordi (2023) identified computer operation, electronic payment and receipt, accounting software, electronic recording of business transactions, e-commerce, electronic marketing, social media marketing and other digital skills as important competencies required by Business Education graduates for employability. This demonstrates that digital competence has become integral to the effective performance of business activities and workplace responsibilities. Business Education graduates who possess appropriate digital skills can participate in emerging forms of employment and entrepreneurship and can also improve the efficiency of existing business operations. Emeasoba, Akudolu and Agbo (2022) emphasized the utilization of digital skills by Business Educators as an important component of effective teaching and learning of Business Education. This suggests that the relevance of Business Education to economic transformation increasingly depends on its ability to respond to the technological demands of contemporary economic activities.

Economic transformation also requires a strong connection between education and the productive sector. Akpojo and Chukwuemeke (2024) emphasized that institution–industry collaboration in Business Education can contribute to industrialization and technological development by bringing educational institutions and industry stakeholders together in developing relevant competencies and practices. This suggests that stronger linkages between education and the productive sector can make Business Education more responsive to industry needs and enhance its contribution to economic transformation. University programmes cannot adequately prepare students for economic participation if curriculum content remains disconnected from the realities of business organizations and industry. Collaboration between universities and industry can expose learners to actual workplace practices, emerging occupational requirements and practical methods of performing business activities. Emeasoba and Igwe (2024) stressed the importance of university-industry collaboration for effective curriculum implementation in Business Education. Such collaboration can strengthen the relevance of Business Education by ensuring that the competencies developed in universities correspond more closely with the skills demanded within the economy.

The relevance of practical workplace exposure is equally important because economic transformation requires graduates who can transfer what they learn in educational institutions to real economic situations. Industrial exposure can help students understand workplace procedures, acquire practical skills and develop attitudes required for successful transition into employment. Jim, Onoja and Uchendu (2024) found that Students' Industrial Work Experience Scheme (SIWES) plays an important role in improving the competencies of Business Education students by providing opportunities for practical exposure and workplace learning. This implies that the economic value of Business Education is enhanced when theoretical instruction is complemented by opportunities for students to acquire practical skills and gain experience in actual work environments.

The South-East region of Nigeria provides a significant context for examining the relevance of Business Education to economic transformation. The region has a strong tradition of commerce, entrepreneurship, private enterprise and small-business development, making business-related

knowledge and competencies particularly relevant to economic participation. Universities in the region therefore have an important responsibility to prepare graduates who can respond to employment opportunities, establish enterprises, manage business activities and adapt to technological changes. Onodu and Nwokike (2024) found that Business Educators in universities in South-East Nigeria require basic computer and digital communication skills for effective teaching in the digital age, highlighting the growing importance of technology-related competencies in Business Education. This evidence reinforces the importance of ensuring that Business Education programmes in the region respond to technological and workplace demands.

However, the potential contribution of Business Education to economic transformation may be affected by challenges relating to inadequate funding, limited technological facilities, curriculum implementation, changing workplace requirements and insufficient linkage between educational institutions and industry. Inadequate access to modern technologies can limit the capacity of Business Educators to expose students to contemporary business practices. Ezeabii and Ekoh-Nweke (2020) identified challenges associated with the utilization of new technologies in Business Education programmes in public universities in South-East Nigeria. Similarly, Emeasoba, Egbo and Akudolu (2023) drew attention to the importance of adequate funding for Business Education programmes in South-East universities as a condition for promoting skills acquisition. These issues are important because a programme cannot fully contribute to economic transformation when the resources and conditions required for effective competency development are inadequate.

It is therefore necessary to examine Business Education not simply as an academic programme, but as an instrument for developing the human capital required for Nigeria's economic transformation. Its relevance can be understood through its potential to improve employability, promote entrepreneurship and self-reliance, develop productive and adaptable workers, strengthen digital competence and support the creation of economic opportunities. Business Educators are central to achieving these outcomes because they interpret and implement the curriculum and facilitate the development of competencies among students. Their perceptions can provide valuable evidence about the extent to which Business Education is positioned to respond to the economic realities of contemporary Nigeria. Against this background, the present study examines the perceived relevance of Business Education in Nigeria's economic transformation among Business Educators in universities in South-East Nigeria.

Statement of the problem

Business Education in Nigerian universities should prepare graduates with the knowledge, practical skills, entrepreneurial abilities and digital competencies needed for employment, self-employment, enterprise development and job creation. It should also equip students to respond effectively to changing labour-market demands, technological developments and emerging economic opportunities. When properly implemented through competent business educators, practical training, appropriate technology and industry collaboration, Business Education can contribute significantly to employability, self-reliance, productivity and Nigeria’s economic transformation.

However, the extent to which Business Education is achieving these objectives remains a concern. Graduate unemployment, changing workplace demands, inadequate skills development, limited technological facilities and weaknesses in curriculum implementation raise questions about the alignment between Business Education and Nigeria’s economic needs. These challenges suggest a gap between the expected contribution of the programme and its actual outcomes, particularly in preparing graduates for employment, entrepreneurship and effective participation in the modern economy.

If this gap persists, Business Education may fail to provide the human capital needed for employment creation, enterprise development, productivity and technological advancement. Graduates may continue to face difficulties in securing jobs or establishing sustainable businesses, while employers may lack workers with relevant professional, entrepreneurial and digital competencies. Although previous studies have examined aspects such as employability, entrepreneurship, skills acquisition and curriculum implementation, limited attention has been given to the overall perceived relevance of Business Education to Nigeria’s economic transformation from the perspective of business educators in universities in South-East Nigeria. Therefore, this study examines how Business Educators perceive the relevance of Business Education to employment and job creation, entrepreneurship and self-reliance, and the development of a digitally competent workforce.

Research Questions

The following research questions guided the study.

1. To what extent do Business Educators perceive Business Education as relevant to employment and job creation in Nigeria?

2. To what extent do Business Educators perceive Business Education as relevant to entrepreneurship and self-reliance in Nigeria?

Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance

$H0_1$: There is no significant difference between the mean ratings of Business Educators in Federal and State universities on the perceived relevance of Business Education to employment and job creation in Nigeria.

$H0_2$: There is no significant difference between the mean ratings of Business Educators in Federal and State universities on the perceived relevance of Business Education to entrepreneurship and self-reliance in Nigeria.

Methodology

A descriptive survey research design was adopted for this study. The design was considered appropriate because it enabled the researcher to collect data from Business Educators on their perceived relevance of Business Education to employment and job creation, entrepreneurship and self-reliance in universities in South East Nigeria. The study was conducted in federal and state universities in South East Nigeria offering Business Education programmes. The population of the study comprised 130 Business Educators, consisting of 88 lecturers from federal universities and 42 lecturers from state universities. A census sampling technique was adopted because the population was relatively small and manageable; therefore, the entire population was used for the study. The instrument for data collection was a structured questionnaire titled Perceived Relevance of Business Education to Economic Transformation Questionnaire (PRBEETQ)**.** The instrument consisted of two sections. Section A elicited information on the respondents' demographic characteristics, while Section B contained 20 questionnaire items developed in line with the two research questions, with 10 items measuring employment and job creation and 10 items measuring entrepreneurship and self-reliance**.** The 20 items were considered adequate because they were developed to capture the major dimensions of the two constructs as identified from the literature and the objectives of the study. The questionnaire was structured on a four-point Likert rating scale of Very High Extent (VHE) = 4, High Extent (HE) = 3, Low Extent (LE) = 2, and Very Low Extent (VLE) = 1**.** The instrument was face validated by three experts**,** comprising two experts in Business Education from the Department of Agricultural and Vocational Education and one expert in Measurement and Evaluation**,** all from Michael Okpara University of Agriculture, Umudike, Abia State**.** Their observations and recommendations were incorporated into the final version of the instrument to ensure that the questionnaire adequately measured the constructs of the study. The reliability of the instrument was established using the Cronbach Alpha reliability method, which yielded an overall reliability coefficient of 0.84, indicating that the instrument possessed satisfactory internal consistency for data collection. The researcher, with the assistance of two trained research assistants, administered the questionnaire using the direct delivery and retrieval method. All the 130 copies of the questionnaire administered were successfully retrieved, representing a 100% response rate. The complete retrieval of the questionnaires eliminated non-response bias and ensured that every member of the study population was represented in the analysis. The data collected were analysed using mean and standard deviation to answer the research questions, while the independent samples t-test was used to test the null hypotheses at the 0.05 level of significance**.** The criterion mean of 2.50 was used for decision-making. Mean ratings of 2.50 and above were regarded as accepted, while mean ratings below 2.50 were regarded as rejected. The null hypotheses were rejected where the calculated t-value exceeded the critical t-value at the 0.05 level of significance; otherwise, the null hypotheses were not rejected.

Results

Research Question 1: To what extent do Business Educators perceive Business Education as relevant to employment and job creation in Nigeria?

Table 1: Mean and Standard Deviation of Respondents' Ratings on the Perceived Relevance of Business Education to Employment and Job Creation (N = 130)

S/N	Items	Mean ($\bar{X}$)	SD	Decision
1	Business Education equips graduates with skills that enhance their employability in public and private organizations.	3.54	0.61	Accepted
2	Business Education provides practical competencies that enable graduates to secure employment in business-related occupations.	3.62	0.56	Accepted
3	Business Education develops communication and interpersonal skills needed for effective workplace performance.	3.48	0.65	Accepted
4	Business Education equips graduates with accounting and financial management skills required in the workplace.	3.57	0.60	Accepted
5	Business Education develops administrative and managerial skills that improve graduates' employment opportunities.	3.51	0.63	Accepted
6	Business Education prepares graduates to provide business services that can create employment opportunities.	3.45	0.68	Accepted
7	Business Education provides skills that enable graduates to establish small businesses and employ other people.	3.58	0.59	Accepted
8	Business Education enhances graduates' ability to identify and utilize employment opportunities in emerging business areas.	3.46	0.67	Accepted
9	Business Education develops practical skills that can help reduce graduate unemployment.	3.52	0.64	Accepted
10	Business Education contributes to job creation by preparing graduates for productive participation in the economy.	3.60	0.58	Accepted
	Cluster Mean	**3.53**	**0.62**	**Accepted**

Decision rule: Mean rating of 2.50 and above = Accepted**;** mean rating below 2.50 = Rejected.

The results presented in Table 1 show that Business Educators perceived Business Education as relevant to employment and job creation in Nigeria to a very high extent, with a cluster mean of 3.53 and standard deviation of 0.62. The item mean scores ranged from 3.45 to 3.62, all of which were above the criterion mean of 2.50. The highest mean rating of 3.62 was recorded for the statement that Business Education provides practical competencies that enable graduates to secure employment in business-related occupations, while the lowest mean of 3.45 was recorded for the statement that Business Education prepares graduates to provide business services that can create employment opportunities. Overall, the findings indicate that Business Educators perceive Business Education as having substantial relevance to improving employability and creating employment opportunities in Nigeria.

Hypothesis 1: There is no significant difference between the mean ratings of Business Educators in federal and state universities in South-East, Nigeria on the extent to which Business Education is relevant to employment and job creation in Nigeria.

Table 2: t-test Analysis of mean ratings of Business Educators in federal and state universities on the extent to which Business Education is relevant to employment and job creation in Nigeria

Universities	N	X	SD	DF	t-cal.	t-crit.	Decision
Federal	**88**	**3.51**	**0.52**				
				128	**-0.62**	**1.98**	**Not rejected**
State	**42**	**3.57**	**0.49**				

Where N = Number of respondents, X = Mean, SD = Standard deviation, DF = Degree of freedom, NS = Not Significant

The result of the independent samples t-test in Table 2 revealed that there was no statistically significant difference between the mean ratings of Business Educators in federal and state universities on the extent to which Business Education is relevant to employment and job creation in Nigeria. Since the calculated t-value of -0.62 did not exceed the critical t-value of 1.98 at the 0.05 level of significance, the null hypothesis was not rejected. This implies that Business Educators in both categories of universities held similar views regarding the relevance of Business Education to employment and job creation in Nigeria.

Research Question 2: To what extent do Business Educators perceive Business Education as relevant to entrepreneurship and self-reliance in Nigeria?

Table 3: Mean and Standard Deviation of Respondents' Ratings on the Perceived Relevance of Business Education to Entrepreneurship and Self-Reliance (N = 130)

S/N	Items	Mean ($\bar{X}$)	SD	Decision
1	Business Education develops entrepreneurial skills needed to establish and manage small businesses.	3.61	0.58	Accepted
2	Business Education enables graduates to identify viable business opportunities in their environment.	3.55	0.62	Accepted
3	Business Education equips graduates with skills for developing and managing profitable business ventures.	3.58	0.60	Accepted
4	Business Education develops financial management skills needed for successful entrepreneurship.	3.64	0.55	Accepted
5	Business Education provides marketing skills that enable graduates to promote and sell products and services.	3.57	0.61	Accepted
6	Business Education develops record-keeping skills needed for effective management of entrepreneurial ventures.	3.52	0.64	Accepted
7	Business Education encourages creativity and innovation for self-employment.	3.49	0.66	Accepted
8	Business Education equips graduates with decision-making and problem-solving skills for managing business challenges.	3.56	0.60	Accepted
9	Business Education promotes self-reliance by preparing graduates to generate income through independent economic activities.	3.63	0.57	Accepted
10	Business Education reduces dependence on paid employment by preparing graduates for self-employment.	3.59	0.59	Accepted
	Cluster Mean	**3.57**	**0.60**	**Accepted**

The results presented in Table 3 show that Business Educators perceived Business Education as relevant to entrepreneurship and self-reliance in Nigeria to a high extent, with a cluster mean of 3.57 and standard deviation of 0.60**.** The item mean scores ranged from 3.49 to 3.64, indicating that all the items recorded mean ratings above the criterion mean of 2.50 and were therefore accepted. The highest mean rating of 3.64 was recorded for the statement that Business Education develops financial management skills needed for successful entrepreneurship, while the lowest mean rating of 3.49 was recorded for the statement that Business Education encourages creativity and innovation for self-employment. The findings therefore indicate that Business Educators perceive Business Education as highly relevant to developing entrepreneurial capabilities and promoting self-reliance among graduates.

Hypothesis 2: There is no significant difference between the mean ratings of Business Educators in federal and state universities in South-East, Nigeria on the extent to which Business Education is relevant to entrepreneurship and self-reliance in Nigeria.

Table 4: t-test Analysis of mean ratings of Business Educators in federal and state universities on the extent to which Business Education is relevant to entrepreneurship and self-reliance in Nigeria

Universities	N	X	SD	DF	t-cal.	t-crit.	Decision
Federal	**88**	**3.55**	**0.50**				
				128	**-0.65**	**1.98**	**Not rejected**
State	**42**	**3.61**	**0.47**				

The result of the independent samples t-test in Table 4 revealed that there was no statistically significant difference between the mean ratings of Business Educators in federal and state universities on the extent to which Business Education is relevant to entrepreneurship and self-reliance in Nigeria. Since the calculated t-value of -0.65 did not exceed the critical t-value of 1.98 at the 0.05 level of significance, the null hypothesis was not rejected. This implies that Business Educators in both federal and state universities held similar views regarding the relevance of Business Education to entrepreneurship and self-reliance in Nigeria.

Discussion of Findings

The findings of the study revealed that Business Educators in federal and state universities agreed to a very high extent that Business Education is relevant to employment and job creation in Nigeria. The absence of a significant difference between Business Educators in federal and state universities further indicates a broad consensus regarding the contribution of Business Education to preparing graduates for employment and creating opportunities for productive economic participation, irrespective of

institutional ownership. This finding suggests that Business Educators recognize the capacity of Business Education to develop practical business, administrative, communication, financial and entrepreneurial skills that can enhance graduates' employability and ability to establish income-generating ventures. The finding may be attributed to the practical and vocational orientation of Business Education, which combines theoretical knowledge with skills that are applicable to workplace activities and business operations. Through exposure to relevant business competencies, graduates can acquire abilities that support their participation in formal employment as well as their capacity to identify and create employment opportunities. The finding is consistent with Amaewhule, Abung and Amadi (2024), who reported that Business Education graduates require employability skills such as communication, leadership, problem-solving, administrative and information technology skills to function effectively in the workplace. Similarly, Umeh and Iyoha (2024) emphasized the importance of relevant employability competencies among Business Education graduates in responding to changing labour-market demands. The convergence of these findings reinforces the view that a properly implemented Business Education programme can contribute to employment generation by equipping graduates with competencies relevant to the labour market and productive economic activities. From a practical perspective, the findings imply that universities should strengthen the practical and career-oriented components of Business Education through adequate instructional facilities, workplace exposure, entrepreneurship training and collaboration with relevant industries.

The findings further revealed that Business Educators in federal and state universities agreed to a very high extent that Business Education is relevant to entrepreneurship and self-reliance in Nigeria. The non-significant difference between the mean ratings of Business Educators in federal and state universities indicates that this perception is shared across institutional contexts. This consensus reflects the recognition of Business Education as a programme capable of developing entrepreneurial abilities that enable graduates to identify opportunities, establish and manage businesses, make sound financial decisions, market products and services, maintain business records, solve business problems and generate income independently. The high rating accorded to entrepreneurship and self-reliance may be attributed to the practical orientation of Business Education, which exposes students to business-related knowledge and skills that can be applied beyond paid employment. By developing financial management, marketing, record-keeping, creativity, innovation, decision-making and problem-solving abilities, Business Education can provide graduates with competencies needed to initiate and sustain small-scale enterprises. The finding is consistent with Ingwe, Okute and Okon (2023)**,** who identified entrepreneurial skills as necessary for Business Education graduating students to achieve self-reliance. The finding also agrees with Egberi and Alabi (2023)**,** who emphasized the importance of opportunity recognition, creativity, innovation and business problem-solving skills in promoting self-reliance. The convergence of these findings reinforces the view that Business Education can serve as an important avenue for developing entrepreneurial capabilities and reducing excessive dependence on paid employment. From a practical perspective, universities should strengthen entrepreneurship-oriented components of Business Education by providing practical enterprise activities, business incubation opportunities, mentorship, access to relevant technology and stronger linkages with practising entrepreneurs.

Conclusion

Based on the findings of the study, it was concluded that Business Educators agreed that Business Education is highly relevant to Nigeria's economic transformation through its contributions to employment and job creation, entrepreneurship and self-reliance. The study established that Business Education provides graduates with practical business, employability and entrepreneurial skills that can enhance their opportunities for employment, support the establishment of business ventures, promote income generation and reduce dependence on paid employment. The achievement of the objectives of Business Education depends largely on the quality of instructional delivery, practical skills development, availability of relevant facilities, and effective preparation of graduates for the changing demands of the economy. Therefore, strengthening Business Education through practical training, entrepreneurship development, digital skills acquisition and relevant industry linkages is essential for enhancing its contribution to employment generation, self-reliance and Nigeria's economic transformation.

Recommendations

Based on the findings and conclusion, the following recommendations were made:

1. University management and relevant government agencies should strengthen the practical and employability components of Business Education programmes by providing adequate instructional facilities, organizing workplace-based training, and facilitating internship and industrial attachment opportunities for students. This will enable Business Education students

to acquire practical competencies that can improve their employability and prepare them for productive participation in the labour market.

2. Business Educators should intensify entrepreneurship-oriented teaching and practical enterprise activities by engaging students in business simulations, small-scale enterprise projects, opportunity identification exercises, financial management activities, marketing practices, and business planning. This will develop students' entrepreneurial competencies, encourage self-employment, and enhance their capacity to establish and manage sustainable income-generating ventures.

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INNOVATION AS A TOOL FOR BUSINESS SUSTAINABILITY AMONG SMALL AND MEDIUM ENTERPRISES

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Background of the Study

Business is a living system that responds to its environment. One of such environments is technology. Any business that wants to achieve its objectives, and possibly sustain its existence must adapt to the phenomenon of innovation. It is not out of place seeing many business organizations going into extinction due to their inability to cope with customers' ever-changing relationship satisfaction appetite.

Sustainability according to UN 1987 Brundtland Report is the ability to meet present needs without compromising the ability of future generations to meet their own needs. It is aimed at balancing human development goals with the finite limits of nature.

Statement of Problem

Innovation has made business transactions very seamless these days ranging from e-commerce to robotics. However, at the same time it has created much pressure for business organizations on their ability to remain competitive, ensure effectiveness and efficiency in its operations and remain adaptable to its environment. These among others, are serious challenges to modern day business owners because customers have become more exposed in terms of variety of goods and services available at their disposals and rights of business relationship. This phenomenon, has put business organizations in a tight corner to maintain a favourable balance.

Objective of the Study

The study is guided by the broad objective of finding how innovation helps to sustain small and medium scale enterprises, with specifics in:

i. Determining how innovation enables SMEs to have a competitive advantage over their peers.
ii. Establishing the relationship between SMEs innovation strategies in their effectiveness and efficiency.
iii. Finding out how innovation enables SMEs to remain adaptable to their business environment.

Research Questions

(i) How does innovation help SMEs in maintaining competitive advantage?
(ii) What is the relationship between innovation and SMEs effectiveness and efficiency?
(iii) In which ways do innovation support, SMEs adaptability to their business environment?

Literature Review

Small and Medium Scale Enterprises (SMEs) are graded based on so many factors, such as capital, employees, profit, space, etc. Central Bank of Nigeria (BN) defines SMEs as businesses with assets between ₦5million and ₦500 million and 11 to 200 employees. Duru (2011) states that they are predominantly found in agriculture, retail, manufacturing and services; run as sole proprietorship, partnerships or small limited liability companies and account for nearly half of Nigeria's Gross Domestic product (GDP). Mbanefo & Eboka (2022) state that their major challenges are finance; infrastructure and compliance with extant laws in Nigeria.

Innovation

Kahn & Mayoor (2020) opine that innovation is a process of introducing new idea, product, or process that creates real value. The new approach should be able to do something different or changing an existing system. It should equally turn a creative thought into practical solution that solves problems. Also, it should be executable into a real-world-use.

Importance of Innovation

- According to Kent (2024) innovation helps business organizations to maintain competitive advantage over its contemporaries.
- It does this by making such organizations stand out in a crowd through cost leadership, product differentiation and niche strategy (Porter 2025).

- Innovative businesses are effective and efficient. Vogt (2023) states that innovative business organizations attain their objectives without wasting time, money or energy. They do this by making optimal use of available resources in the midst of scarcity.
- Adaptability is another need for innovation by business enterprises. Roach (2024) concludes that innovative business organizations has the capacity and willingness to change how they think, act or work when faced with new challenges. That is to say that they are flexible, have learning agility and are resilient.

Types of Innovation

Parson (2024) classified innovation into the following categories:

Incremental: A small but steady improvement to current products or services.

Disruptive: Changing the entire system from the top to bottom.

Process: a faster or cheaper ways to complete tasks. It is usually temporary

Product: new or upgrading a product or services

Business model: a system of changing how a company operates.

Marketing: using new ways to advertise, package or price a product or services.

Challenges of Innovation

In as much as innovation is apt for business survival and sustainability, it comes with a price. Roach (2024) concludes that innovation breeds resistance to change (especially from the workers who are used to status quo ante), unclear strategy and resource shortage. Sometime organizations find it difficult to contain some elements of sabotage among its employees, especially when they were not properly tutored on the strategies and its outcome to their jobs. Also, in some cases organizations may not have enough human and material resources to introduce the needed innovation thereby creating a stalemate.

Sustainability

United Nations (1978) defines sustainability as meeting presents needs without compromising the ability of future generations to meet their own needs. It focused on the areas of environmental protection, social development, economic prosperity and intergovernmental equity.

Pillars of sustainability

Wallace (2022) identified environmental stewardship, social responsibility, economic viability, transparency and accountability and innovation and adaptability as the key fundamentals of sustainability.

Economic viability

According to Munro (2023) economic viability remains a focal point for the survival and sustenance of any business organization. It needs to build long-term financial health, maintain steady growth without depleting, ecological or human capital. Organizations should do these by creating and maintaining jobs, make optimal and smart use of resources and maintain green business environment through long term solutions instead of quick harmful profits.

Theoretical Framework

This work was anchored on the following theories due to their relevance to the study:

Expectancy Theory (Victor Vroom)

The theory relies on three elements to explain how people make choices. These are;

Expectancy: Belief that working harder will lead o better performance.

Instrumentality: Belief that good performance will lead to a specific reward.

Valance: The personal value or importance one places on the reward.

The main import of the theory is that people are motivated to put in their best when they know that the end-point will be favourable.

Schumpeter's Theory of Innovation

The theory visualizes an entrepreneur as an innovator who develops an untried technology and as a catalyst who brings in his innovative ideas and actions thereby interrupting and altering the stagnant circular flow of the economy and bringing about development.

Schumpeter posits that innovation can introduce new product, add new features to existing products, identifying and opening new markets, discovery of new source of raw materials or carrying out a new form of organization.

Empirical Review

Ogbu &Ebeke (2024) did a study at Enugu and Ebonyi States to find out the effects of innovation on skills acquisition among students of tertiary institutions. They found, that among others, that innovation endears students to acquire new skills.

Frederick, Loice & Omwono. (2018) in their study at Kenya to unravel the effects of innovation on the performance of women entrepreneurs discovered that innovation leads to increased market shares, helps in improving the quality of goods produced, raises volumes of sales, and increase positive impacts on the performance of entrepreneurs.

Rukervwe (2015) in his study done in Nigeria to find out the effects of innovations on the performance of SMEs fond that there is a strong relationship between innovation and performance of SMEs.

Research Methodology

The study adopted a descriptive survey where data were sourced from primary and secondary sources. A population of 330 entrepreneurs drawn randomly from Afikpo (Ebonyi State), Nsukka (Enugu State) and Onitsha (Anambra State) was used out of which a sample of 318 was drawn using Taro Yamane formula with 0.05% as error margin. Data were analysed using descriptive statistics and inferential statistics to test the hypotheses on the relationship between innovation and sustainability among SMEs. The decision rule was based on statistical significance (p-values < 0.05) and effect size (t-values) to either accept or reject the null or alternative hypothesis.

Research Hypotheses

Hypothesis 1

Ho: There is no significant relationship on the effects of innovation on SMEs competitive advantage.

H_1: There is a significant relationship on the effects of innovation on SMEs competitive advantage.

Hypothesis 2

Ho: There is no significant relationship between innovation and SMEs effectiveness and efficiency.

H_1: There is a significant relationship between innovation and SMEs effectiveness and efficiency.

Hypothesis 3

Ho: Innovation has no significance on SMEs adaptability to their business environment.

H_1: Innovation has significance on SMEs adaptability to their business environment.

Data Presentation and Analysis

Table 1.1: Effects of Innovation on Competitive advantage among SMEs

Statement/Options	SA	A	U	D	SD	Total
Innovation leads to cost leadership	62	68	101	26	39	318
Innovation increases profit	185	104	11	48	8	318
Innovation ensures focus	134	101	38	10	19	318
Total	381	273	150	84	66	954
Percentage (%)	40%	29%	15%	09%	04%	100%
Mean ($\bar{X}$)	127	91	50	28	22	318

Table 1.1 shows that 381 (40%) respondents Strongly Agree 273 (29%) Agree, 150 (15%) undecided, 84(09%) Disagree while 66(07%) Strongly Disagree on "Effects of innovation on competitive advantage of SMEs". From the above analysis it could be deduced that most of the respondents, 654(69%) agree that innovation has effects on competitive advantage of SMEs.

Table 1.2: Relationship between innovation and SMEs" effectiveness and efficiency.

Statement/Options	SA	A	U	D	SD	Total
Innovation fastens goal achievement	109	123	38	26	22	318
Innovation improves quality of output	167	121	11	09	10	318
Innovation promotes relevance	90	155	23	28	22	318
Total	366	399	72	63	54	954
Percentage (%)	38%	42%	08%	06%	06%	100%
Mean ($\bar{X}$)	122	133	24	21	18	100

Table 1.2 revealed that 366 (38%) respondents Strongly Agree, 399 (42%) Agree, 72 (08%) undecided, 63(06%) Disagree while 54(05%) Strongly Disagree that there is a relationship between innovation and SMEs' effectiveness and efficiency.

Table 1.3: Innovation and SMEs' adaptability to their business environment.

Statement/Options	SA	A	U	D	SD	Total
Innovation aids SMEs' operational flexibility	89	98	56	39	36	318
Innovation promotes learning of new skills	159	136	09	08	06	318
Innovation encourages SMEs' resilience	145	111	22	22	18	318
Total	393	345	87	69	60	954

Percentage (%)	41%	36%	09%	07%	06%	100%
Mean ($\bar{X}$)	131	115	29	23	20	318

Table 1.3 indicates that 393 (41%) respondents Strongly Agree, 345 (36%) Agree, 87 (9%) undecided, 69(7%) Disagree while 06(6%) Strongly Disagree that innovation has impact on SMEs' adaptability to their environment.

Test of Hypotheses

In order give more validity to the data analysis, hypotheses were tested on the objectives of the study based on the available data collected using various statistical tools as follows:

Hypothesis 1

Response on the effects of innovation on competitive advantage among SMEs.

Ho: There is no significant effects of innovation on SMEs competitive advantage.

H_1: There is a significant effect of innovation on SMEs competitive advantage.

Findings:

ANOVA was used to test this hypothesis. The result revealed a strong positive correlation between innovation and competitive advantage, with (r= 0.962) and (p = 0.001). Regression analysis equally confirmed this with (β= 0.962, P < 0.001). These results confirm that innovation has significant effects on SMEs' competitive advantage.

Hypothesis 2: Responses on the relationship between innovation and SMEs' effectiveness and efficiency.

Hypothesis 2

Ho: There is no significant relationship between innovation and SMEs effectiveness and efficiency.

H_1: There is a significant relationship between innovation and SMEs effectiveness and efficiency.

Findings:

The analysis revealed a strong positive correlation (r = 0.939) between innovation and effectiveness and efficiency. Regression analysis confirmed that innovation pushes SMEs to improve their effectiveness and efficiency (β = 0.939), < 0.001) confirming, ANOVAS significance (P = 0.001) thereby validating the model. We therefore conclude that innovation has a significant relationship in the effectiveness and efficiency of SMEs.

Hypothesis 3

Response on innovation and SMEs adaptability to their business environment.

Hypothesis 3

Ho: There is no significant relationship between innovation and SMEs adaptability to their business environment.

H_1: There is a significant relationship between innovation and SMEs adaptability to their business environment.

Findings: Data analysis indicated a strong positive relationship (r = 0.968) between innovation and adaptability. Regression analysis demonstrated that innovation significantly affect SMEs adaptability (β = 0.968, P <0.001). ANOVA results were highly significant (p = 0.001), indicating a strong model validity. Therefore, we conclude that innovation strongly affects SMEs adaptability positively.

Summary of Findings

1. Innovation enables SMEs to have a competitive advantage among their peers, thus correlating Kent (2024) which states that innovation helps business organizations to maintain competitive advantage over its contemporaries.
2. Innovation significantly, enables SMEs to improve in their effectiveness and efficiency of their operations. This agrees with Vogt, (2023) which states that innovative business organizations attain their objectives without wasting time, money or energy in their operations.
3. Innovation aids SMEs to adapt to their business environment. The finding is in tandem with Roach (2024) assertion that innovative business organizations has the capacity, and willingness to change how they think, act or work when faced with new challenges.

Recommendations

Based on the findings of the study, the following recommendations were made:

i. SMEs should embrace innovations, especially in this digital age, to not only remain competitive but to stand out among crowds in the fierce competitive business environment.

ii. SMEs should swallow innovation hook, line and sinker so as to improve their levels of effectiveness and efficiency. This will enable them retain customers, attract new ones and expand their market shares, growth and profit.

iii. SMEs should not look the other way where innovation is discussed so as to know how and when to change their modus operandi in order to avoid extinction or relegation by its environment. Innovation will help them to remain relevant at all times.

Conclusion

The paper is of the conviction that if, its findings and recommendations are heeded to, SMEs will not only remain competitively advantageous, effective and efficient as well as relevant to their environment but will also bring economic, social and technological development to themselves and the nation in general thus reducing social vices and improving standard of living in the country.

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YOUTHS EMPOWERMENT THROUGH VOCATIONAL EDUCATION: A SUSTAINABLE TOOL FOR ACHIEVING A RENEWED HOPE TOWARDS NATIONAL DEVELOPMENT

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Abstract

Unless the federal government, philanthropists businessmen and women assist in empowering women, Nigeria will continue to witness poverty, unemployment and persistence set back in achieving sustainable economic and national development. These papers examine reliable and efficient means federal government could attain genuine hope renewal towards national development through the empowerment of youths in the society. The paper further discusses the concept of power and empowerment, youths and empowerment. In addition; the paper examined different ways of empowering youths, sustainability and national development, strategies for sustaining youths for national development empowerment as well as the benefits derived from empowering youths in Nigeria. The paper concluded that youths could be empowered in the areas of vocational education (i.e Entrepreneurship skills, Accounting, Marketing, Management and Information communication technology /secretarial), Health Agriculture and Home economic skills for economic renewal. It was recommended that all hands should be on deck in empowering youths, for the sustenance of their families and the society at large.

Keywords**: **Empowerment, National Development, Renewed Hope, Vocational Education, Youths

Introduction

The formal system of education laid efficiencies on paper qualification and white cola jobs. The government offices and companies had enough employment for the graduates then, but this is not true of the government offices and companies as of today. The increasing unemployment condition in the country became a disturbance to both the government and individuals therefore, the need to provide an educational system that has the ability and strategy for youth empowerment. This is found in the Federal Republic of Nigeria Policy on Education (2022), which emphasized on vocational education which enhances acquisition of practical and applied skills as well as basic scientific knowledge for youths empowerment. According to Ugochukwu (2015), one of the major concerns of most contemporary societies is how to reduce the ever rising tide of unemployment and achieve appreciable success in wealth

creation and poverty reduction and foster socio-economic development. Since youths are seen to be future leaders, pillars of a nation and vital tool for nation building, they must be empowered in order to develop a capacity of managing their own business and contributes immensely to the growth of the economy. To achieve this aim, w youths need to be supportive, cared for and empowered in all ramifications.

Concept of Power and Empowerment

Power is the ability to make choices, to be disempowered means to be deriied choice, while empowerment refers to the processes by which those who have been denied the ability to make choices acquire such ability. According to Innocence Erne (2015), empowerment is the process of obtaining basic opportunities for marginalized individual either by the marginalized or the non-marginalized. Empowerment is always reffered with feminism in any discussion or deliberation. Therefore empowering youths is an indispensable tool for advancing development and reduction of poverty. Since youths, male and female, form the larger part of the country's population always keep the ball rolling, there is need for youths to be economically empowered in terms of creating paid jobs and apprenticeship for the sustenance of family members health nutrition, dressing and the general wellbeing of the family. Empowerment deals with equipping an individual with reputable confidence to develop his own capacity having the will and sound mind to make decisions, accept responsibilities, make choice, access to productive resources, increase one's self positive image, ability to be competent and overcoming of stigma of any type in the society.

Renewed Hope Agenda

The word "Renewed Hope' was introduced at the inception of the current administration in Nigeria headed by President Bola Ahmed Tinubu. The manifesto of the government was premised on rebuilding the country's lost glory through implementation of effective and efficient economic reforms, vast agricultural development programme, rural infrastructural development, educational reforms, human and capital development through job and wealth creation, empowerment, renewable energy etc. All the outlined agenda are critical and of importance in order to chat a new course for economic and national progression. Therefore, youths must not be left behind in order to achieve substantial growth. This is because youths comprising of boys and girls form the larger percentage of Nigeria's population, they are forces to be reckoned with during electioneering period. Most youths are committed and vibrant, who look after achieving greatness in life. These youths eventually turn out to become good ambassadors and leaders of the economy occupying various positions of authourity.

It is therefore, imperative for government at all levels to ensure that dedicated youths with proven integrity, are given vast opportunities in elective positions, political appointments as heads of strategic Ministries, Departments and Agencies (MDAs) especially, where they can function effectively and efficiently and their impacts could be easily felt by the citizens at large. This would help the state administrators to achieve its intended developmental plan as well as supporting the federal government renewed hope agenda for the sake of social and economic revival as well as national development. All these are evidenced in the in the current administration in Nigeria in which good numbers of youths are appointed as ministers, Ambassadors, Senior Special and Special Advisers. Moreso, a sizeable number of youths were elected under different political parties as Members of House of Representatives Senators and House of Assembly in several states of the federation.

Youths and Empowerment

Youths empowerment is referred to as the process of increasing social, political, economic and spiritual height of youths. Lofty objectives guided gender equality as established by the World Development Report of (2017). The objectives include improving avenue to economic opportunities for youths, reducing excess female mortality and closing education gaps, reducing the reproduction of gender inequality across generations and supporting youth's voice in the communities. Unfortunately, the above objectives were neglected. youth's role seems to be neglected in our societies.

Youths are reckoned as pillars of a nation and leaders of tomorrow thereby face a lot of challenges in the society such as social cultural beliefs, poverty and illiteracy amongst others. For a nation to be peaceful and economically progressive, there is the need for the training institutions to propel the entrepreneurship training in all the courses at all levels of education so that youths will be well equipped with necessary business skills needed in the labour market and for self-reliance. It is therefore, imperative for both men and women to be self-employed in other to fully support their families and Nigeria as a nation so as to achieve the renewed hope desired by all citizenry..

Majority of families are living in abject poverty without any paid job. This is why those who were educated tend to work and as well fulfilling their roles by keeping the ball rolling. In many developed

countries of the world, youths are the brain behind the economy. This is the more reasons why Eze (2015) encouraged that an individual is expected to be exposed to different level of skills, thus, basic skills (proficiency in reading, writing, simple calculations, communication and human relations), technical skills (capacity in operating machines, engines, computer and construction), professional skills (such as in marketing, accounting, teaching, law, mining, surveying and architecture), and management/leadership skills (such as goal setting, planning, motivation, decision making, delegation, supervision and ethical judgement).

Since skills occur in different categories, youths should be made to understand the category in which they have comparative advantage through empowerment. Buttressing the above view, Innocent Ene, (2015) recommended the need to awaken the consciousness of youths empowerment in the family and the nation as a whole, since the empowered youth contributes un-quantifiably to the education, home economics, agriculture, health, security, civil-service and industrial sectors of the economy. However, the essence of empowering youths is for them not to become nuisance, parasites and economically dependent.

Youths and Entrepreneurship Ventures

A youth entrepreneur perceive business opportunities in the environment which other individuals are unable to see. Therefore, successful entrepreneurs are quick to spot market needs and supply products to meet those needs in new and profitable way. An entrepreneur including youth may engage in the following businesses: serves as suppliers to bigger enterprises, nurtures indigenous raw materials and processing industries to support their growth, setting up computer centres/office management, barbing saloon, food processing, soap making, bean cake baking, interior decoration, laundry services, nail fixing, refferrals, freelancing services, shoe making, medicure and pedicure services, nail fixing, laundry services, refferals, freelancing services, poultry farming, fish farming and goat/sheep/rabbit/cattle rearing and piggery (Ezeani 2016 and Iredia, 2021). According to Atakpa (2016), entrepreneurs are highly creative people that they always look out for new scientific theories and foresight. There is need to encourage women and other individuals through entrepreneurship ventures for a successful living

Agoha, (2016) opined that women are empowered through the various entrepreneurship skills available for the business related ventures, mini stores can be opened to acquaint the youths with the sales while still in school. According to her, women entrepreneurs can be empowered in the following areas: info-tech business (such as computer repairs, ICT consulting, computer accessories, sales of laptops, sales of personal computers (PCs) and software engineering, printing and publishing (e.g. book binding, publishing, diary/calendar production, exercise books, envelopes production and stickers), telecommunication business (such as GSM unlocking, handset production, sales of handset accessories, handset repairs, handset sales, recharge card sales, telephone booth operation);transportation (such as taxi services, tri cycle services, motorcycle hiring transport, barrow/truck hiring, keke Napeps, canoe hiring and so on); Soap and detergents business (e.g aloe vera soap production, antiseptic soap production, black soap production, detergent production, toilet bowl cleaner and liquid detergent production), fashion and styles (e.g barbing salon, beauty shop, undies making, fashion school, fashion designing, tailoring services and travel bags making and food bag production); baby items such as (baby powder production, baby cream production, baby shoe, baby oil production, and baby jelly production); internet based business (automobile internet marketing, award sites, banner designer, business software sites, cyber copywriting, discussion board, download sites, fee for air link sites); educational services (e.g nursery/primary schools operating, secondary school, day care center, extra moral lessons) and bath (such as towels production, bed sheets production, belts production, handkerchief, pillowcases production, under wears production) can be done by youths.

Relevance of Entrepreneur Skills to Business Ventures

Ezeani (2018) affirmed that the relevance of entrepreneurship to business involved knowledge gain or acquire can be used by the youths to be able to flow effectively in the labour market. The knowledge will also help the youths to interact and gain information which will help to boost business of all kinds. Entrepreneurship skills will also help youths to open up nursery/primary schools, secondary schools, extra moral lessons, which will be useful for the society and enable them generate income as well for the families. Also, baby items will be cheaper and will also get to the hands of the poor individual at cheaper rates. Establishing printing and publishing business in the rural areas will save the people there the transport of going to the town to buy books and other stationeries. Entrepreneurship skills will also help youths to be experts in the production of soap, powder, set up barbing saloon and tailoring businesses. Furthermore, Entrepreneurship skills acquired by youths will expose them to the use of modern machines in terms of communication, recording and storing of information (computer/internet).

Amahi, odimmega and Amahi (2018) noted that the senior secondary education curriculum was developed to further consolidate to ensure the actualization of government agenda of renewed hope initiatives, transformation and other national developmental aspirations. In other words, the prime objective of this is to ensure that individual is well prepared for higher education as well as required relevant functional trade/ entreneurship skills on value re-orientation, job creation, wealth generation and poverty education.

The entreneurship/trade skills that were expected of an individual to possess according to Amahi, odimmega and Amahi (2015), Ezeani (2018) , Okeke (2020) &Enemou (2016)involved the following: auto body repair and spraying/plant, auto electrical work, marketing, salesmanship, fisheries, animal husbandry, mining, tourism, auto mechanical work, air conditioning refrigerator, welding and fabrication engineering craft work, block laying, brick laying and concrete work , photography, GSM maintenance, book keeping, store keeping, data processing, shorthand, keyboard, printing craft practice, textile trade, dying and blending, garment making, leather goods manufacturing and repair, catering practice, upholstery, furniture making, carpentry and joining, machine, wood working painting and decorating, plumbing and pipe fitting.

The integration of these entrepreneurial skills into the school curriculum and the realization of its laudable objectives will help to produce individuals that can make use of their brains and hands as a result of the acquired creative knowledge and self-employment skills. Amahi, odimmega and Amahi (2015) citing lukman and oviawe, (2010) observed that such productive abilities and managerial skills would sustain quality production of goods and rendering of service to ensure human survival and economic development. However, the idle hands are devils workshops. If entrepreneurship skills are well developed in Nigeria youths, It will reduce over dependency, unemployment and poverty in the society

Theoretical Framework

The study was anchored on the Social Cognitive Career Theory (SCCT) Established by Lent, Brown and Hacketi in 1994 and the Social Learning Theory of career, choice by krumboilt at 1990. Social Cognitive Career Theory (SCCT) is a theory that rested on motivation that is driven by the three construct of self-efficacy, outcome expectation and goal directed activity. Therefore, these three constructs, act as mediators in the relationships between individual and environmental experiences and outcome behaviors.

Self-efficacy deals with the ability of an individual to perform a particular behavior, outcome expectation involve the anticipate, outcome of one's action, and goals are the determination to engages in a particular activity. Moreso, self-efficiency should fully mediate the fully relationship between environmental factor and outcome (SCCT). Further purpose that a youths inputs (I.e demographics environmental influences). Influences self-efficiency beliefs and outcome expectation, which is turn affect the formation of interest, which subsequently influences goal action and performance attainments. However, self-efficiency beliefs are concerned not with the skills ones has with judgment of one's ability to perform a particular behavior of course of action. Efficacy belief influence that courses of action women choose to pursue, how much effort they put forth in given endeavors, how long they will preserve in the face of obstacles and failures and their resilience to adversity.

Sustainability and National Development

Development involves the interest of individual and the society at large to adopt scientific and technical knowledge to achieve desired objectives. As life is complex, so also development itself. National development is the expansion, or growth of people in an area or environment and structural transformation of the society, polities, social and culture that involve a change in technological development. National development is the ability of a country or countries to improve the social welfare of the citizenry which include construction of good road , bridges, portable water, quality education, transportation, good health services and so on (Nweke, 2015). Since entrepreneurship is the life wire of a nation, Nigeria's future lies in the dynamism and growth of entrepreneurial businesses. Entrepreneurial trades can be seen as places of training and learning for youths and individuals at all levels and functions. Sustainability occurs when natural system is merged with social, political and economic challenges faces by the individuals. There is need to empower youths to improve the quality of human factor to advance in knowledge and brings in new ideology and embrace economic development for self-efficacy and global sustainable national achievement and development. Women need to be assisted to meet the needs of the present society.

Strategies for Sustaining Youths for National Development

How can youths be empowered for a national development? According to the World Bank (2015). Putting resources into poor youth's hands results in large development for the nation. World Bank added that youths could be empowered by providing such opportunities in the home economic, agriculture, public work, finance and other sectors to accelerate economic growth, assisting to mitigate the effect of current and future financial crises. It further affirmed that the strategies for sustaining youths for national development include educating goal, increasing literacy rate among youths, improving youths access to

credit, land and other resources, promoting youths political rights and participation. When youths were globally empowered, the nations economy will turn out to something better. Hence youths are helper to the nation, families and the society at large. Government policies and strategies are geared towards supporting and encouraging individuals/ youths in generating growth in self-reliant and in-sustenance of national development.

Benefits Derived from Empowering Youths in Nigeria

The relevance of youths entrepreneurship ventures cannot be overemphasized. Both men and women need to be empowered for adequate family enhancement that bring about national development. If women remain unpowered, disenfranchised and discriminated against, there can be no sustainable national development. Buttressing the above views, Igbinedon and Ojeaga (2014) posited that Nigerian youths contribute immensely to the growth of the country in one way or the other. According to the authors, youths contributed to the economic development in such areas as trade and retail businesses, health and social works, hotels and restaurants business. When youths were empowered in such a way that they are stinkingly rich, they tend to disrespect the elders and have no time for their immediate families and parents. On the other hand, when youths become the sole or bread winner of the family, other siblings or parents become dependants and lazy. Youths empowerment encourage self-efficacy and individual development,

Diverse Ways of Empowering Youths

Business education equips an individual for skills, knowledge, attitudes and values that will assist him/her in the labour market. As a discipline, business education embraces entrepreneurship accounting, marketing, management and so on. It is also an indispensable tool for national development hence it prepares individuals as an entrepreneur, employers, employees, job creators, amongst others. Youths could be empowered in the following areas such as business education (e.g. entrepreneurship, accounting, marketing/distributive trade and secretarial/stenography), agriculture, health and public works amongst others.

Youths Empowerment Through Entrepreneurship Skills

Entrepreneurship is the life wire of any nation (Ezeani 2018), Nigerian youths could be empowered in various fields of entrepreneurship trades, skills acquisition, businesses, confectionaries, farming and merchandize. One of the potentials of entrepreneurship education is that it empowers both the educated and uneducated individuals especially the youths. With entrepreneurship knowledge, a nation can be transformed; diversification of the family's economy and provision of resources, employment opportunities to the citizenry. Amahi, Odimmega and Amahi (2018) stressed the need for quality entrepreneurship education if the recipients are to acquire appropriate knowledge, attitudes, abilities and skills that will make them to be job creators rather than job seekers. Therefore, entrepreneurship education is an indispensable ingredient for the acquisition of quality skills which leads to job creation.

Entrepreneurship education focuses on the starting of new business ventures and tends to draw the interest of individuals who desire the opportunity to have control of their own business, make wealth and live successful life (Ogheneakoke,2018), Ubah (2015) as cited by ogheneakoke (2018) highlighted the objectives of entrepreneurship to include poverty alleviation, reduction of kidnapping of life and properties, increase income per capital, reduction of the level of unemployment, minimizing of banditry, child and human trafficking and prostitution, enhance economic growth and development for the individual and the nation, and so on. From the above objective, youths should be empowered as to increase their income per capital. Entrepreneurship education provides wonderful opportunities for youths that will foster employment, livelihood diversification as well as self- employment

Empowering Youths Through Accounting Skills

Youths as a business education recipients are empowered to sustain their families and the society. Youths could be empowered in accounting/ bookkeeping related job in rendering consultancy services, recording of simple transaction of the business, knowledge of safety rules involved in a particular business, knowledge of total business or industry being entered, ability to interprete financial statement, awareness of manufacturing and production method and knowledge of business laws. (Olise, 2016), Youths can also be empowered to be self-employed thus; machine operator, book-keeper, data processing, equipment operator, self-practicing accountant and a forensic accountant.

Empowering Youths Through Marketing Skills

In empowering youths, Olise, (2016) posited the importance of marketing and selling skills as ability to budget and forecast, determine current and future trends in product sales, knowledge of advertising,

determine and interpret factors which indicate extent and strength of competition, determine availability of goods for raw materials for production and storage of finished goods and knowledge of seasonal fluctuation of goods. Okwuanaso and Nwazor (2010) quoting Bassey (1992) affirmed that an individual who have obtained the knowledge of marketing including youths could be empowered to engage in retailing ventures (e.g storing and caring for automobile), wholesaling, store operation, public relations, advertising services, furnishing, real estate buying, selling and appraisal, renting management, prepared food distribution (general line and commodity lines), general merchandise sales in all types of shops, apparel and accessories distribution, food service (raw\unprepared) and international trade (import and export business) among others.

Empowering Youths Through Managerial Skills
Youths could be empowered through managerial skills such as ability to make long and short term planning, manage time and meet job schedules, knowledge of good human relationship, and knowledge of need for employee's growth and development, ability to communicate effectively using oral and written skills and ability to conduct personal evaluation**.**

Empowering Youths Through General Business Skills
In the area of knowledge of general business skills, such as ability to make short or long-term planning, basic steps involved in starting business are thus; familarization with purchasing of fixtures, equipment and furnishing, ability to assess facilities and equipment required, knowledge of facilities available for supplying information on setting up a small business from either governmental agencies or trade association resource, ability to keep employee's records of wages and allowances and knowledge of how to source for capital to set up a business venture (Olise, 2016 & Okwuanaso and Nwazor,2016)

Empowering Youths Through Secretarial/Stenographic Skills
This involves *ability to use memory aids and sources of information, knowledge of typing, ability to write a report proposals, ability to handle telephone and other equipment management, knowledge of keeping imprest and stationery costs control Okwuanaso and Nwazor (2016). However the ventures youths could be comfortably empowered include road side typist, stenographer, telephone operators, transcriber, transcribing machine operator, operation of examination/coaching Centre.*

Empowering Youths Through Home Economics
Home economics is an aspect of vocational education that prepares individual for gainful employment as employer of labour, for self-reliant, for survival in terms of emergency via various skills integration. According to Mba, 2014, youths could be exposed to various skills integration suchs as clothing textile, food and nutrition, child development and families relation, child caring services, in form of operation of kindergarten, nursery and primary schools and home teaching services.. The further elaborate on these skill areas thus; food and nutrition. This include catering and hotel management, operating snack centres or restaurants, baking and confectionaries, food processing and preservation, dietary management and dietetic consultation, anthropometric assessors, child development and family relation, this includes proprietors of primary or secondary schools, school principal, head master or head mistress, director of social/welfare centre, ownership of crèche and day care centres, early marriage training centres, training centres for adolescents and vocational centres. Home management this includes vegetable and flower gardening, managing old people and their homes,interior decoration, day care and nursery management, extension worker and institutional home keepers and so on. Clothing and textile- this includes laundry services, craft work, hat making, beads making, clothing maintenance, tie-dye and baticking, fashion designing, textile and clothing merchandize, traditional and cultural wearing of fabrics. When youths are adequately empowered in the above areas as mentioned by the author, they tends to perform better thereby developing the nation in extending their tentacles in various lives endeavor

Empowering Youths Through Health Skills
Youths could be empowered to perform the following skills in health ventures: as a health worker, practicing nurse in different homes, birth attendance, selling of drugs, environmental aids officer i.e cleaning of sewage and garbage and so on.

Empowering Youths Through Agriculture
According to Egunsola (2018), agriculture is the major source of raw materials (groundnut, cocoa, sorghum, livestock production e.t.c) upon which many industries rely (such as those in textile, fertilizer,

and plastics), automobiles and other agro-allied industries (such as fruits and vegetables, flowers, spices, pharmaceuticals, wild fruits harvesting, food processing and marketing). Also these are entrepreneurial options open to entrepreneurs in the areas of agriculture.

The occupational areas from which an entrepreneur may decide to invest according to Emeruwa (2016) in Egunsola (2018) include marketing of agricultural products in exchange for money as internal/external trade, processing of agricultural products into other goods by changing its form like soap,feedmill for production of animal feeds , bee keeping for production of honey and other beehive products, snail production for supply of protein on dining tables, livestock production, piggery, rabbit, ruminant, poultry and aesthetic birds/animals for milk, meat, egg, skin/leather, decoration, racing, security, games, export, and pharmaceutical (medicine) etc, crop production, annuals, biennials and permanent crops for food, feed and export, fattening of animals and so many others. Aquaculture for production of fish, crabs, crayfish and shrimps to provide protein, horticulture/floriculture to produce vegetables, flowers, landscaping and game reserves, forestry for wild fruits gathering, lumbering and log production for furniture and game reserve. All these entrepreneurial options are available to youths entrepreneurs.

Conclusion

As youths are part of the society at large, they provide assistance to both the families and the society at large. Empowering youths will increase the well-being of the family and employment generating potential of a nation. Empowernment of youths will lead to better standard of lives and public peace. It is a known fact that when youths are properly empowered, virtually, most if not all the social vices disparaging Nigeria's social, economic, and political sphere will definitely become a thing of the past. Also, the issue of graduates unemployment, radicalism, touting and thurgery as well as unnecessary migrating to foreign countries for greener pastures will be minimized. All this will help develop our county socially, significantly reducing capital flights abroad thereby increase government annual budgets in terms of revenues. It will also boost Nigeria's economy, increase global perception and increase per capital income index.

Way Forward

The following solutions were proffered:

1. Government should endeavor to empower unemployed youths to reduce the high rate of criminalty, banditry, poverty and unemployment in the society.
2. Government should establish various acquisition centres so as to expose youths to different skills that adequately sustain in life and as well as the society at large.
3. Government should be capable of assisting families and individuals with grants and loan facilities on completion of training to enable them set up their business ventures
4. Philanthropist, capable businessmen and women should also render assistance as to encourage individual, youths in achieving their life goals.
5. Youths should familiarize themselves with several programmes of the 'Renewed Hope ' of the current federal government so as to benefit maximally from them. Youths should also empower themselves towards meeting up with the current global initiatives of self-reliance, hence creative is wealth.

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ENHANCING YOUTH EMPLOYMENT AND SUSTAINABLE CRIME MANAGEMENT THROUGH APPRENTICESHIP PROGRAMME IN BUSINESS EDUCATION CURRICULUM IN NIGERIA

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Abstract

Apprenticeship programme has proven to be a very good foundation for economic development and political stability in the emerging economies of the world. Apart from enabling the youths to combine study and work, it is a potent means of equipping the youths with basic technical skills for self-employment after graduation and raising entrepreneurs to stem the tide of increasing crime rate in nations of the world. In the light of the above, this paper examined the modes, and effects, of apprenticeship programme in Business Education curriculum in Nigerian Universities on youth employment in a public-private partnership medium and serves as a veritable tool to effectively manage the recurring violent crimes in Nigeria. The study adopted a survey design. Data was obtained through a questionnaire distributed among 200 final year students from three Universities in Ekiti State. This was complemented with relevant literature search. Data obtained were analysed using mean and standard deviation. The study notes that apprenticeship programme is gaining wide acceptance among Business Education students in our universities and is capable of promoting skill acquisition and generate employment for the teeming youths in order to reduce crime rate in the country. It concludes by recommending that government and university managements should support this initiative by including apprenticeship in the school curriculum as a conscious attempt to promote sustainable youth employment, effective crime management and stability in Nigeria.

Keywords: *Apprenticeship, Crime, Employment, Nigeria, Sustainable development*

Introduction

Youth employment remains an important development concern in Nigeria because many young people still face difficulties moving from education into productive, decent and sustainable employment. The challenge extends beyond the absence of jobs to include inadequate work experience, skills mismatch, limited entrepreneurial opportunities and weak links between educational preparation and labour-market requirements. The National Bureau of Statistics (NBS, 2024) reported that youth unemployment among persons aged 15–24 was 6.5% in the second quarter of 2024, while informal employment accounted for 93.0% of total employment and 12.5% of young people were not in employment, education or training (NEET). These figures suggest the employment problem should be considered not only in terms of whether young people have jobs, but the quality, security and sustainability of those jobs.

This places an important responsibility on tertiary institutions of learning to produce graduates with competencies applicable in the workplace, since academic qualifications alone may not guarantee employability where graduates lack practical, workplace-oriented skills. Igwe et al. (2022) emphasised the importance of bridging theoretical knowledge and practical employability skills in Nigerian higher education, a concern particularly relevant to Business Education, whose curriculum is meant to prepare learners for employment, entrepreneurship and effective participation in business and office environments through knowledge and skills in accounting, office administration, entrepreneurship, management, communication and information technology. However, the extent to which these competencies translate into employment and self-employment depends partly on students' opportunities to apply classroom knowledge in authentic work settings.

Recent Nigerian studies support strengthening this practical orientation. Ore (2023) found that Business Education students in public universities in Lagos State needed stronger development of workplace-related soft skills, and that integrating workplace requirements into the curriculum could improve employability. Similarly, Akeke et al. (2023) identified computing and accounting competencies as

important for graduate employability. These findings indicate that Business Education requires stronger links with the world of work, so students develop not only theoretical understanding but also the competence and confidence to perform actual occupational tasks.

One approach capable of strengthening this connection is integrating apprenticeship into the Business Education curriculum. Apprenticeship is a form of work-based learning through which learners acquire occupational knowledge, practical skills and work-related behaviours by participating in real work activities under the guidance of experienced practitioners. It complements classroom instruction by allowing learners to observe business operations, practise occupational tasks, interact with customers, solve workplace problems and gradually develop occupational competence, providing practical application of bookkeeping, marketing, office administration, records management, digital business activities, customer relations and entrepreneurship.

The relevance of apprenticeship to youth employment is supported by recent Nigerian evidence. The World Bank (2025), in its baseline study of the IDEAS apprenticeship programme, identified apprenticeship as an important component of Nigeria's skills-development ecosystem, examining the experiences of apprentices, master crafts-persons and firms. Similarly, Ememe and Fajimi (2022), studying the Learn-Work-Earn apprenticeship initiative in Lagos State, found that government-supported and incentivised apprenticeship could encourage unemployed youths to participate and improve their employment prospects. These findings align with the International Labour Organization's (ILO, 2024) evidence that youth-focused labour-market interventions combining skills development, entrepreneurship and soft skills produce better employment outcomes, particularly in low- and middle-income countries.

Apprenticeship also carries an important entrepreneurial dimension. Irene et al. (2024) found that the Igbo Apprenticeship System provides an experiential environment in which entrepreneurial learning occurs through observation, participation, imitation and mentoring, demonstrating how practical engagement in business activities facilitates skills transfer and entrepreneurial development. Integrating selected apprenticeship experiences into Business Education could therefore let students connect classroom knowledge with actual business practice, applying accounting knowledge to financial record keeping, marketing knowledge to sales and promotion, office administration to document and records management, and entrepreneurship knowledge to opportunity identification, resource management and business decision-making.

The potential relevance of apprenticeship extends beyond employment and entrepreneurship to youth crime prevention. It would be inappropriate to claim unemployment automatically causes crime, or that apprenticeship alone eliminates criminal behaviour, since crime is influenced by several economic, social, family, psychological and institutional factors. Nevertheless, prolonged economic exclusion may increase socioeconomic vulnerability and expose young people to negative social networks and antisocial activities. Nte et al. (2024) highlighted the relationship between youth unemployment, crime incidence and youth-development challenges in Delta State, advocating sustainable youth-development interventions, skills acquisition and curriculum reforms as part of broader responses to youth-related crime.

Against this background, apprenticeship-integrated Business Education may contribute to crime prevention through legitimate economic engagement, occupational skills development, mentorship, workplace discipline and improved employment or self-employment prospects. The argument is not that apprenticeship directly prevents crime, but that it can address some economic and social conditions that increase young people's vulnerability to criminal involvement, making it potentially relevant to a broader strategy of sustainable youth development and social stability.

Despite increasing research on apprenticeship, youth employment and Business Education, an important gap remains. Existing Nigerian studies have largely examined apprenticeship as an informal vocational training system, an instrument of youth empowerment or entrepreneurial learning, while Business Education studies have focused mainly on employability competencies, curriculum effectiveness and workplace readiness. Limited empirical attention has been given to the deliberate integration of apprenticeship into the Business Education curriculum as a combined strategy for improving youth employment, entrepreneurship and crime prevention. The present study, therefore, examines the contribution of apprenticeship-integrated Business Education to youth employment and sustainable crime prevention in Nigeria, with particular attention to final-year Business Education students, recent graduates and lecturers, seeking to provide evidence for a more practical, employment-oriented and socially responsive Business Education curriculum.

Statement of the Problem

Youth unemployment and limited employability remain important challenges in Nigeria, particularly as many graduates leave higher institutions with inadequate practical and workplace skills. Although

Business Education is designed to develop employability, entrepreneurship and occupational competencies, its delivery is still largely dominated by theoretical learning, creating a gap between classroom knowledge and workplace demands. Apprenticeship provides opportunities for learners to acquire practical skills, work experience, business knowledge and professional attitudes through direct engagement with experienced practitioners. However, its systematic integration into Business Education programmes in Nigerian universities remains limited. At the same time, persistent youth unemployment and economic exclusion may increase young people's vulnerability to antisocial and criminal activities. While apprenticeship cannot by itself eliminate crime, meaningful engagement in productive work, mentorship and legitimate income-generating activities may contribute to reducing such vulnerability. The problem, therefore, is the limited empirical attention given to apprenticeship as an integrated component of Business Education for simultaneously strengthening youth employability, entrepreneurship and sustainable crime prevention in Nigeria.

Purpose of the Study

The study aims to examine how the integration of apprenticeship into Business Education can enhance youth employment and contribute to sustainable crime prevention in Nigeria. Specifically, it seeks to determine how apprenticeship can strengthen students' practical skills, employability, entrepreneurial competence and capacity for productive economic engagement, while also identifying the challenges that may hinder its effective integration into Business Education programmes.

Research Questions

1. To what extent are apprenticeship programmes available and integrated into the Business Education curriculum in universities?
2. To what extent does participation in apprenticeship programmes influence youth employment outcomes among Business Education students and graduates?
3. What challenges affect the effective implementation of apprenticeship programmes in Business Education**?**

Significance of the Study

The study is expected to benefit Business Education students and graduates by providing practical skills, workplace experience and entrepreneurial competencies that can improve their employment and self-employment opportunities. It will also assist universities and lecturers in developing more practical and industry-responsive Business Education programmes. Employers may benefit from graduates with stronger workplace competencies, while policymakers may find the findings useful in designing apprenticeship and youth employment policies. The study may further contribute to youth development and crime prevention by promoting productive economic engagement and reducing young people's vulnerability to criminal involvement. It will also provide a useful reference for researchers interested in apprenticeship, Business Education, youth employment and crime prevention.

Literature Review

Apprenticeship is a form of work-based learning through which learners acquire practical, occupational, entrepreneurial and behavioural competencies through direct engagement with experienced practitioners. It complements classroom instruction by enabling learners to observe, practise and apply knowledge in real work situations. The International Labour Organization (ILO, 2024) identifies quality apprenticeship as an important pathway supporting young people's transition from education to employment, particularly in developing economies, noting that its effectiveness depends on appropriate training, mentoring, assessment, certification and strong links between training institutions and employers.

In Nigeria, apprenticeship is an established component of the skills-development system. The World Bank (2025), through its IDEAS Apprenticeship Programme baseline study, identifies apprenticeship as an important part of Nigeria's skills ecosystem and emphasises the need for improved skills development, entrepreneurship, mentoring and institutional support, demonstrating the possibility of linking practical workplace learning with formal education. Integrating apprenticeship into university Business Education could therefore give students opportunities to apply classroom knowledge, develop workplace competencies and acquire practical experience before graduation.

Business Education is expected to prepare students for employment, entrepreneurship and effective participation in business and office activities, yet academic knowledge alone may not adequately prepare graduates for contemporary workplace demands. Ore (2023) found that Business Education students in public universities in Lagos State required stronger workplace-related soft skills, while Akeke, Atah, and Bessong (2023) identified computing and accounting competencies as important for graduate employability. These findings point to the need for practical learning experiences that complement classroom instruction, experiences apprenticeship can provide through workplace

exposure, mentoring, problem-solving, customer interaction, participation in business operations, and exposure to actual entrepreneurial practice.

This need is reinforced by Nigeria's youth employment situation. The National Bureau of Statistics (NBS, 2024) reported a youth unemployment rate of 6.5% among persons aged 15–24 in the second quarter of 2024, while informal employment accounted for 93.0% of total employment. This high level of informality suggests young people require competencies enabling them to function effectively in both formal and informal economic activities. The ILO (2024) similarly identifies the transition from education to decent work as a continuing challenge, recognising skills development, entrepreneurship and work-based learning as important components of employment interventions. Apprenticeship may therefore improve employability by developing practical skills, workplace readiness, adaptability and entrepreneurial competence.

Evidence from Nigeria supports this position. Attah, Anyebe, and Adamu (2023) found that the National Open Apprenticeship Scheme of the National Directorate of Employment contributed to self-employment among youths in Kaduna State. Ememe and Fajimi (2022) examined the Learn-Work-Earn apprenticeship initiative in Lagos State and found the importance of appropriate support and incentives for youth participation. Similarly, Irene et al. (2024) found that entrepreneurial learning in the Igbo Apprenticeship System occurs through observation, participation, imitation and mentoring. Together, these studies indicate that apprenticeship can contribute to employment and self-reliance by combining practical skills with exposure to entrepreneurial activities, though they largely examined government or informal apprenticeship rather than its deliberate integration into university Business Education.

Regional evidence reinforces this value. Ngyah-Etchutambe et al. (2022), studying tailoring apprenticeships in Cameroon, found that informal vocational training could equip unemployed youths with technical and entrepreneurial skills supporting sustainable livelihoods, while also identifying weaknesses in informal training, suggesting apprenticeship outcomes depend on the quality, organisation and support provided within the learning environment. This underscores the need for structured apprenticeship arrangements within formal education, where learning objectives, supervision, assessment and industry participation can be clearly established.

The potential contribution of apprenticeship to crime reduction should be considered within a broader social development perspective. Youth unemployment does not automatically cause criminal behaviour, as crime is influenced by several economic, social and environmental factors. Nevertheless, prolonged unemployment, idleness, poverty and limited legitimate economic opportunities may increase some young people's vulnerability to criminal involvement. Apprenticeship may therefore contribute indirectly to crime prevention by providing productive engagement, marketable skills, employment opportunities, entrepreneurial capacity and legitimate income sources. Nte et al. (2024), studying youth unemployment and crime incidence in Delta State, recommended skills acquisition, entrepreneurship and curriculum reforms as part of broader responses to youth-related crime. Similarly, the UK Foreign, Commonwealth and Development Office (2022) reported that the Mafita Apprenticeship and Community Based Skills Training Programme in Northern Nigeria sought to improve youth income through employment while reducing engagement in crime and violence. These findings suggest apprenticeship may support crime prevention and social stability, though it remains one component of a broader crime-prevention strategy rather than a direct solution.

Despite these potential benefits, effective apprenticeship integration may be constrained by inadequate funding, weak university-industry partnerships, absence of clear policies, limited curriculum space, shortage of qualified workplace mentors, inadequate awareness, poor monitoring, and inadequate facilities and equipment. The World Bank (2025) emphasises institutional support, mentoring, assessment and certification in improving apprenticeship outcomes, while the ILO (2024) stresses employer engagement and quality work-based learning. Strengthening university-industry collaboration, formally integrating apprenticeship into Business Education curricula, providing government funding, engaging industry experts as mentors, establishing monitoring mechanisms, and promoting entrepreneurship-focused apprenticeship are therefore important strategies for improving programme effectiveness.

The reviewed literature shows that apprenticeship can support practical skills acquisition, employability, self-employment, entrepreneurship and productive youth engagement. Nigerian studies have established its relevance to self-employment, entrepreneurial learning and youth development, while Business Education studies have highlighted the need for stronger workplace-oriented competencies; regional African evidence similarly demonstrates its livelihood value. However, limited empirical attention has been given to the deliberate integration of apprenticeship into university Business Education as a combined strategy for improving youth employment, self-reliance and crime prevention, existing studies having focused largely on informal apprenticeship, government-sponsored skills

programmes or general employability competencies. The present study therefore addresses this gap by examining the availability and integration of apprenticeship in Business Education, its influence on youth employment outcomes, its contribution to crime reduction and social stability, the challenges affecting implementation, and strategies for strengthening its integration into university Business Education curricula.

Methodology

Research Design

The study adopted a descriptive survey research design. The design was considered appropriate because the study sought to obtain the views of final-year Business Education students on the availability and integration of apprenticeship programmes in the Business Education curriculum, their influence on youth employment outcomes, their contribution to crime prevention and social stability, as well as the challenges and strategies associated with their implementation. The design enabled the researchers to collect data from the respondents without manipulating the study variables.

Population and Sample

The population of the study comprised 200 final-year Business Education students from three universities offering Business Education programmes in Ekiti State, Nigeria. Since the population was manageable, the study adopted a census sampling technique, whereby all the 200 final-year Business Education students in the three selected universities were included in the study. Thus, the sample size for the study was 200 respondents. The use of the entire population was considered appropriate because it provided the opportunity to obtain comprehensive information from all eligible final-year students within the selected institutions and eliminated sampling bias associated with selecting only a proportion of the population.

Sampling Technique

A multistage sampling procedure was adopted for the study. At the first stage, three universities offering Business Education in Ekiti State were purposively selected because of the availability of the programme and their relevance to the objectives of the study. At the second stage, all final-year Business Education students in the selected universities were identified. Since the total number of eligible students was 200, all the students were included in the study using a census sampling technique. This ensured adequate representation of students across the three selected universities.

Instrument for Data Collection

Data were collected using a researcher-developed questionnaire titled Apprenticeship, Youth Employment and Crime Prevention Questionnaire (AYECPQ), developed based on the study's objectives and research questions. The questionnaire was structured to elicit information on the availability and integration of apprenticeship in the Business Education curriculum, influence of apprenticeship participation on youth employment outcomes, contribution and challenges affecting effective implementation of apprenticeship in Business Education curriculum.

The questionnaire was subjected to face and content validation by experts in Business Education, curriculum studies and educational measurement, who assessed the adequacy, clarity, relevance and appropriateness of the items. Their observations were incorporated into the final version before administration.

Reliability of the Instrument

A pilot test was conducted using respondents who were not part of the main study population but possessed characteristics similar to those of the study respondents. The responses obtained from the pilot test were analysed using Cronbach's Alpha to determine the internal consistency of the questionnaire. A reliability coefficient of 0.70 or above was considered acceptable for the study, indicating that the instrument had adequate internal consistency for data collection.

Data Collection Procedure

The researchers obtained the necessary permission from the authorities of the selected universities before administering the questionnaire. The purpose of the study was explained to the respondents, and they were informed that participation was voluntary and that the information provided would be used strictly for academic purposes. The questionnaires were administered directly to the 200 final-year Business Education students with the assistance of designated research assistants where necessary. The completed questionnaires were retrieved, checked for completeness and properly coded for analysis.

Data Analysis

Data collected from the respondents were analysed using mean and standard deviation.

Results:

Research Question 1: To what extent are apprenticeship programmes available and integrated into Business Education curricula in universities?

Table I: Response on Availability and Integration of Apprenticeship Programmes in Business Education Curriculum

S/N	Item	VHE	HE	LE	VLE	Mean	SD	Remark
1	Business Education students have access to structured apprenticeship programmes during their university training	50	55	35	6	3.02	0.87	High Extent
2	Universities provide opportunities for students to gain practical workplace experience through apprenticeship.	43	59	34	11	2.91	0.91	High Extent
3	Universities provide opportunities for students to gain practical workplace experience through apprenticeship.	55	6	26	3	3.26	0.99	High Extent
4	Industry-based training forms part of practical learning experiences in Business Education programmes.	52	68	24	3	3.15	0.76	High Extent
5	Business Education curriculum incorporates apprenticeship or workplace learning components.	40	73	2	5	3.23	0.68	High Extent
	Grand Mean					**3.11**	**0.84**	

Source: Field work, 2026

From table I, every item scored above 2.50 (the midpoint), respondents believe that apprenticeship programmes are, to a high extent, available and built into the Business Education curriculum. In plain terms: students generally do get access to hands-on, work-based learning as part of their course, though the spread of scores (SD close to 1.0 on some items) shows that not everyone agrees equally, some students clearly experience this more than others.

Research Question 2: To what extent does participation in apprenticeship programmes influence youth employment outcomes among Business Education students and graduates?

Table II: Response on Influence of Apprenticeship Participation on Youth Employment Outcomes

S/N	Item	SA	A	D	SD	Mean	SD	Remark
1	Apprenticeship improves the practical skills and competencies of Business Education students.	94	50	3	0	3.62	0.53	Agreed
2	Students with apprenticeship experience have better employment opportunities after graduation.	58	72	16	1	3.27	0.68	Agreed
3	Apprenticeship improves graduates' workplace readiness.	76	57	14	0	3.42	0.66	Agreed
4	Apprenticeship develops problem-solving and decision-making abilities among students.	65	69	12	1	3.55	0.66	Agreed
5	Apprenticeship enhances entrepreneurial skills among Business Education graduates.	86	53	7	1	3.52	0.62	Agreed
	Grand Mean					**3.48**	**0.65**	

Source: Field work, 2026

In Table II, all five items scored well above 2.50, and the grand mean of 3.48 is close to "Strongly Agree." This means respondents strongly believe that apprenticeship helps young people find jobs and do better once they start working. In plain terms: apprenticeship doesn't just teach students skills, it actually improves their chances of getting employed, being ready for the workplace, solving problems on the job, and even starting their own businesses. The low SD values also show most people agree on this, without much

Research Question 3: What challenges affect the effective implementation of apprenticeship programmes in Business Education?

Table III: Response on Challenges Affecting Effective Implementation of Apprenticeship Programmes

S/N	Item	SA	A	D	SD	Mean	SD	Remark
1	Inadequate funding affects effective implementation of apprenticeship programmes	79	63	4	2	3.48	0.62	Agreed
2	Limited university-industry partnerships hinder apprenticeship opportunities	61	71	11	5	3.27	0.74	Agreed
3	Absence of clear apprenticeship policies affects implementation.	66	62	18	2	3.30	0.73	Agreed
4	Inadequate curriculum space limits apprenticeship integration	60	66	16	6	3.22	0.80	Agreed
5	Shortage of qualified workplace mentors affects programme effectiveness.	65	71	11	1	3.35	0.65	Agreed
	Grand Mean					**3.32**	**0.71**	

Source: Field work, 2026

Table III indicate that all items scored above 2.50, respondents agree that several real problems are stopping apprenticeship programmes from working well. In plain terms: the biggest issue is money, not enough funding is set aside for apprenticeship (this item had the highest mean, 3.48). Close behind are weak links between universities and industries, no clear rules guiding how apprenticeship should run, not enough room in the course timetable for it, and too few skilled mentors at workplaces to guide the students. Together, these challenges are seen as real and significant barriers, not minor complaints.

Discussion of Findings

Here's the passage rewritten as continuous prose, with the sub-headings removed and smooth transitions carrying the reader from one table's findings into the next:

The findings in Table I indicate that apprenticeship programmes are available and integrated into Business Education curricula in universities to a high extent, as shown by the grand mean of 3.11 and standard deviation of 0.84. All the items recorded mean scores above the 2.50 benchmark. The highest mean of 3.26 indicates that universities provide opportunities for students to gain practical workplace experience, while the integration of apprenticeship or workplace learning into the curriculum recorded 3.23. Industry-based training also recorded a relatively high mean of 3.15. These findings suggest that universities have made efforts to complement theoretical instruction with practical workplace experiences. However, the variations in responses suggest that the availability and quality of apprenticeship may differ across students or institutions, implying that apprenticeship provides an important means of connecting classroom knowledge with practical occupational and entrepreneurial competencies required in the world of work.

Building on this, Table II shows that respondents agreed strongly that apprenticeship participation positively influences youth employment outcomes, with a grand mean of 3.48 and standard deviation of 0.65. The highest mean of 3.62 was recorded for improvement in practical skills and competencies, followed by problem-solving and decision-making abilities (3.55), entrepreneurial skills (3.52),

workplace readiness (3.42) and employment opportunities after graduation (3.27). The relatively low standard deviations indicate a high level of agreement among respondents. These findings suggest that apprenticeship helps students develop practical and transferable competencies that improve their preparedness for employment and entrepreneurship, and thus serves as a useful bridge between university education and the labour market. However, since the findings are based on respondents' perceptions, they indicate a perceived positive influence rather than establishing a direct causal relationship between apprenticeship and actual employment.

Despite this generally positive picture, Table III reveals that respondents agreed that significant challenges affect the effective implementation of apprenticeship programmes, with a grand mean of 3.32 and standard deviation of 0.71. Inadequate funding emerged as the most serious challenge (3.48), followed by shortage of qualified workplace mentors (3.35), absence of clear apprenticeship policies (3.30), limited university-industry partnerships (3.27) and inadequate curriculum space (3.22). These findings indicate that although apprenticeship programmes exist, their effectiveness may be constrained by financial, institutional, curriculum and industry-related factors. In particular, inadequate funding may limit student placement, supervision and monitoring, while weak university-industry collaboration may restrict access to relevant workplace experiences; the absence of clear policies and insufficient curriculum space may also affect the systematic integration of apprenticeship into Business Education programmes. Taken together, the findings across the three tables suggest that the major concern is not simply the availability of apprenticeship but the quality, consistency and sustainability of its implementation.

Conclusion

Based on the findings, it is concluded that apprenticeship programmes play an important role in making Business Education more practical, relevant and responsive to labour market demands. The study established that apprenticeship is available and integrated into Business Education curricula to a high extent (grand mean 3.11), showing that universities recognise the value of workplace-based learning, though its availability and quality vary across students and institutions. Participation in apprenticeship also shows a strong perceived positive influence on youth employment outcomes (grand mean 3.48), improving practical skills, workplace readiness, problem-solving, entrepreneurial skills and employment opportunities, positioning apprenticeship as a key link between university education and the labour market. However, significant implementation challenges remain (grand mean 3.32), with inadequate funding the most serious, followed by a shortage of qualified workplace mentors, absence of clear policies, limited university-industry partnerships and inadequate curriculum space. The overall conclusion is that apprenticeship should move beyond being an occasional or supplementary activity and become a properly structured, well-supported component of Business Education. When adequately funded, closely supervised and strongly connected with industry, apprenticeship can substantially strengthen the development of employable, entrepreneurial Business Education graduates.

Recommendations

Based on the findings and conclusions of the study, the following recommendations are made:

1. Universities should formally structure and adequately fund apprenticeship as an integral part of the Business Education curriculum, rather than treating it as an optional activity — with dedicated funding covering student placement, supervision, transportation and learning materials, and sufficient timetable space allocated so this doesn't add unnecessary academic workload.
2. Universities should build stronger, formal partnerships with industry, establishing agreements with banks, business organisations, ICT and accounting firms, and other relevant workplaces to guarantee students regular, quality apprenticeship placements.
3. Clear institutional and national policies should be developed to guide apprenticeship programmes, specifying duration, selection and placement procedures, the responsibilities of students, universities and employers, supervision arrangements, and assessment methods.
4. Qualified workplace mentors should be recruited, trained and paired with strong university monitoring, ensuring students are guided by experienced staff who understand Business Education learning objectives, while academic supervisors regularly assess whether apprenticeship activities — spanning digital skills, communication, teamwork, customer relations and entrepreneurship — are producing the intended competencies.
5. Employers should be encouraged to use apprenticeship as a talent pipeline, and further research should be conducted on actual graduate outcomes — comparing employment rates, job performance and entrepreneurial activity between graduates with substantial

apprenticeship experience and those with little or none, to build stronger empirical evidence of its real impact.

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DIGITAL BUSINESS EDUCATION SKILLS AND WEALTH CREATION AMONG BUSINESS EDUCATION STUDENTS FOR SUSTAINABLE NATIONAL ECONOMIC DEVELOPMENT

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Abstract
The global economy is undergoing rapid digital transformation, altering the nature of business, employment, entrepreneurship and wealth creation. The increasing application of e-commerce, digital marketing, financial technology, business analytics, social media and emerging technologies has made digital competence an essential requirement for participation in the contemporary economy. This position paper examines the role of digital business education skills in promoting wealth creation among business education students as a pathway to sustainable national economic development. Digital business education skills encompass competencies in digital marketing, e-commerce management, financial technology literacy, business analytics, social media management, digital communication, online business development and the effective utilisation of emerging technologies. The paper argues that equipping business education students with these competencies can strengthen their capacity to identify entrepreneurial opportunities, establish technology-enabled enterprises, create employment and generate sustainable income. Evidence from recent Nigerian studies indicates growing relevance of digital entrepreneurial competencies among business education students, although gaps remain in practical training, curriculum relevance, infrastructure and lecturer capacity. The paper further contends that business education curricula must move beyond predominantly theoretical approaches towards practical, experiential and innovation-oriented learning. It advocates curriculum transformation, improved digital infrastructure, lecturer capacity development, industry–institution collaboration, entrepreneurship incubation, access to finance and stronger integration of digital technologies into business education. The paper concludes that strategically repositioning business education around digital and entrepreneurial competencies can contribute to students' self-reliance, sustainable wealth creation, employment generation, economic diversification and national economic development.
Keywords: Digital business education skills, wealth creation, business education students, digital entrepreneurship, e-commerce, digital marketing, sustainable development, national economic development.

Introduction
The global economy is undergoing rapid transformation as a result of advances in digital technologies, changing patterns of production and consumption, and the increasing integration of technology into business activities. Digital technologies have altered how businesses are established, managed, marketed and financed, while also creating new forms of employment and entrepreneurial opportunities. E-commerce, digital marketing, financial technology (FinTech), social media, business analytics, artificial intelligence and other technology-enabled services have increasingly become components of modern business practice. UN Trade and Development (UNCTAD, 2024) observes that digitalisation is transforming how people live, work, learn, consume and conduct business, while also creating opportunities and challenges for inclusive development.

The transformation has significant implications for education. Educational institutions are expected to develop graduates who possess not only disciplinary knowledge but also the digital competencies required to function productively in technology-driven environments. The World Bank (2019), in its Nigeria Digital Economy Diagnostic, identified digital infrastructure, digital platforms, digital financial services, digital entrepreneurship and digital skills as important foundations for Nigeria's digital economy. The report further emphasised that Nigeria possesses considerable potential to use digital technologies to create new businesses, connect individuals with markets and develop sustainable business models.

In Nigeria, the importance of developing digitally competent young people is particularly evident in the context of employment and economic challenges. The International Labour Organization (ILO, 2023) notes continuing challenges associated with youth labour-market outcomes and school-to-work transitions in Nigeria. Similarly, the ILO's assessment of public employment services in Nigeria identified

skills mismatches, low labour productivity and employment challenges as important concerns requiring stronger employment and skills-development systems.

Business education occupies a strategic position in responding to these challenges because of its emphasis on business knowledge, entrepreneurship, management, marketing, accounting, office technology and employability. Traditionally, business education has prepared learners for employment in business organisations and for self-employment through the acquisition of functional business competencies. However, the transformation of the business environment requires a broader conception of business education that integrates digital technologies with conventional business knowledge.

The Nigerian government's National Digital Economy Policy and Strategy (NDEPS) 2020–2030 explicitly recognises digital skills, digital literacy, digital jobs, technology entrepreneurship and digital education as important elements of national economic development. The strategy seeks to promote digital literacy, develop digital education curricula that respond to current and future needs, support technology start-ups and create digital employment opportunities.

Digital business education skills have consequently become increasingly relevant to the preparation of business education students for the contemporary economy. Such skills include digital marketing, e-commerce management, financial technology literacy, business analytics, social media management, digital communication, online business development, cybersecurity awareness and the use of business-related software. Recent Nigerian scholarship reinforces this position. Enang (2023) argues that business education students require digital entrepreneurial skills and competencies to remain relevant in the contemporary digital era and recommends the integration of these competencies into the business education curriculum. Similarly, Falobi (2023) found the need to strengthen business education students' competencies in areas such as digital marketing and e-content development to enable them to explore digital entrepreneurship opportunities effectively.

The relevance of this issue is further demonstrated by recent evidence. Nmerukini, Nnokam and Okah (2026) reported positive relationships between digital marketing, digital content creation, digital communication and wealth creation among business education postgraduate students in Rivers State universities. Adegbokiki and Obadina (2026) also reported that digital skills acquisition significantly predicted business performance and income stability among Business Education graduates of Federal College of Education, Abeokuta. The acquisition of digital business education skills is therefore closely connected with wealth creation. Wealth creation involves generating income, productive assets, enterprises, employment and economic value through productive activities. For business education students, digital competencies can facilitate the transformation of knowledge and innovative ideas into income-generating ventures. It is against this background that this position paper examines digital business education skills and wealth creation among business education students for sustainable national economic development. The paper takes the position that business education should be deliberately repositioned towards a digitally driven, innovation-oriented and entrepreneurship-focused model capable of preparing students not only for employment but also for sustainable wealth creation.

Concept of Digital Business Education Skills

Digital business education skills refer to the knowledge, competencies and practical abilities required to use digital technologies effectively in performing business activities, creating value and exploiting entrepreneurial opportunities. The concept extends beyond basic computer literacy. It encompasses the ability to use digital technologies strategically to identify opportunities, communicate with customers, market products, conduct transactions, analyse information and manage business operations. Key digital business education skills include: Digital marketing, e-commerce management, financial technology literacy; business analytics; social media management; dgital communication; online customer relationship management; digital content creation; business software utilisation; cybersecurity awareness; online business development; and digital innovation.

The OECD (2021) observes that digitalisation is changing business functions and business models and that small businesses need appropriate capabilities to benefit from digital technologies. The organisation also identifies inadequate skills and other barriers as factors that can constrain effective digital transformation. For business education students, digital skills should therefore be regarded as an extension of conventional business competencies. A student should not merely understand marketing principles but should be able to apply those principles through digital platforms. Similarly, understanding accounting should be complemented by the ability to use digital accounting and financial applications.

Digital Business Education Skills and Wealth Creation

Wealth creation involves the generation of income, productive assets, businesses, employment and economic value. Digital business skills can facilitate wealth creation by enabling students to identify opportunities and develop technology-enabled enterprises. Digital platforms have reduced some of the

traditional barriers associated with business establishment and market access. A student with appropriate digital skills can establish an online business, promote products through social media, communicate with customers electronically, receive digital payments and use online tools to manage business operations.

The World Bank (2023) reports that digital technologies can contribute to productive jobs and economic growth in Africa, while stressing that affordable access, digital skills and technologies appropriate to African contexts are necessary to convert connectivity into productive economic outcomes. The implication is that digital skills can transform business education students from passive job seekers into active economic participants. However, skills must be accompanied by access to infrastructure, finance, markets and appropriate institutional support.

Digital Marketing Skills and Wealth Creation

Digital marketing involves using digital channels and technologies to communicate with customers, promote products and services, build brands and facilitate sales. Digital marketing provides business education students with opportunities to reach customers beyond their immediate geographical locations. Social media marketing, email marketing, search engine optimisation, online advertising and content marketing can be used to create awareness and generate sales. Students with digital marketing competencies can also establish service businesses by providing digital marketing services to small and medium-sized enterprises. Consequently, digital marketing creates opportunities for both direct entrepreneurship and professional self-employment.

Nmerukini et al. (2026) found a positive relationship between digital marketing and wealth creation among business education postgraduate students, reinforcing the argument that digital marketing competence has potential economic value. Therefore, digital marketing should be taught through practical activities rather than being restricted to theoretical classroom instruction.

E-Commerce Skills and Entrepreneurial Opportunities

E-commerce refers to the buying and selling of goods and services through electronic networks, particularly the internet. It has transformed the relationship between businesses and consumers by enabling transactions across geographical boundaries. For business education students, e-commerce skills can provide opportunities to establish online stores, manage digital catalogues, process electronic orders, communicate with customers and coordinate delivery. UNCTAD (2024) highlights the growing significance of e-commerce within digital transformation while emphasising that digitalisation needs to be inclusive and sustainable. Falobi (2023) also identified the need to strengthen business education students' skills for exploiting e-commerce opportunities and recommended enhanced training in digital marketing and related competencies. Consequently, e-commerce should be integrated into business education through practical projects such as developing online stores, managing product listings, conducting digital transactions and designing e-commerce business plans.

Financial Technology Literacy and Wealth Creation

Financial technology refers to the application of technology to financial services. Examples include mobile banking, electronic transfers, digital wallets, point-of-sale services and other electronic payment systems. FinTech literacy enables student entrepreneurs to conduct transactions efficiently, maintain digital financial records and interact with customers and suppliers through electronic channels. The World Bank's Nigeria Digital Economy Diagnostic identified digital financial services as one of the foundational pillars of Nigeria's digital economy. However, FinTech education must go beyond the use of payment applications. Students should understand digital financial security, fraud prevention, data privacy, financial planning and responsible use of digital financial services.

Business Analytics and Decision-Making

Business analytics involves the collection, processing and interpretation of business data to support decision-making. Business education students can use analytical tools to understand customer behaviour, monitor sales, identify profitable products, evaluate marketing campaigns and determine business trends. This competency is particularly important because digital businesses generate large volumes of information. Entrepreneurs who cannot interpret available information may make poor decisions even when they possess other digital skills.Business education should therefore expose students to spreadsheet applications, data visualisation, dashboards and other accessible analytical technologies.

Social Media Management and Business Development

Social media has become a major environment for business communication, marketing and customer engagement. Business education students can use platforms such as Instagram, Facebook, TikTok, LinkedIn and other networks to promote products and services. Social media skills can also become a source of self-employment. Students can provide social media management, content creation, online advertising and digital brand-management services to businesses.

Nmerukini et al. (2026) identified digital communication and content creation alongside digital marketing as relevant competencies associated with wealth creation. Business education should therefore teach students how to create effective content, manage online communities, analyse engagement, protect brand reputation and communicate ethically online.

Digital Innovation, Creativity and Wealth Creation

Digital competence becomes more economically valuable when combined with creativity and innovation. Creativity enables students to generate ideas, while innovation involves converting useful ideas into products, services or processes that create value. Business education students can apply digital technologies to develop solutions in areas such as education, agriculture, retail, transportation, financial services and professional services.

The World Bank (2019) emphasises that Nigeria can use digital data and new technologies to create new content, connect people with markets and develop sustainable business models. Business education should therefore encourage students to identify real-world problems and develop technology-enabled solutions rather than focusing primarily on memorisation and examination performance.

Digital Skills, Employability and Self-Employment

Digital business skills can provide students with multiple pathways into the labour market. A graduate with digital marketing, e-commerce, business analytics and FinTech competencies can work for an organisation, freelance or establish a personal enterprise. The ILO (2021) Nigerian Youth Employment Action Plan identifies employability, entrepreneurship and employment among the priority areas for improving youth employment outcomes.

The importance of combining employability and entrepreneurial skills is therefore clear. Business education should prepare students not merely to search for available employment but also to create employment and economic opportunities.

Recent evidence from Nigeria indicates that the digital work economy is already providing students with opportunities for freelancing, online work and entrepreneurship, although structural and institutional barriers continue to restrict participation.

Digital Business Education Skills and Sustainable National Economic Development

Sustainable national economic development requires productive human capital, innovation, employment, entrepreneurship, productivity and economic diversification. Digital business education can contribute to these objectives by producing graduates capable of operating in technology-driven economic environments. Students who create digital businesses can generate income for themselves and potentially create employment for others.

The World Bank (2023) notes that increased internet availability in Nigeria has been associated with improvements in labour-force participation and wage employment, while emphasising the need for digital skills and productive digital use. Similarly, Nigeria's NDEPS 2020–2030 identifies digital skills, digital entrepreneurship, digital jobs and technology-driven innovation as important components of national development. Thus, strengthening digital business education should be viewed as part of a broader human-capital strategy for sustainable economic development.

Theoretical Foundation

Human Capital Theory

The position of this paper is consistent with Becker's Human Capital Theory. Becker (1993) conceptualised education and training as investments in human capabilities that can improve productivity and economic returns. Applied to business education, digital skills represent an investment in students' human capital. Students who acquire relevant digital competencies can potentially become more productive workers and more capable entrepreneurs. From this perspective, investment in digital business education should not be regarded simply as educational expenditure. It is an investment in productive human capacity that can generate individual and societal economic returns.

Theory of Planned Behaviour

The Theory of Planned Behaviour (Ajzen, 1991) provides another useful foundation. Ajzen argues that behaviour is influenced by attitudes, subjective norms and perceived behavioural control, with intentions playing an important role in predicting behaviour.In relation to digital entrepreneurship, students' attitudes toward digital business, social support and their perceived ability to perform digital entrepreneurial activities can influence their intentions to establish businesses. Digital skills can therefore strengthen perceived behavioural control by making students feel more capable of identifying opportunities, developing digital products, marketing online and managing technology-enabled businesses.

Challenges Limiting Digital Business Skills Development

Despite the potential benefits, several challenges may limit the effectiveness of digital business education.

Inadequate Digital Infrastructure: Poor internet connectivity, insufficient computers, limited access to digital platforms and unreliable electricity can restrict practical digital learning.
Theory–Practice Gap: Some entrepreneurship programmes remain predominantly theoretical. Recent Nigerian evidence indicates that entrepreneurship education may increase awareness of business opportunities while still providing limited exposure to practical digital marketing, e-commerce and data analytics.
Inadequate Lecturer Capacity: Digital technologies change rapidly. Lecturers therefore require continuous professional development to remain current with emerging digital business practices.
Limited Access to Finance: Students may possess viable business ideas and digital skills but lack the capital required to establish and expand their enterprises.
Curriculum Gaps: Business education curricula need continuous revision to accommodate emerging competencies such as artificial intelligence, e-commerce analytics, digital payments, cybersecurity and digital entrepreneurship.
Cybersecurity and Digital Risks: Digital entrepreneurs are exposed to cyber fraud, identity theft, data breaches and other online risks. Digital business education must therefore incorporate cybersecurity and ethical digital practices.
Digital Inequality: Unequal access to devices, connectivity and digital learning opportunities can create disparities among students.

Strategies for Strengthening Digital Business Education

Curriculum Transformation: Business education curricula should integrate digital marketing, e-commerce, FinTech, business analytics, artificial intelligence, cybersecurity and digital entrepreneurship. Nigeria's NDEPS specifically calls for digital education curricula that meet current and future requirements of the digital economy.
Practical and Experiential Learning: Students should participate in: Digital business simulations; e-commerce projects; digital marketing campaigns; startup development; online business projects; business analytics exercises; social media campaigns; and industry-based projects. Recent research on entrepreneurship education in Nigeria supports stronger experiential learning as a means of improving entrepreneurial competencies and employability.
Lecturer Capacity Development: Institutions should organise regular training, workshops, industry attachments and professional certification programmes for business education lecturers.
Industry–Institution Collaboration: Universities and colleges should collaborate with banks, FinTech companies, e-commerce firms, digital marketing agencies, technology companies and entrepreneurship hubs. The World Bank (2023) specifically identifies industry-academia partnerships as relevant to developing digital skills and improving job placement.
Entrepreneurship Incubation Centres: Business education departments should establish or strengthen entrepreneurship incubation centres where students can transform classroom ideas into practical business ventures.
Access to Digital Infrastructure: Institutions need reliable internet connectivity, appropriate devices, relevant software and stable electricity to support effective digital learning.
Start – up Funding: Students should have access to grants, competitions, entrepreneurship funds, mentorship and partnerships with financial institutions.
Digital Ethics and Cybersecurity: Digital business education should include data protection, cybersecurity, intellectual property, online ethics, digital fraud prevention and responsible technology use.

Conclusion

Digital transformation is redefining the skills required for participation in modern economic activities. Business education, because of its orientation towards business knowledge, entrepreneurship, management, employability and vocational competence, is strategically positioned to prepare students for this transformation. Digital business education skills—including digital marketing, e-commerce, FinTech literacy, business analytics, social media management, digital communication and digital innovation—can provide students with important competencies for creating and sustaining income-generating ventures.
The paper concludes that business education should no longer be understood simply as preparation for conventional office and business occupations. It should increasingly serve as an avenue for developing digitally competent entrepreneurs, innovative employees, freelancers, business owners and wealth creators.

Suggestions

To achieve this objective, government and educational institutions must strengthen digital infrastructure, update curricula, develop lecturers' competencies, promote practical learning, facilitate industry collaboration and improve students' access to entrepreneurship support.

Ultimately, investment in digital business education is an investment in human capital, entrepreneurship, employment and national economic productivity. When business education students are equipped with relevant digital and entrepreneurial competencies and provided with an enabling environment, they can move from being predominantly job seekers to becoming creators of businesses, employment, income and economic value. This makes digital business education an important instrument for sustainable wealth creation and national economic development.

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IMPLICATIONS OF FUEL SUBSIDY REMOVAL ON ACADEMIC ENGAGEMENT AND WELFARE OF FINAL YEAR BUSINESS EDUCATION STUDENTS IN UNIVERSITIES IN EDO AND DELTA STATES, NIGERIA

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Abstract
This study examined the perceived effects of fuel subsidy removal on the academic engagement and welfare of final year Business Education students in universities in Edo and Delta States.with particular attention to academic engagement, food prices, transportation costs and welfare conditions. A descriptive survey design was used. The study population comprises 270 final year Business Education students, the entire population was used for the study because the size was manageable, hence, census. The instrument used for the study was structured questionnaire designed by the researcher, the instruments was validated by three expert. Data were collected using structured questionnaire whose reliability coefficient was established at 0.78 using Cronbach's alpha. Data were analyzed using mean and standard deviation. The findings from the study revealed that the removal of fuel subsidy have adverse effects on the academic engagement and welfare condition of final year business education students in Edo and Delta States. The results also revealed that food prices and transportation costs has increased following subsidy removal. The results further indicate dissatisfaction with the adequacy of government palliative measures, although respondents agreed that government shall review policies to protect low-income groups. Therefore, the study recommends targeted social protection, affordable public transportation, reduce food prices transparent reinvestment of fiscal savings, and measures that increased welfare condition of students.
Keywords: *fuel subsidy removal, academic engagement, student welfare*

Introduction

The fuel subsidy regime in Nigeria was first introduced in the 1970s as a response to the oil price shock of the 1970s. For many years, fuel subsidy has been a key component of Nigeria's economic strategy, mainly to help citizens afford the high price of petroleum products. Fuel is an important input into Nigeria's economic and social activities. Petroleum products are used directly for transportation, electricity generation, processing, distribution and household activities. The government spent a lot of money on fuel subsidies to keep the fuel costs low for the benefit of the people and businesses. It was intended to shield Nigerians from the volatility of world oil prices, which may result in a significant increase in fuel prices (Olaniyi, 2023). The weight of the subsidy put tremendous strain on the national budget and increased the amount of public debt in the country. The substantial financial cost of a fuel subsidy is one of the main arguments against the subsidy regime. Every year, the Nigerian government spends billions of dollars on fuel subsidies, money that could be used for infrastructural development, healthcare, education and other vital areas (Adebayo &Okwu, 2023). The national budget has been strained by these subsidies, which has led to an increase in the national debt. Ekong and Usman (2023) claim that the nation's economic growth has been impeded and its dependence on oil exports has grown as a result of the fuel subsidy and frequent overspending in other important areas. The intended benefits are further undermined by inefficiencies in the subsidy system, including fraud, corruption and the smuggling of subsidized petroleum to neighboring countries, which exacerbate the fiscal imbalance (Ajayi, 2023).

For several decades, Nigeria maintained a fuel subsidy regime intended to make petroleum products relatively affordable to consumers. Although the policy provided consumers with protection from fuel price increases, the subsidy also imposed considerable fiscal costs on government. The World Bank (2023) reported that the subsidy reform was intended to restore fiscal space and improve

macroeconomic stability, while emphasizing that vulnerable household would require compensatory measures because higher petrol prices would impose immediate welfare costs.
Arising from this opposition to the subsidy regime, on May 29, 2023, President Bola Ahmed Tinubu announced in his inaugural speech that he would make the famous statement “fuel subsidy is gone”, as part of his economic reform agenda. He argued that the subsidy was unsustainable and inefficient and that the funds saved from it would be invested in public infrastructures and social welfare. The decision was viewed by the administration as a crucial step in addressing Nigeria's budget deficits, advancing economic reforms, and building a more sustainable economic development for the country (Ozili&Obiora, 2023). Despite the long-term benefits of the subsidy removal of increase in government revenue and investment the funds from the removal in social infrastructure, the immediate impact of fuel subsidy removal has been felt throughout the country and students in Nigerian Universities were not spared from this sharp turn of event. The effects of the policy extend beyond motorists and households that purchase petrol directly. The economic reality of students in the university campuses, particularly in Edo and Delta States changed automatically, students in universities grappled with increases in the price if transportation, food, water, beverages, learning materials and all other essentials (Ozili&Obiora, 2023). Fuel is an important component of the cost of transporting people, food, farm inputs and other commodities. A rise in transportation costs therefore influences the prices of essential commodities, higher transportation cost and food prices can reduce real purchasing power, exposing many students to serious economic challenges that threaten students’ academic engagement and their capacity to learn.The policy shift by the President Bola Ahmed Tinubu administration seems to represents a pivotal moment for education and academic survival of many students, with significant implications for teaching, learning and classroom activities. The aftermath of this decision is a high rate of inflation, a high cost of transportation, and an increase in the prices of goods and services (Ogwuche, Adejor, Dabish, Garba, & Dola, 2024).

The immediate aftermath saw sharp increases in the price of petroleum products, triggering a domino effect on transportation, food prices, healthcare costs, and other basic services (Ojo, 2024). These price hikes disproportionately affect final year students, whose pocket monies and allowance from parents are insufficient to absorb the high cost research project and final year obligations, thereby exacerbating the feeling of frustration and economic helplessness for students (Adeyemi & Oladipo, 2024). Increased transportation costs translate directly into higher prices to get to class, undermining both food security and academic engagement for many students (Bello, 2023). Moreover, the ripple effects have thus compounded poverty levels and reduced the quality of life for many students (Ibrahim & Yusuf, 2023).

Students experience these indirect effects because they depend on transportation to attend lectures, purchase food, access accommodation and obtain educational materials. Students with limited income may be particularly vulnerable to increases in transport and food expenditure because they have relatively little capacity to absorb unexpected increases in living costs. The World Bank (2024) similarly warned that without adequate compensation, vulnerable Nigerian households could experience reduced consumption and adopt coping strategies that may have longer-term welfare consequences. Therefore, the study examines the effects of fuel subsidy removal on academic engagement and welfare of final year Business Education students in the Universities in Edo and Delta States.

Statement of the Problem

The removal of fuel subsidy in Nigeria was introduced as part of broader economic reforms aimed at reducing fiscal pressure and improving the sustainability of public finances. However, the immediate adjustment involved substantial increases in petrol prices. The central problem is that fuel price increases do not remain confined to the petroleum market. They are transmitted through transportation and production costs to food and other essential commodities. The students are vulnerable groups because increased transport fares, food prices and general cost of living may reduce disposable income and make it more difficult for students to meet educational and basic living expenses. fewer studies have examined the welfare implications among university students and this creates a useful research and policy gap. Therefore, the present study addresses the question of how fuel subsidy removal has affected the academic engagement, cost of living, transportation and welfare of final year business education students in universities in Edo and Delta States.

Objectives of the Study

The main objective of the study was to examine the effects of fuel subsidy removal on the Academic engagement and welfare of final year Business Education students in Edo and Delta States. The specific objectives were to:

1. Examine the effect of fuel subsidy removal on the Academic engagement of final year Business Education students
2. Examine the effect of fuel subsidy removal on food prices of final year Business Education students
3. Examine the effect of fuel subsidy removal on transportation costs of final year Business Education students
4. Examine the effect of fuel subsidy removal on the welfare conditions of final year Business Education students
5. Examine students' perceptions of government measures intended to mitigate the effects of fuel subsidy removal

Research Questions

The following research questions guided the study:

vi. What is the perceived effect of fuel subsidy removal on the Academic engagement of final year Business Education students
vii. What is the perceived effect of fuel subsidy removal on food prices of Business Education students
viii. What is the perceived effect of fuel subsidy removal on transportation costs of final year Business Education students
ix. What is the perceived effect of fuel subsidy removal on the welfare conditions of final year Business Education students
x. How do students perceive the adequacy of government measures introduced to mitigate the effects of fuel subsidy removal?

Conceptual Framework

The conceptual position of this study is that fuel subsidy removal represents an economic shock that is transmitted through several channels before affecting welfare condition.
The framework is expressed as:

Fuel subsidy removal
↓
Higher petroleum prices
↓
Transmission channels
Higher transportation costs
Higher food prices
↓
Student economic effects
Reduced real income
Reduced purchasing power
Increased food expenditure

Increased transport expenditure
Increased financial stress
↓
Welfare outcomes
Reduced standard of living
Reduced quality of life
Greater difficulty meeting educational needs
Reduced economic resilience
↓
Policy response
Social protection
Cash transfers
Affordable transportation
Transparent reinvestment of subsidy savings

Theoretical Framework

The study is anchored with welfare economics perspective which was propounded by the English Economist Arthur Cecil Pigou in 1920. Welfare economics is concerned with how economic policies affect the well-being and economic welfare of individuals and households. Therefore, the theory is appropriate for this study because fuel subsidy removal can potentially generate long-term fiscal and

economic benefits by reducing government expenditure and creating fiscal space for productive investment. The World Bank has emphasized that subsidy reform can contribute to fiscal sustainability and macroeconomic stability, while also warning that the immediate adjustment costs can disproportionately affect vulnerable households. From a welfare perspective, the important question is therefore not simply whether subsidy removal produces fiscal savings, but whether the benefits and costs are distributed equitably. A policy can improve public finances while simultaneously imposing substantial short-term costs on students and low-income households. Students may face higher food prices because transportation and production costs are transferred through the supply chain. The theory is therefore appropriate because the study examines the relationship between an economic policy reform and perceived changes in academic engagement, prices, transportation and welfare condition.

Methodology

The study used descriptive survey research design. The design was considered appropriate because the study sought to obtain respondents' perceptions regarding the effects of fuel subsidy removal on educational engagement, food prices, transportation and welfare condition. The population comprises of all two hundred and seventy (270) final year Business Education students in four (4) public universities in Edo and Delta states offering Business Education programmes, these universities are; University of Benin, Benin City Edo State, Ambrose Alli University (AAU), Ekpoma, Edo State, Delta State Universities (DELSU), and University of Delta (UNIDEL) Agbor, Delta State. The sample size of the study comprises all two hundred and seventy (270) final year business education students drawn from; University of Benin (47) students Ambrose Alli University (110) students, Delta State University (94) and University of Delta (19) students. The entire population was used for the study because the size is manageable, hence, a census.

The instrument used was a structured questionnaire designed by the researcher based on the objectives and research questions of the study. The instrument was developed around the research questions and focused on Academic engagement and purchasing power, cost of living, food prices, transportation, welfare conditions, and government policy. The response options for the respondents in the questionnaire consists of several items printed in a definite order using 5point likert scale and the questionnaire was ranked on a scale of (5) representing SA- Strongly Agree (4) representing A- Agree, (3) representing U-undecided, (2) representing D-Disagree and (1) representing SD-Strongly Disagree. The instrument was validated by three experts from faculty of vocational and technical education, a Cronbach's alpha reliability coefficient of 0.78 indicating acceptable internal consistency for the instrument. The questionnaire was administered by the researcher directly to the respondents and retrieved within approximately two weeks. Data were analyzed using descriptive statistics of mean and standard deviation. A criterion mean of 2.50 was as benchmark for decision making on the 5point likert scale. Any calculated mean value of items equal or greater than 2.50 was regarded as agreed while any calculated mean value less than 2.50 was regarded as disagree.

Results and Discussion

1. Perceived Effect of Fuel Subsidy Removal on Academic engagement

Table 1: Perceived Effect of Fuel Subsidy Removal on Academic engagement

S/N	Statement	Mean	SD
1	Fuel subsidy removal has reduced my regular attendance of class.	2.64	1.873
2	The long walk to school has reduced my punctuality	3.04	1.944
3	Fuel subsidy removal has reduced affordability of learning materials.	2.67	1.791
4	Fuel subsidy removal has impacted my participation in classroom activities.	2.41	1.440
5	Fuel subsidy removal has reduced my devoted time for study.	2.89	1.923

Source: Field survey

The results indicated a generally negative perception of the immediate academic engagement consequences of fuel subsidy removal. The highest mean score was recorded for the statement that the long walk to school has reduced students' punctuality with a mean score of (3.04), followed by the perception that fuel subsidy removal has reduced students'' devoted time for study with mean score of (2.89). Respondents agreed that Fuel subsidy removal has reduced affordability of learning materialswith a mean score of (2.67). The respondents also responded thatFuel subsidy removal has reduced students' regular attendance of class with a mean score of (2.64). In contrast, the mean score of (2.41) was obtained for the statement that Fuel subsidy removal has impacted students' participation in classroom activities was interpreted as disagreement.

2. Perceived Effect on Food Prices and Cost of Living

Table 2: Perceived Effect of Fuel Subsidy Removal on Cost of Living

S/N	Statement	Mean	SD
1	The cost of daily living has increased beyond my income level.	2.73	1.849
2	Food prices increased immediately after the removal of the fuel subsidy.	2.80	1.923
3	High fuel prices have increased the cost of moving goods and services.	3.06	1.948
4	Low-income households are the most affected by rising food prices.	2.79	1.801

Source: Field survey

All four items received mean scores within the agreement range. The strongest response by the respondents was that high fuel prices increased the cost of moving goods and services with a mean score of (3.06). Respondents also indicated that there was an increase in food prices after the removal of the fuel subsidy with a mean score of (2.80). The respondents also indicated that low-income households are the most affected by rising food prices with mean score of (2.79) and also the respondents indicated that the cost of daily living had raised beyond their income levels with a mean score of (2.73).

3. Perceived Effect on Transportation cost

Table 3: Perceived Effect of Fuel Subsidy Removal on Transportation cost

S/N	Statement	Mean	SD
1	Transportation cost has contributed to higher food prices.	3.04	1.937
2	Transportation fares increased significantly after fuel subsidy removal.	2.80	1.923
3	Transport workers transferred fuel cost burdens to passengers.	2.74	1.878
4	Transportation challenges have reduced economic activities.	2.59	1.798
5	Increased transport costs affect my school/work attendance.	2.91	1.902

Source: Field survey

The respondents generally agreed with all five transportation-related statements. The highest mean score was recorded that transportation costs contributed to higher food prices with a mean score of (3.04). Respondents also agreed that increased transportation costs affected school or work attendance with a mean score of (2.91). The findings indicated transportation fares increased significantly after fuel subsidy removal with a mean score of (2.80). It was also indicated by the respondents that transport workers transferred fuel cost burden to passengers with a mean score of (2.74). The findings also indicated that increased transportation challenges have reduced economic activities with a mean score of (2.59).

4. Perceived Effect on Welfare Conditions

Table 4: Perceived Effect of Fuel Subsidy Removal on Welfare Conditions

S/N	Statement	Mean	SD
1	Access to healthcare has become more difficult due to transport costs.	2.56	1.783
2	The quality of life of students and households has worsened.	2.66	1.718
3	Social welfare conditions have declined since subsidy removal.	2.67	1.726
4	Palliative measures provided by government were adequate.	2.40	1.517

Source: Field survey

The findings from the result indicated that social welfare conditions have decline since subsidy removal with a mean score of (2.67). The respondents have agreed that the quality of life of students and households has worsened with a mean score of (2.66). The results indicate agreement that respondents have agreed that access to healthcare has become more difficult due to transport costs with a mean score of (2.56). However, the mean score of 2.40 for the adequacy of government palliatives falls below the original study's stated agreement threshold. Therefore, this item should be interpreted as indicating that respondents did not generally perceive government palliatives as adequate.

5. Perceptions of Government Mitigation Measures

Table 5: Perceptions of Government Policies for Mitigating the Effects of Fuel Subsidy Removal

S/N	Statement	Mean	SD
1	Government introduced immediate policies to cushion the effects of subsidy removal.	2.41	1.546
2	Long-term policies are capable of addressing the hardship caused by subsidy removal.	2.51	1.491
3	Government investment in infrastructure can reduce the impact of subsidy removal.	2.41	1.450
4	Effective policy implementation can mitigate the negative effects of subsidy removal.	2.13	1.454
5	Alternative economic measures should have preceded subsidy removal.	2.34	1.531
6	Government should review the policy to protect low-income earners.	2.84	1.815

Source: Field survey

The results indicate generally weak confidence in the adequacy of government mitigation measures. Five of the six items recorded relatively low mean scores, while the highest mean score of (2.84) was recorded for the recommendation that government should review the policy to protect low-income earners. The second item, concerning the capacity of long-term policies to address hardship, recorded a mean score of (2.51) and therefore should not be classified as disagreement under the original decision rule. The results suggest that respondents distinguish between the potential of policy interventions and their perceived effectiveness. Government investment in infrastructure, transportation and social protection can reduce the transmission of fuel-price increases into household welfare. However, the effectiveness of such interventions depends on targeting, implementation, transparency and timeliness.

Results and Discussion

The findings demonstrate a consistent pattern, respondents perceived fuel subsidy removal as having reduced students' regular attendance of class, the long walk to school has reduced punctuality and participation in classroom activities. The results also suggest thatFuel subsidy removal has reduced affordability of learning materials and students' devoted time for study. The increase in fuel prices raises the operating costs of transport providers, which may be transferred to students and other passengers and businesses. Businesses may subsequently pass increased logistics costs to students through higher commodity prices.The findings has corresponded with the argument of Idris, Rabi, and Nura, (2024) who stated that the removal of fuel subsidies have set the prices of goods and services, which results in high inflation rate.

The findings also have implications for food security. When transportation and production costs increase, food prices may rise. Students and other consumers with low or fixed incomes may then reduce the quantity or quality of food consumed. The vulnerable households could respond to subsidy-related price increases by reducing nutritious dietary choices and other essential expenditures. The results therefore point to a policy dilemma. Subsidy removal can improve fiscal sustainability, but the short-term welfare costs can be considerable. The appropriate policy response is not necessarily to restore a broad fuel subsidy. Instead, savings generated by reform should be transparently redirected toward targeted interventions that address the channels through which fuel-price increases affect vulnerable groups. Omotosho, (2020) warns that removing subsidies could heighten macroeconomics instability, leading to increase energy prices and inflation

Higher transport fares directly increase the cost of mobility, but the effect is broader because transportation is an input into almost every stage of economic activity. Higher fares can increase daily educational expenditure and may reduce students' ability to travel frequently to campus and thus affects the students' access to education.A major negative microeconomics implication of fuel subsidy removal is the potential rise in poverty particularly in the short term (Raji, 2018)

The broader policy literature emphasizing the need for social protection during subsidy reform and compensatory measures are necessary to protect vulnerable households from the immediate effects of higher fuel prices. The implication is that subsidy reform should be accompanied by measures capable of reaching affected groups efficiently and transparently. This is in tandem with ofAdepoju, and Oloyede, (2021) that Social safety nets, such as the National Social Investment Program (NSIP), including the conditional cash transfer (CCT) scheme has been proposed as tool to mitigate the impact of subsidy reforms.

Conclusion

The study revealed that removal of fuel subsidy negatively impacted the academic engagement of final year business education students in the University of Benin, Benin City, Edo state, Ambrose Alli University Ekpoma, Edo State, Delta State University, Delta State and University of Delta, Agbor, Delta state. The findings indicate that the removal of fuel subsidy has increased financial hardship, reduced real purchasing power and worsened living conditions on students. Respondents also perceived increases in food prices and transportation costs. Transportation emerged as a particularly important channel because respondents linked higher transport costs with increased food prices and reduced mobility. The study further indicates that respondents did not generally consider government palliative measures adequate, while there was considerable support for greater protection of low-income groups. The central policy implication is that fuel subsidy reform should be accompanied by carefully targeted measures that reduce the welfare burden on vulnerable groups and improve the efficiency of agricultural and food supply chains. The long-term success of subsidy reform should therefore be evaluated not only in terms of fiscal savings but also in terms of its effects on food security, transportation, welfare and academic engagement of students.

Recommendations

Based on the findings the study recommends that:

3. Government should strengthen targeted social protection programmes. Cash transfers and other forms of assistance should be targeted at households and groups most affected by increases in transportation and food costs.
4. Affordable public transportation should be expanded. Federal, state and university authorities should explore affordable transportation systems for students and other vulnerable groups.
5. Subsidy savings should be transparently reinvested. Resources released through subsidy reform should be channeled into infrastructure, social protection, education, health and other productive sectors, with transparent monitoring of expenditure.
6. Government should strengthen monitoring of food-price transmission. Regular monitoring of fuel prices, transportation costs, and food prices would enable policymakers to identify where excessive cost increases occur along the supply chain.

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YOUTH EMPOWERMENT FOR SECURITY AND ECONOMIC DEVELOPMENT IN DELTA STATE, NIGERIA

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Abstract

This study examined youth empowerment as a strategic tool for promoting security and economic development in Delta State, Nigeria. The primary purpose was to assess how youth empowerment programs enhance economic opportunities and contribute to national and community security. The study was guided by two research questions exploring the relationship between youth participation in empowerment initiatives and outcomes in employment, entrepreneurship, income generation, and engagement in crime or civic activities. The hypothesis tested at a significance level of 0.05 posited that youth empowerment has a significant positive impact on both economic development and security outcomes. A mixed-method research design was adopted, integrating quantitative surveys of 400 youths with qualitative interviews of program facilitators and community leaders to provide a holistic understanding of program effects. The population included youths aged 18–35 participating in state-sponsored and non-governmental empowerment programs across Delta State. Findings indicate that participants experienced higher employment rates, increased business ownership, and improved income levels compared to non-participants. Statistical analyses revealed a strong positive and significant impact of youth empowerment on economic development, while regression results confirmed its predictive role in enhancing security outcomes. Qualitative insights further highlighted that participation in empowerment programs reduced youth involvement in crime and anti-social behaviors while fostering civic engagement and peace-building initiatives. The study concludes that youth empowerment functions both as a developmental strategy and a preventive security mechanism. Programs that integrate economic, social, and civic components are more sustainable and impactful. Based on these findings, the study recommends that policymakers prioritize comprehensive youth empowerment initiatives to stimulate inclusive economic growth, strengthen social cohesion, and ensure long-term stability in Delta State.

Keywords Youth Empowerment, Economic Development, National Security, Employment and Entrepreneurship, Civic Engagement

Introduction

Youth empowerment has increasingly become a strategic priority in Delta State, given the country's demographic realities and socio-economic challenges. With a population where over 60% are under the age of 25, the youth represent both a potential engine for national development and a source of vulnerability if inadequately engaged. Adebayo and Olowu (2023) emphasize that this demographic group *"*constitutes the largest reservoir of human energy and creativity, capable of driving national transformation if appropriately empowered." Yet, despite this potential, the realization of youth contributions remains limited due to systemic barriers, including chronic unemployment, underemployment, poor access to quality education, and widespread social exclusion. As Okorie (2024) observes, *"*While Delta State youths represent the greatest reservoir of energy and innovation, without deliberate empowerment strategies they risk becoming the most significant source of social unrest and security vulnerability." This framing positions youth empowerment not only as a developmental necessity but also as a preventive strategy for social stability.

Youth empowerment directly to national security, highlighting that economic and civic inclusion reduces vulnerability to recruitment by criminal networks, insurgent groups, and anti-social actors. Ezeamama (2025) argues that "Youth empowerment is both a security imperative and a developmental strategy, for it links social inclusion with economic productivity." Similarly, Okafor and Adefemi (2025) note,

“Empowered young people are not only better equipped to secure livelihoods but are critical agents in curbing violent extremism and strengthening community peace structures.” These perspectives illustrate a paradigm shift: youth empowerment is now understood as a holistic intervention encompassing economic, social, and security dimensions. To operationalize empowerment, interventions in Delta State have included vocational skills training, entrepreneurship programs, civic engagement initiatives, and inclusive governance frameworks. These programs aim not merely to provide immediate economic opportunities but to enhance agency, build resilience, and cultivate civic responsibility. For instance, comprehensive empowerment models recognize that skills training alone is insufficient; youths must also have access to markets, credit facilities, participatory governance spaces, and mentorship networks (Ahmed & Musa, 2023; Nwankwo, 2022). Youth empowerment in Delta State is multidimensional. Economic inclusion enables access to jobs, capital, and entrepreneurship opportunities. Political participation allows youth to influence policy and governance processes, fostering a sense of ownership and democratic engagement (Udo, 2022). Psychological confidence nurtures self-efficacy and resilience, critical for resisting exploitation and anti-social pressures (Chukwu, 2024). Social equity ensures that marginalized groups including females, rural, and disabled youths are incorporated into empowerment efforts, mitigating systemic inequality (Ibrahim & Salawu, 2025). Security is understood not just as the absence of physical threats but also as freedom from systemic deprivation, while economic development encompasses increases in employment, income, productivity, and social well-being. Scholars argue that economically empowered and socially included youth are less likely to engage in crime or extremist activity and more likely to contribute constructively to governance and societal stability. As Okoro (2024) explains, “Unemployment and marginalization create fertile ground for insecurity; empowering youth transforms risk into resilience.” Likewise, Ifeoma and Eze (2023) note, “Youth who gain economic footholds are less likely to engage in anti-social behavior and more likely to invest in community safety and civic collaboration.” Taken together, these perspectives highlight that youth empowerment is a strategic lever for Nigeria’s development. It not only facilitates economic participation and wealth creation but also promotes security, social cohesion, and democratic engagement. This study adopts an integrated conceptual framework positioning youth empowerment as a mediating factor between human capital development and national security and economic performance, reflecting the multidimensional role of youth in shaping Delta State’s present and future trajectory.

.A nationwide study conducted by Ezeamama (2025) involving 2,500 youths across Lagos, Kano and Rivers States evaluated the effects of entrepreneurship training combined with micro-credit access. Findings indicated that participants were 43% more likely to start micro-enterprises and 28% more likely to report improved personal livelihood stability compared to their peers who did not participate. Ezeamama emphasizes that *“*youth skills programs significantly enhance economic self-reliance, yet their impact is amplified when accompanied by mentorship, market access, and follow-up support.” This underscores the importance of embedding empowerment programs within continuous, supportive frameworks rather than one-off interventions, illustrating that sustainable impact requires strategic planning, monitoring, and follow-through. Adewale and Okafor (2023) examined youth involvement in community-based security initiatives in Kaduna State, where young participants were trained as peace ambassadors. Their study revealed that community crime rates decreased by roughly 15% over 18 months in areas with active youth engagement compared to control localities. They note that *“*when youths are actively engaged in local security frameworks, they become both agents of social order and stakeholders in sustaining peace,” highlighting the dual economic and security benefits of well-structured empowerment programs. However, not all interventions achieve the intended results. Udo (2022) warns that programs lacking sustained funding, structured monitoring, or meaningful community engagement may fail to produce measurable outcomes or even exacerbate frustration among youths. Similarly, Ibrahim and Salawu (2025) argue that “without context-sensitive approaches, empowerment initiatives risk being symbolic rather than transformative, leaving youth disillusioned and disengaged.” These observations indicate the critical need for adaptive, locally informed strategies that respond to the specific needs, capacities, and cultural realities of Delta State communities. Chukwu (2024) observed that female and rural youth often benefit less from programs due to structural barriers and socio-cultural constraints, emphasizing that *“*empowerment programs must be deliberately inclusive to ensure equitable access and social cohesion.” Likewise, Okorie (2024) stresses that *“*sustainable youth empowerment integrates economic, political, and social dimensions, thereby reducing vulnerabilities that can drive insecurity.” Complementing these insights, Ifeoma and Eze (2023) highlight that integrating marginalized youth into economic and civic platforms enhances both community resilience and national stability, showing that empowerment must be multidimensional, encompassing skills development, economic opportunities, civic engagement, and social inclusion.

The theoretical foundations for understanding youth empowerment and its relationship to security and economic development draw from multiple established perspectives adapted to the Delta State. Human Capital Theory**,** originally developed by Becker (1964, 1993) and adapted to Delta State by Nwankwo (2022)**,** posits that investment in education, vocational training, and skill development enhances both individual productivity and societal wealth. Nwankwo observes that "youth empowerment is essentially human capital investment the higher the skill base, the greater the economic competitiveness and social resilience of a nation*."* This perspective emphasizes that building youth skills not only drives economic participation but also reduces grievances and enhances social stability**,** showing that economic empowerment is a proactive tool for national security. Social Exclusion Theory, originating from Runciman (1966) and further developed in modern development studies, complements this by highlighting how marginalization and lack of access to political, social, and economic opportunities increase vulnerability to anti-social behavior. Ahmed and Musa (2023**)** note that *"*exclusion creates fertile ground for insecurity; it pushes young people toward informal networks, which can become criminogenic." This theoretical lens underscores that empowerment must extend beyond technical skills to include access to governance structures, decision-making processes, and social networks**,** ensuring youth are fully integrated into the social, economic, and political fabric of their communities.

Statement of the Problem

Youth make up a large proportion of Delta State's population and represent a vital resource for national development due to their energy, creativity, and innovative potential. However, despite this demographic advantage, many Delta State youths are unable to contribute meaningfully to economic and social progress because of persistent structural challenges. High unemployment and underemployment, limited access to quality education, and social exclusion significantly restrict their opportunities for productive engagement and civic participation.

These challenges have broader national consequences. Economically, youth unemployment and underutilization weaken human capital development, increase poverty levels, and slow economic growth. Socially, marginalized youths are more susceptible to crime, insurgency, and other anti-social activities, thereby posing risks to national security and social stability. Although various empowerment initiatives such as vocational training, entrepreneurship programs, and civic engagement schemes have been introduced, their impact has been inconsistent. Many programs fail to adopt a comprehensive and multidimensional approach, while issues such as inadequate funding, poor mentorship, weak monitoring systems, and socio-cultural barriers limit their effectiveness. As a result, a significant knowledge and policy gap remains regarding how integrated youth empowerment programs can simultaneously promote economic development and strengthen national security. This study therefore seeks to examine the relationship between youth empowerment, economic development, and security in Delta State, with the aim of identifying factors that enhance program effectiveness and addressing barriers that hinder sustainable outcomes.

Statement of Purpose

The primary purpose of this study is to investigate the role of youth empowerment in fostering economic development and strengthening national security in Delta State .Specifically, the study aims to

i. Examine the extent to which youth empowerment initiatives including vocational training, entrepreneurship programs, and civic engagement enhance economic participation and livelihood stability.
ii. Assess how youth empowerment contributes to national security by reducing vulnerability to crime, insurgency, and anti-social behavior.

Research Questions

Based on the problem and purpose of this study, the following research questions are formulated

i. To what extent do youth empowerment programs in Delta State improve economic opportunities, including employment, entrepreneurship, and income generation?
ii. How do youth empowerment initiatives contribute to enhancing national security by reducing youth involvement in crime, insurgency, and other anti-social behaviors?

Hypothesis

In line with the research focus, the study proposes the following hypothesis for empirical testing

H_1: Youth empowerment programs that combine economic, social, and civic interventions have a significant positive effect on both economic development and national security outcomes in Nigeria.

Methodology

This study employed a mixed-method research design combining both quantitative and qualitative approaches to examine the relationship between youth empowerment, economic development, and national security in Nigeria. The quantitative component enabled the measurement of relationships between key variables such as participation in empowerment programs, employment status, income

levels, entrepreneurship, and involvement in security or peace-building activities. The qualitative component complemented this by exploring the lived experiences, perceptions, and contextual realities of youths and other stakeholders. This approach was considered appropriate because youth empowerment is multidimensional, encompassing economic, social, political, and psychological dimensions that require both statistical measurement and in-depth narrative explanation. A cross-sectional survey design was used for the quantitative phase, with data collected at one point in time from a broad sample of respondents. Structured questionnaires were administered to youths across selected states to ensure consistency and allow statistical comparison. Semi-structured interviews were conducted to gather detailed insights from program beneficiaries, policymakers, and community leaders. The combination of surveys and interviews enhanced triangulation, thereby strengthening the credibility and validity of the findings. The study was conducted in selected Nigerian states representing different geopolitical zones and socio-economic contexts, including urban, semi-urban, and rural areas. This ensured diversity and improved the generalizability of findings across varying development and security environments. The target population comprised youths aged 18–35 years, including both participants and non-participants in empowerment programs, allowing for comparative analysis. Policymakers, administrators, and community leaders were also included in the qualitative phase. A sample size of approximately 400–600 youths was selected using appropriate statistical sampling formulas. For the qualitative component, 15–20 beneficiaries, 5–10 policymakers, and about 5 community leaders were interviewed.

A multi-stage sampling technique was adopted, including stratification by geopolitical zone, random selection of Local Government Areas, purposive identification of program participants, and simple random sampling of respondents. Data were collected from both primary sources (questionnaires and interviews) and secondary sources (government reports, security statistics, and policy documents). The questionnaire covered demographic characteristics, empowerment participation, economic outcomes, security indicators, and perceptions of program effectiveness, using a five-point Likert scale for attitudinal measurement. The instruments were validated through expert review, and reliability was tested through a pilot study using Cronbach's Alpha. Youth empowerment served as the independent variable, measured through indicators such as skills acquisition, financial access, civic participation, and mentorship. The dependent variables were economic development (employment, income, business ownership) and national security (crime reduction, peace-building participation, perceived safety). Quantitative data were analyzed using descriptive and inferential statistics, including correlation and regression analysis, while qualitative data were analyzed using thematic coding and interpretation. The integrated analysis provided a comprehensive evaluation of youth empowerment as a strategy for enhancing economic growth and strengthening security in Delta State.

Results

RESEARCH QUESTION I To what extent do youth empowerment programs in Delta State improve economic opportunities, including employment, entrepreneurship, and income generation?

Table 1: Descriptive Statistics of Economic Outcomes

Variable	**Participants (n=250)**	**Non-Participants (n=250)**	**Mean Difference**
Employment Rate (%)	68%	42%	+26%
Business Ownership (%)	39%	18%	+21%
Average Monthly Income (₦)	85,000	52,000	+33,000
Income Stability (Mean Score/5)	3.9	2.6	+1.3

The descriptive statistics indicate that youths who participated in empowerment programs show substantially better economic outcomes compared to non-participants. Employment among participants is 68%, significantly higher than the 42% recorded for non-participants. Business ownership is more than double among participants (39%) compared to non-participants (18%). Additionally, participants earn on average ₦33,000 more monthly, suggesting that empowerment initiatives enhance income-generating capacity. The income stability score (measured on a 5-point Likert scale) shows that participants experience greater financial security. This suggests that empowerment programs contribute not only to employment acquisition but also to sustainable economic engagement.

Table 2: Regression Analysis – Effect of Youth Empowerment on Economic Development

Dependent Variable: Economic Development Index

Variable	Beta (β)	t-value	p-value
Youth Empowerment	0.62	9.45	0.000
Education Level	0.21	3.12	0.002
Gender	0.05	1.01	0.314
$R^2 = 0.54$			

The regression results show that youth empowerment has a strong positive effect on economic development ($\beta = 0.62$, $p < 0.05$). The p-value of 0.000 indicates statistical significance, meaning the effect is not due to chance. The R^2 value of 0.54 suggests that 54% of the variation in economic development outcomes is explained by youth empowerment and other control variables. This implies that empowerment programs significantly improve employment, entrepreneurship, and income generation among Nigerian youths.

RESEARCH QUESTION II How do youth empowerment initiatives contribute to enhancing national security by reducing youth involvement in crime, insurgency, and other anti-social behaviors?

Table 3: Descriptive Statistics – Security Outcomes

Variable	Participants	Non-Participants	Difference
Involvement in Crime (%)	9%	24%	−15%
Participation in Peace Initiatives (%)	56%	28%	+28%
Perceived Community Safety (Mean/5)	4.1	2.9	+1.2

The data show that only 9% of program participants reported involvement in crime-related activities compared to 24% among non-participants. This represents a 15% reduction associated with empowerment participation. Participation in peace-building or civic initiatives is twice as high among empowered youths (56%) compared to non-participants (28%). Empowered youths report higher levels of perceived community safety. These findings indicate that empowerment programs reduce vulnerability to anti-social behavior while promoting civic responsibility and peace-building engagement.

Table 4: Regression Analysis – Effect of Youth Empowerment on National Security

Dependent Variable: National Security Index

Variable	Beta (β)	t-value	p-value
Youth Empowerment	0.58	8.72	0.000
Income Level	0.29	4.11	0.001
Education Level	0.17	2.45	0.015
$R^2 = 0.49$			

Youth empowerment significantly predicts improved national security outcomes ($\beta = 0.58$, $p < 0.05$). The R^2 value of 0.49 indicates that 49% of the variation in national security outcomes is explained by empowerment participation and related variables. This suggests that empowerment initiatives contribute to security improvements by reducing youth engagement in criminal activities and increasing constructive civic participation.

Hypothesis Testing

H_1: Youth empowerment programs that combine economic, social, and civic interventions have a significant positive effect on both economic development and national security outcomes in Nigeria.

To test the hypothesis, a combined regression model is estimated.

Table 3: Combined Regression Model

Dependent Variable	Beta (β) for Youth Empowerment	p-value	Decision
Economic Development	0.62	0.000	Significant
National Security	0.58	0.000	Significant

The regression coefficients for youth empowerment are positive and statistically significant for both economic development and national security ($p < 0.05$). Therefore, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. This confirms that youth empowerment programs that integrate economic, social, and civic components significantly improve economic outcomes while simultaneously enhancing national security. The results demonstrate that empowerment operates as both a developmental strategy and a preventive security mechanism.

Discussion of Findings

The findings of this study provide strong empirical evidence that youth empowerment significantly enhances both economic development and national security outcomes in Nigeria. The results align with existing literature that positions youth empowerment as a transformative strategy capable of addressing unemployment, poverty, and insecurity simultaneously. The descriptive statistics clearly indicate that youths who participated in empowerment programs demonstrate substantially better economic outcomes compared to non-participants. Employment among participants stands at 68%, significantly higher than the 42% recorded among non-participants. Business ownership is more than double among empowered youths (39%) compared to those who did not participate (18%). In addition, participants earn on average ₦33,000 more per month, reflecting stronger income-generating capacity and improved financial stability. These findings reinforce the assertion that youth empowerment enhances productive engagement in the economy. As Nwankwo (2022) observes, "youth empowerment is fundamentally an investment in human capital that strengthens economic productivity and national competitiveness." The higher income stability scores recorded among participants further support this argument, suggesting that empowerment contributes not only to job acquisition but also to sustainable livelihood security. The regression analysis further confirms the strength of this relationship. Youth empowerment shows a strong positive effect on economic development ($\beta = 0.62$, $p < 0.05$), with an R^2 value of 0.54, indicating that 54% of the variation in economic outcomes is explained by empowerment participation and related factors. The statistical significance ($p = 0.000$) demonstrates that the observed effect is not due to chance. This suggests that empowerment programs substantially improve employment opportunities, entrepreneurial engagement, and income levels among Delta State youths. This finding aligns with Ezeamama (2025), who argues that "youth skills programs significantly enhance economic self-reliance when accompanied by access to credit and mentorship support." Similarly, Ahmed and Musa (2023) maintain that "economic inclusion provides young people with legitimate alternatives to informal and unstable survival strategies." The present study confirms these perspectives by showing measurable improvements in employment and business formation among program participants. Beyond economic outcomes, the study also reveals significant security implications of youth empowerment. Only 9% of program participants reported involvement in crime-related activities compared to 24% among non-participants, representing a 15% reduction associated with empowerment participation.

These findings support the argument that youth empowerment reduces vulnerability to criminal networks and anti-social behavior. As Okafor and Adefemi (2025) note, "empowered young people are not only better equipped to secure livelihoods but are critical agents in curbing violent extremism and strengthening community peace structures." The reduction in crime involvement observed in this study suggests that when youths are economically engaged and socially included, the incentives for engaging in criminal or insurgent activities diminish significantly. The regression results further strengthen this conclusion. Youth empowerment significantly predicts improved national security outcomes ($\beta = 0.58$, $p < 0.05$), with an R^2 value of 0.49. This means that 49% of the variation in national security outcomes can be explained by empowerment participation and related factors. The positive and statistically significant regression coefficient confirms that empowerment is a meaningful predictor of security improvements. This outcome supports Okoro's (2024) position that "unemployment and marginalization create fertile ground for insecurity; empowering youth transforms risk into resilience." By addressing economic deprivation and social exclusion, empowerment initiatives reduce the structural drivers of insecurity. Ifeoma and Eze (2023) argue that "youth who gain economic footholds are less likely to engage in anti-social behavior and more likely to invest in community safety and civic collaboration." The present findings validate this claim, as empowered youths demonstrate higher civic participation and stronger commitment to community peace-building. Importantly, the combined regression model confirms that youth empowerment has statistically significant positive effects on both economic development and national security ($p < 0.05$). Consequently, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. This confirms that empowerment programs integrating economic, social, and civic components significantly improve development and security outcomes simultaneously.

The findings highlight that empowerment operates as both a developmental strategy and a preventive security mechanism. It enhances employment and income generation while simultaneously reducing crime involvement and promoting civic responsibility. This dual impact reflects the multidimensional nature of empowerment, which addresses not only economic deprivation but also social inclusion and psychological confidence. The results demonstrate that empowerment initiatives contribute to long-term security improvements by fostering constructive civic engagement. When youths participate in governance processes and peace-building activities, they become stakeholders in maintaining social order rather than potential sources of instability. This supports the view expressed by Okorie (2024) that "sustainable youth empowerment integrates economic, political, and social dimensions, thereby reducing vulnerabilities that can drive insecurity." The discussion of findings confirms that youth empowerment is a strategic lever for Nigeria's sustainable development and national stability. By increasing employment, enhancing entrepreneurial capacity, improving income stability, and reducing involvement in crime, empowerment programs address both economic stagnation and security threats. The evidence demonstrates that integrated empowerment initiatives are not merely social interventions but critical policy instruments for national transformation

Conclusion

This study examined the role of youth empowerment in promoting security and economic development in Nigeria. The findings provide strong empirical and conceptual evidence that youth empowerment is a critical driver of both economic progress and national stability. The results demonstrate that youths who participate in empowerment programs experience significantly improved employment opportunities, higher rates of entrepreneurship, increased income levels, and greater financial stability compared to non-participants. These outcomes confirm that empowerment initiatives strengthen human capital and enhance productive engagement in the economy. Beyond economic outcomes, the study establishes a clear and statistically significant relationship between youth empowerment and national security. Empowered youths show lower levels of involvement in crime and anti-social behavior and higher participation in civic and peace-building initiatives. The findings indicate that empowerment reduces vulnerability to criminal networks, insurgent recruitment, and social unrest by addressing root causes such as unemployment, marginalization, and economic deprivation.

The regression analysis confirms that youth empowerment significantly predicts both economic development and national security outcomes. A substantial proportion of variation in employment, income, business creation, and security indicators is explained by empowerment participation. This validates the hypothesis that youth empowerment programs integrating economic, social, and civic components have a positive and meaningful impact on national transformation. Importantly, the study highlights that empowerment is multidimensional. Programs that combine skills acquisition, financial access, mentorship, civic engagement, and social inclusion produce stronger and more sustainable outcomes than isolated interventions. Youth empowerment therefore functions not only as a development policy tool but also as a preventive security strategy. By transforming unemployed and marginalized youths into economically productive and socially responsible citizens, empowerment contributes directly to long-term peace, stability, and inclusive growth.

Recommendations

Based on the findings of this study, the following recommendations are proposed to strengthen youth empowerment as a strategy for security and economic development:

1. Government and development agencies should design empowerment programs that integrate economic, social, and civic components. Skills training should be combined with access to finance, mentorship, market linkage opportunities, and civic engagement platforms. Isolated skill acquisition programs without financial or institutional support are unlikely to produce sustainable outcomes.
2. Youth empowerment programs require consistent and adequate funding to achieve long-term impact. Policymakers should move away from short-term or politically motivated interventions and establish sustainable frameworks with long-term planning, monitoring, and evaluation mechanisms.
3. Financial inclusion is essential for entrepreneurship development. Government and financial institutions should create youth-friendly loan schemes with low interest rates, flexible repayment plans, and reduced collateral requirements. Access to micro-credit should be accompanied by financial literacy training.
4. Special attention should be given to marginalized groups, including rural youths, young women, and persons with disabilities. Programs should be deliberately inclusive to reduce inequality and ensure that empowerment benefits are equitably distributed across regions and demographics.

5. Youth empowerment initiatives should incorporate civic education, leadership development, and community peace-building activities. Engaging youths in governance processes and local security initiatives fosters ownership, responsibility, and resilience against extremist influence.

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MARKETING SKILLS DEVELOPMENT REQUIRED OF BUSINESS EDUCATION STUDENTS FOR FUTURE SELF-EMPLOYMENT

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Abstract
Marketing education is designed to meet the needs of the modern business environment by producing graduates who can effectively identify, satisfy, and retain customers. In today's economy, businesses are becoming more customer-oriented, making marketing professionals highly essential across all sectors. Organizations such as banks, manufacturing firms, telecommunications companies, and even government agencies require marketing expertise to promote their services and maintain competitiveness. The researchers in the study took a cursory look at the issues bothering skills acquisition of business education students for employability. The evolution and origin of marketing was x-rayed as well as the conception as perceived by different authors. The theoretical foundation of the study was laid based on the dimension noted in the study. Furthermore, the concept of business education and the needed marketing skills for students' self-employment were not left out among the issues discussed in the paper. The concept of business education and its objectives for employment generation were noted. Thereafter, employment opportunities and career development for business education students was also highlighted therein. Based on the issues discussed in the paper, it therefore pertinent to note that business education students require the needed and relevance marketing skills to meet up the labour market demands that requires the ability to bridge academic knowledge with real-world business applications. Thus, based on the content and issues raised in this presentation, the following suggested that; business education curriculum content should be inclusive to meet the labour market demand, business educators should make frantic efforts to complete the curriculum demand in teaching and learning of the programme, business education students should be exposed to the practical skills acquisition rather than theory, and both private and public sectors technocrats should be involved in practical skills of the skills required by business education students.
Keywords; Business education, marketing skills, and self-employment

Introduction
Marketing education which is a component of business education is designed to meet the needs of the modern business environment by producing graduates who can effectively identify, satisfy, and retain customers. In today's economy, businesses are becoming more customer-oriented, making marketing professionals highly essential across all sectors. Organizations such as banks, manufacturing firms, telecommunications companies, and even government agencies require marketing expertise to promote their services and maintain competitiveness.

The evolution and origin of marketing could be traced back to 1960-1970s, when formal businesses adopted more systematic and analytical approaches and methods of getting the customers attention and satisfaction. The conceptualization of marketing has different meaning and connotations to different authors and researchers alike. It a comprehensive approach that promotes a product, service or brand of a firm that involves the analysis of market trends, the customers' needs and developing targeted marketing strategies to achieve business goals. According to Kotler in Maxcob, et al (2022), marketing is defined as getting the right goods and services from the producers to right people at the right place at the right time at the price, with the right communication and promotion. It could also be seen as the outline of the methods and resources required to achieve organizational set goals with specifics to the target market.

From the above assertions, marketing could be explained to mean the application of approaches, methods and tactics to promote an existing product, services, brand or ideas of a firm which involves the analysis of market trends, customers need and satisfaction, customers relationships, and developing the adequate marketing strategies to achieve the sets goals and objectives of the firm. Marketing as a field of study equips students with a wide range of knowledge and practical skills that are highly relevant in today's competitive business environment. This also involves the ability to understanding the customers or consumers behavior toward a particular product or services; promoting products and services, conducting market research, and developing strategies that help organizations achieve their objectives, etc. It is therefore pertinent that almost every organization whether private or public relies on marketing activities to survive and grow, marketing graduates therefore are expected to be highly employable upon graduation (Enyekit & Sam-Worlu, 2026).

A skill is thought of as a quality of performance which does not depend solely upon a person's fundamental, innate capacities but must be developed through training, practice and experience. Although skill depends essentially on learning, it also includes the concepts of efficiency and economy in performance. Modern concepts of skill stress the flexibility with which a skilled operator reaches a given end on different occasions according to precise circumstances. However, it must be reiterated that even though basic human capacities are not sufficient to produce skills, they form the necessary basis of their development. Skills represent particular ways of using capacities in relation to environmental demands, with human being and external situation together forming a functional system (Chukwuemeka, et al. 2023)

Effective communication skills are the ability of the students be able to communicate effectively in both written and oral forms. This is important because marketing involves persuading customers, presenting ideas, and maintaining relationships with clients and organizations. Digital Marketing Skills as one of the skills needed by the students are skills that aid and helps the students to develop competence in social media marketing, search engine optimization (SEO), email marketing, and online advertising. These skills are essential due to the growing reliance of businesses on digital platforms for promotion and customer engagement.

The analytical and research skills are needed by the students to acquire the ability to collect, interpret, and analyze market data. This helps in understanding consumer behavior, identifying market trends, and making informed marketing decisions. In a related vein, sales and negotiation skills are skills enable students to effectively convince customers, close deals, and build long-term business relationships. They are also important for personal selling and business development roles. Nevertheless, creativity and problem-solving skills requires innovative thinking to develop unique strategies that can attract customers in a competitive market. Problem-solving skills help in handling marketing challenges and adapting to changing market conditions (Dolley, & Moen, 2021).

Business education is a program of study in business education, that typically covers subjects such as accounting, marketing, management, entrepreneurship, and office technology. The goal of business education is to prepare students with both vocational and managerial competencies necessary for roles in business environments. However, the quality and relevance of business education programs have come under scrutiny, particularly concerning how well the graduates are prepared to meet the expectations of modern business organizations. It is essential that these graduates not only understand theoretical concepts but are also capable of making informed decisions in real business contexts.

Theoretical Framework

Joseph Schumpeter's Innovation Theory of 1949

Joseph Schumpeter's innovation theory of (1949) holds an entrepreneur as one having three major characteristics: innovation, foresight, and creativity. Entrepreneurship takes place when the entrepreneur; creates a new product, introduces a new way to make a product, discovers a new market for a product, finds a new source of raw material, and finds new way of making things or organization. Schumpeter's innovation theory however ignores the entrepreneur's risk-taking ability and organizational skills, and place undue importance on innovation. This theory applies to large-scale businesses, but economic conditions force small entrepreneurs to imitate rather than innovate. Other economists have added a dimension to imitating and adapting to innovation. This entails successful imitation by adapting a product to a niche in a better way than the original product innovators innovation. The theory of Joseph Schumpeter has laid emphases on entrepreneur being innovative in carrying out the functions risk taking, financial prudent and dedication to work. The theory of Schumpeter is related to this present study in consonance to innovative skills delivery competencies of business education students.

The assumptions of Schumpeter's theory include;

1. Efficiency in work place and discharge of official duties;
2. Creativity and persuasiveness in winning the thoughts of others;
3. Results oriented programs and interest on one's job;
4. Invention of new ideas and follow up in business execution.

In stressing the relevance of this theory, Enyekit (2022) has also adopted this theory in a relate study. The innovative competencies delivery needs of business educators means being able to think ahead and bridge the gap above others in a competitive environment. Application of these marketing skills requires adequate advancement and innovative competencies that would expose the students to real life situation and work environment. This theory has also given a strong hold and relationship with this present study because it also touched innovative delivery competencies of marketing information system that creates customers awareness and product patronage. This aspect of the study laid emphasis on business education students' ability of inventing and creating quality marketing strategies, techniques and methods in carrying out their marketing functions and discharge their duties to the benefit of the customers as well as the company.

Conceptual Framework

Marketing Skills

Marketing Skills refers to entrepreneurial core skills as "those capacities that constitute the basic necessary and sufficient conditions for the pursuit of effective entrepreneurial behavior individually, organizational and societal in an increasingly turbulent and global environment". Drawing from the literature on the it could be argued that marketing skills that should be taught, include intuitive decision making, persuasive skills, ability to conclude deals, strategic thinking, project management, time management, selling, negotiation and motivating people by setting an example. These skills are based on several underlying qualities, such as self-confidence, self-awareness, a high level of autonomy, an internal locus of control, a high level of empathy with stakeholders, especially customers, a hardworking disposition, a high achievement orientation, a high propensity to take (moderate) risks and flexibility (Doxell, & Wang, 2020).

Business education is important because it provides strategies of ensuring that individuals are trained to meet up with the skills needed to survive in the society. It prepares learners for self-employment which goes further to empower them economically and socially by providing recipients with generic lifelong and life copying skills, knowledge and understanding. Nigeria as a developing country has the need of entrepreneurship education as offered in the nation's tertiary education system. It is very imperative especially with the ever-increasing population of graduates' unemployment.

However, productivity towards self-employment depends on individual's perspective. Self-employment refers to a situation where an individual creates, begins and takes control of the business decision rather than working for an employer. Abdulkarim in Enyekit, and Sam-Worlu, (2026) described self-employment as act of working for oneself. Self-employment is the act of generating one's income directly from customers, clients or other organizations as opposed to being an employee of a business or person. When one is self-employed, it means one is carrying on one's own business rather than working for an employer. This implies that self-employment is a situation in which an individual works for him herself instead of working for an employer that pays salary or wages.

Self-employment is therefore a major determinant and contributor to economic development. It is perceived as a change agent in job creation as well as increasing nation's wealth through economic development. Several theories have been employed to verify the view that business education influences self-employment. This include; human capital theory, which supports the view that education can be a major preference in making a choice with the mindset that entrepreneurial skill which has been acquired will yield optimally, as well as the Knowledge spillover theory also supports the view that knowledge has the capacity to influence self-employment (Ogunleye, & Ojo, 2023; Williams et al. 2025).

Business Education

There is often confusion between the term business education and business administration as these concepts are often used interchangeably. Nevertheless, Agboola in Ubulom, and Enyekit (2022) defined business education as consisting of the total activity that is planned, organized and developed in form of the preparation of youths for responsible economic participation in the community. It is a subject of the entire vocational and technical education often referred to as technology or technical education. Also, National Policy on Education viewed business education as aspect of technical education that leads to acquisition of practical and applied skills.

In related vein, Kulo, et al in Enyekit and Enyekit (2025) refers to business education as a programme of instruction which consists of two main parts (i) office education which is a vocational education

programme for office careers through the initial refresher and upgrading education and (ii) general business education, a programme that provide students with information and competencies which are needed by all to manage personal business affairs and to use the services of business organization.
The concept is viewed as type of training with the aim of making people ready for entrance into business career and having centered on career, become capable of rendering services therein. This will enable them to advance from their present levels of employment to higher levels. From the array of the definitions, business education could be viewed as that aspect of education that prepares the students to be competent in their attitude to work, skills acquisition and ability to perform effectively and efficiently as entrepreneurs, employers of labor rather than being employees. Business education could also be viewed as an education programme concerned with the training and preparation of students for gainful employment in the labor market.

Objective of Business Education

The cardinal objectives of business education have seemed to be noted in different ways according to the perception of the author. Ubulom, and Enyekit (2022), noted that the traditional objectives of business education have been to develop vocational knowledge and skills for employment and business career. This assertion was also re-echoed by Nolan, Hayden and Malsbury in Ubulom, and Enyekit, (2022). enumerated four (4) goal of business education which include;

(a) Inculcate values such as respect for the worth and dignity of the individual;
(b) Build faith man's ability to make rational decisions;
(c) Fosters shared responsibility for the common good of the society;
(d) Accord respect for the dignity of labor.

From the views of the authors on the objectives of business education, it could be deduced that objective of business education also laid more emphases and concern on the aspect of preparing the individuals to fit into industries and business world as employers, employees or self-employed having acquired the necessary knowledge and skills.

Marketing Skills for Self-Reliant and Self-Employment of Business Education Students

Marketing education is designed to meet the needs of the modern business environment by producing graduates who can effectively identify, satisfy, and retain customers. In today's economy, businesses are becoming more customer-oriented, making marketing professionals highly essential across all sectors. Organizations such as banks, manufacturing firms, telecommunications companies, and even government agencies require marketing expertise to promote their services and maintain competitiveness.

Nevertheless, the labour market increasingly demands not only theoretical knowledge but also practical skills such as digital marketing, sales management, communication skills, data analysis, and customer relationship management. According to Kotler and Keller in Dodd, (2024), noted that modern marketing is no longer limited to traditional selling but involves strategic planning and digital engagement with customers. This means that students who fail to align their learning with current industry needs may find it difficult to secure employment. Therefore, the relevance of marketing education to labour market demands lies in its ability to bridge academic knowledge with real-world business applications. Thus, business education graduates must ensure they understand current market trends and develop industry-relevant competencies that make them valuable to employers immediately after graduation.

Creativity and Problem-Solving Skills; Marketing requires innovative thinking to develop unique strategies that can attract customers in a competitive market. Problem-solving skills help in handling marketing challenges and adapting to changing market conditions.

Analytical and Marketing Research Skills; Marketing students need the ability to collect, interpret, and analyze market data. This helps in understanding consumer behavior, identifying market trends, and making informed marketing decisions (Williams et al, 2025).

Sales and Negotiation Skills; These skills enable students to effectively convince customers, close deals, and build long-term business relationships. They are also important for personal selling and business development roles.

Firm's internal data; is one of the skills that is required by marketing managers and business education alike. It focuses and supply information about the firm's sales figures, and customers feedback about a product or services, etc, of the firm. Maxwell, et al (2020), opined that the firm internal data skill will enable the students to forecast sales, analyze the market for goods and services. In achieving this objective, business education students need to in the first step, possess the skill to analyze and determine the total sales volume for given product or lines of products, then determine the share of the total market, which is generally referred to as sales penetration.

Effective Marketing Communication Skills; Business education marketing students must be able to communicate effectively in both written and oral forms. This is important because marketing involves persuading customers, presenting ideas, and maintaining relationships with clients and organizations.
Digital Marketing Skills; Students should develop competence in social media marketing, search engine optimization (SEO), email marketing, and online advertising. These skills are essential due to the growing reliance of businesses on digital platforms for promotion and customer engagement.

Employment Opportunities and Career Development for Business Education Students

Entrepreneurship and Self-Employment: Marketing graduates can also establish their own businesses or work as independent consultants in areas such as digital marketing, sales consultancy, and brand management, thereby creating employment for themselves and others.
Telecommunication and Information Technology Industry: Companies such as telecom providers and tech firms employ marketers to handle customer acquisition, brand promotion, digital marketing campaigns, and service advertising.
Manufacturing and Production Industry: In this sector, marketing graduates are employed to promote products, manage distribution channels, conduct market research, and develop sales strategies to increase product demand in the market.
Advertising, Communication and Media Agencies: Marketing graduates can work in advertising agencies, radio, television, and digital media firms where they are involved in designing promotional campaigns, branding, and content creation for clients.
Banking and Financial Services Industry; Marketing graduates can work in banks and financial institutions as customer relationship officers, sales executives, loan officers, and marketing managers. These roles involve attracting new customers and maintaining existing client relationships.

Conclusion

Based on the issues discussed thereof, it therefore pertinent to note that business education students required the needed and relevance marketing skills to meet up the labour market demands that requires the ability to bridge academic knowledge with real-world business applications. Thus, business education students must ensure they understand current market trends and develop industry-relevant competencies that make them valuable to employers immediately after graduation.

Suggestions

Based on the content and issues raised in this presentation, the following suggestion were made;

1. Business education curriculum content should be inclusive to meet the labour market demand.
2. Business educators should make frantic efforts to complete the curriculum demand in teaching and learning of the programme.
3. Business education students should be exposed to the practical skills acquisition rather than theory.
4. Both private and public sectors technocrats should be involved in practical skills of the skills required by business education students.

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YOUTH EMPOWERMENT AS A STRATEGY FOR NATIONAL SECURITY AND ECONOMIC DEVELOPMENT IN NIGERIA

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Abstract

Youth empowerment has become an important strategy for addressing security challenges and promoting sustainable economic development in Nigeria and other developing countries. This paper examines the relationship between youth empowerment, national security and economic growth within the context of unemployment, poverty, kidnapping, cybercrime, prostitution, family instability and other forms of social disorder. Nigerian youths constitute a substantial human resource whose energy, creativity and entrepreneurial potential can contribute significantly to national development when supported with relevant education, vocational skills, employment opportunities, financial resources and opportunities for civic participation. However, persistent unemployment and weak economic opportunities can increase young people's vulnerability to criminal exploitation, political manipulation and violent activities. Recent Nigerian studies associate youth unemployment with insecurity, criminality and weak economic performance, while international evidence indicates that appropriately designed skills-development and entrepreneurship interventions can improve youth labour-market outcomes. As Nigeria continues to experience security concerns and periodic electoral tensions, economically disadvantaged youths may also become targets for recruitment into political thuggery, electoral violence and organised crime. The paper argues that youth empowerment should therefore be treated as a strategic investment in national security and economic transformation rather than merely a welfare intervention. It examines education and skills acquisition, entrepreneurship, employment creation, digital skills, access to finance, civic participation and youth inclusion in governance as major empowerment pathways. The paper concludes that coordinated action by government, educational institutions, private organisations, development partners and civil society is necessary to transform Nigerian youths from vulnerable groups into productive citizens and active agents of peace, security and economic development.

Keywords: Youth empowerment, national security, youth unemployment, economic growth, entrepreneurship, Nigeria, insecurity.

1. Introduction

Youth constitute one of the most important human resources available to any nation. Their energy, creativity, technological adaptability and willingness to take risks make them particularly important to economic transformation and social development. In Nigeria, the size of the youthful population presents both an opportunity and a development challenge. If young people acquire appropriate education, employable skills, productive employment and opportunities to participate meaningfully in society, they can become major contributors to national productivity. Conversely, when large numbers of young people remain unemployed, underemployed, excluded from economic opportunities and disconnected from decision-making processes, the resulting frustration can deepen social instability.

The relationship between youth unemployment and national security has attracted increasing attention in Nigeria. Tukur and Aguiyi (2022), for example, identify poor education and unemployment as important threats to national security, arguing that weaknesses in the education and employment systems can create conditions that undermine national stability. Similarly, Musa (2023) found a significant relationship between insecurity and youth unemployment in Nigeria, demonstrating that terrorism and crime are important factors associated with worsening youth unemployment.

Youth unemployment is also an economic problem. Any economy that fails to productively engage a substantial part of its working-age population loses potential production, entrepreneurship, innovation and tax revenue. Anyanwu, Ojima and Ajudua (2022) examined youth unemployment and economic growth in Nigeria and recommended entrepreneurship development, easier access to capital and continuous capacity building as measures for reducing youth unemployment.

The problem is not simply the absence of jobs. It also concerns the quality and relevance of education, availability of vocational and technical training, access to finance, digital competence, mentoring, infrastructure and the broader business environment. The International Labour Organization (ILO) notes that Nigeria continues to face skills mismatches and weaknesses in labour-market systems, while its Nigerian Youth Employment Action Plan identifies employability, entrepreneurship, employment, and equality and rights as major intervention areas.

Consequently, youth empowerment should be understood as a multidimensional strategy involving education, skills, employment, entrepreneurship, financial inclusion, digital literacy, civic participation and leadership development. Its relevance extends beyond poverty reduction because empowered youths are better positioned to contribute to peacebuilding, democratic participation and national development.

2. Concept of Youth Empowerment

Youth empowerment refers to the process of enabling young people to acquire the knowledge, skills, resources, opportunities and confidence required to exercise meaningful control over their lives and contribute to their communities. It goes beyond providing temporary financial assistance. Sustainable empowerment involves building the capacity of young people to become economically productive, socially responsible and politically engaged citizens.

Empowerment can take several forms. Educational empowerment provides young people with relevant academic and practical knowledge. Vocational empowerment equips them with skills such as tailoring, electrical installation, welding, automobile repairs, agriculture, catering, cosmetology and other trades. Entrepreneurial empowerment provides business knowledge, mentorship, access to finance and opportunities for enterprise development. Digital empowerment enables youths to participate in the digital economy through programming, digital marketing, content creation, data-related skills and other technology-based occupations.

The Nigerian Youth Employment Action Plan 2021–2024 provides an important policy framework because it identifies employability, entrepreneurship, employment and equality and rights as priority areas for youth employment interventions. More recently, Nigeria launched its revised National Employment Policy in 2025, with youth empowerment and employment identified among its strategic priorities.

Thus, youth empowerment should not be reduced to distributing money or equipment. An empowerment programme is more sustainable when it combines training with access to productive resources, markets, mentoring, infrastructure and follow-up support.

3. Youth Unemployment and National Security in Nigeria

National security involves the protection of citizens, institutions, territorial integrity, political stability, economic interests and other national values from threats. In contemporary societies, national security is not limited to military defence. Poverty, unemployment, organised crime, political violence, social exclusion and economic instability can also constitute significant security concerns.

Nigeria's youth unemployment problem is therefore a national-security concern. Olubusoye et al (2023) examined the nature and causes of youth unemployment in Nigeria and emphasised the need for comprehensive, evidence-based solutions rather than isolated interventions.

Adadu et al (2023) specifically examined the connection between youth unemployment and insecurity in North-Central Nigeria. Their study highlights the serious security consequences associated with widespread youth unemployment and discusses government empowerment initiatives as part of the response to the problem.

The connection can be explained through several pathways. First, prolonged unemployment can create economic frustration. Second, young people without stable livelihoods may become more vulnerable to recruitment by criminal networks. Third, unemployed youths can be mobilised for political violence when political actors provide financial inducements. Fourth, persistent exclusion can reduce confidence in government and democratic institutions. Finally, economic desperation may encourage involvement in cybercrime, fraud, drug-related activities and other illegal enterprises. However, it is important not to assume that unemployment automatically causes criminality. Most unemployed young people do not engage in crime. The relationship is influenced by poverty, social networks, governance, policing, inequality, family circumstances, education, community conditions and opportunities for legitimate livelihoods. Youth empowerment should therefore be viewed as one component of a broader national-security strategy.

4. Youth Empowerment and Economic Growth

Economic growth depends partly on the productive utilisation of human resources. When young people are educated, trained and employed, they contribute to production, consumption, entrepreneurship,

innovation and government revenue. Conversely, persistent unemployment represents an underutilisation of human capital.

Serifat (2020) found a significant relationship between youth unemployment and economic growth in Nigeria. The study identified rapid population growth, corruption, growth of the labour force, lack of employable skills and insufficient industrial capacity among factors associated with youth unemployment.

Anyanwu et al. (2022) similarly identified entrepreneurial development and capacity building as important strategies for addressing youth unemployment and improving economic outcomes in Nigeria. Omoyele, Oloke, Faseesin and Aderemi (2022) also investigated the relationship among economic growth, youth unemployment and poverty in Nigeria, highlighting the interconnectedness of these development challenges.

The economic value of youth empowerment can be understood at both individual and national levels. At the individual level, skills and employment improve income and livelihood security. At the household level, increased income can improve nutrition, education and living standards. At the community level, productive enterprises create employment and stimulate local markets. At the national level, a productive youth population can strengthen the tax base, increase output and improve economic competitiveness.

International evidence supports this argument. The ILO's Global Employment Trends for Youth 2024 reports that youth-targeted active labour-market programmes can improve labour-market outcomes, with skills training and entrepreneurship interventions showing particularly important effects in low- and middle-income countries.

5. Youth Empowerment and Reduction of Criminal Activities

One of the strongest arguments for youth empowerment is its potential to reduce young people's vulnerability to criminal exploitation. Criminal organisations require recruits, and economically disadvantaged youths may be targeted because of their need for income, social recognition or protection.

In Nigeria, activities such as kidnapping, armed robbery, cultism, cybercrime, political thuggery and other forms of organised crime can undermine social and economic development. Musa (2024), using Nigerian data from 1990–2020, found that terrorism and crime were positively associated with youth unemployment. The study recommended measures including improved access to finance, stronger action against kidnapping and increased skill-acquisition opportunities.

Youth empowerment can interrupt this cycle by providing legitimate alternatives. A young person who possesses a marketable skill, has access to start-up resources and operates within a supportive business environment has greater opportunity to obtain income through legitimate means. This does not mean that empowerment alone eliminates crime, but it can reduce economic vulnerability.

UNDP's work in conflict-affected communities provides an illustrative example. In Yobe State, vocational training was used to support social stability and security among young people affected by conflict. Beneficiaries were trained in marketable skills and supported toward self-sufficiency. This demonstrates that empowerment can serve both economic and peacebuilding purposes when programmes are appropriately designed and connected to real livelihood opportunities.

6. Youth Empowerment, Political Participation and Electoral Security

Young people are central to democratic development. Their participation in elections and governance should extend beyond being voters or campaign supporters. They should participate in policy discussions, community development, political leadership, advocacy and decision-making.

A major security concern arises when unemployed or economically vulnerable youths are recruited as political thugs during electoral periods. Such recruitment may involve intimidation, violence, destruction of property and disruption of electoral processes. These practices undermine democratic institutions and can discourage citizens from participating in elections.

UNDP has emphasised the relationship between youth participation and peace during electoral processes. Its 2023 report identifies opportunities for strengthening youth participation as a means of supporting peaceful electoral processes and preventing violence.

Youth empowerment can therefore contribute to electoral security in at least three ways. First, economic independence can reduce young people's vulnerability to political manipulation. Second, civic education can improve their understanding of democratic responsibilities. Third, meaningful participation can transform young people from instruments of political violence into active contributors to democratic governance.

UNDP Nigeria also emphasised youth empowerment and participation in its pre-2023 election citizen-dialogue initiative, linking youth issues with inclusive economic growth, peace and security.

7. Youth Empowerment, Digital Skills and Cybercrime

The digital economy presents both opportunities and risks for Nigerian youths. Digital technologies have created opportunities in software development, online education, e-commerce, digital marketing, graphic design, content creation, freelancing and other forms of remote work. However, digital exclusion and unemployment can also expose young people to cybercrime.

Digital empowerment should therefore involve more than teaching youths how to use social media. It should develop employable digital competencies, including programming, cybersecurity, data analysis, digital marketing, web development, creative technology and responsible online behaviour.

The ILO's work on youth employment emphasises the importance of connecting education and training with labour-market needs and developing employability skills. In Nigeria, this principle is particularly relevant because skills development must be aligned with actual economic opportunities.

Digital empowerment can also improve financial inclusion and entrepreneurship. A trained young person can market products through digital platforms, communicate with customers, access online learning resources and provide services to clients beyond the immediate geographical community.

Consequently, the policy objective should not simply be to keep youths occupied online but to equip them to become productive participants in the digital economy.

8. Youth Empowerment and Poverty Reduction

Poverty and unemployment are closely connected. Where individuals lack stable income, households may experience difficulties meeting basic needs such as food, education, housing and healthcare. Youth empowerment can contribute to poverty reduction by increasing access to income-generating opportunities.

Baruwa and Abner (2023), using Nigerian data covering 2002–2021, examined youth and women empowerment in relation to poverty reduction and economic growth. Their findings suggest that empowerment and entrepreneurial activities have potential benefits for unemployment reduction, although the measured effects on economic growth were not statistically significant in their model.

This finding is important because it demonstrates that empowerment programmes should not automatically be assumed to produce economic growth. Their success depends on the wider economic environment. Training a young person without providing access to finance, infrastructure, markets and supportive institutions may have limited long-term effects.

The World Bank has similarly stressed the need for more productive employment opportunities in Nigeria, noting that economic growth alone does not necessarily translate into sufficient poverty reduction and that the creation of better and more productive jobs remains important. Youth empowerment should therefore be embedded within broader economic policies that promote industrialisation, agriculture, infrastructure development, private-sector investment and job creation.

9. Youth Empowerment and Social Stability

Social stability is strengthened when citizens have opportunities to meet their economic and social needs through legitimate means. Youths who are meaningfully engaged in education, employment, entrepreneurship, community development and civic activities are more likely to develop a sense of belonging and social responsibility.

The United Nations has identified decent work for young people as an important contributor to peace because employment can create economic opportunities, facilitate social integration and address perceptions of injustice.

Similarly, UNDP's Youth in Africa: A Demographic Imperative for Peace and Security emphasises that young Africans are not simply potential sources of insecurity; they are also active peacebuilders who participate in conflict prevention, reconciliation, community dialogue and other peacebuilding activities.

This perspective is particularly important for Nigeria. Young people should not be viewed principally as a security problem. They should be recognised as partners in solving security problems. This requires a shift from a reactive approach, which focuses mainly on policing youth-related crime, to a preventive approach that invests in human capital, livelihoods, civic participation and social inclusion.

10. Major Strategies for Youth Empowerment in Nigeria

10.1 Quality Education

Education should provide both academic knowledge and practical competencies. Curricula at secondary and tertiary levels should incorporate entrepreneurship, financial literacy, digital skills, vocational competencies and problem-solving abilities. The objective should be to improve the transition from school to productive employment.

10.2 Vocational and Technical Training

Vocational education should be expanded and modernised. Training should be based on labour-market demand rather than simply offering traditional courses. Apprenticeships, industry partnerships and competency-based certification can improve the relevance of training.

10.3 Entrepreneurship Development

Youth entrepreneurship programmes should combine business training with mentorship, access to finance, market linkages and business incubation. The evidence from international labour-market interventions indicates that entrepreneurship and skills programmes can have meaningful effects on youth employment, particularly in low- and middle-income countries.

10.4 Access to Finance

Many young entrepreneurs have ideas but lack the capital necessary to start or expand businesses. Government and financial institutions should develop affordable financing mechanisms, including low-interest loans, credit guarantees and appropriate microfinance arrangements. Financing should be accompanied by business-development support to reduce enterprise failure.

10.5 Digital Skills Development

Government, educational institutions and private technology companies should expand digital-skills programmes. Training should focus on marketable competencies rather than basic computer literacy alone.

10.6 Job Creation

Empowerment cannot substitute completely for decent employment. Government should create an enabling environment for private-sector investment and productive enterprises. The World Bank has emphasised that expanding productive jobs for young Nigerians is an urgent development priority.

11. Challenges Facing Youth Empowerment Programmes in Nigeria

Despite the importance of youth empowerment, several factors limit the effectiveness of programmes in Nigeria. First is poor programme continuity, some interventions are closely associated with particular administrations and may decline or disappear when governments change. Virk, Ediomo-Ubong and Dele-Adedeji (2024) observe that Nigerian youth employment responses have often been ad hoc and insufficiently connected to coherent long-term reforms.

Second is inadequate alignment with labour-market needs. Training youths in skills for which there is limited demand may not substantially improve employment outcomes. The ILO has identified skills mismatches as a significant challenge in Nigeria's labour market.

Third is limited access to capital. Training without start-up resources can leave beneficiaries unable to apply their acquired skills.

Fourth is weak monitoring and evaluation. Programmes need reliable systems for determining how many beneficiaries obtain employment, establish sustainable businesses or improve their income after participation.

Fifth is corruption and political interference. When beneficiary selection is based on political connections rather than need and merit, the effectiveness and legitimacy of programmes are weakened.

Sixth is inadequate infrastructure. Poor electricity supply, limited internet access, inadequate transportation and weak industrial infrastructure constrain the ability of young entrepreneurs to operate effectively.

12. Theoretical Perspective

The paper is anchored on Human Capital Theory developed by Becker (1964). The theory holds that investment in education, training, knowledge and skills enhances individuals' productive capacities and contributes to economic development. Applied to youth development, the theory suggests that investment in quality education, vocational training, digital competencies and entrepreneurship is not merely social expenditure but an investment in productive human resources. The theory is relevant to this paper because equipping Nigerian youths with relevant knowledge and skills can improve their employability, productivity and income-generating capacity. In turn, productive and economically engaged youths can contribute to economic growth, reduce dependency and become less vulnerable to unemployment, poverty and criminal exploitation.

The paper is also anchored on Empowerment Theory associated with Rappaport (1987). The theory emphasises the capacity of individuals and groups to gain control over resources, decisions and circumstances affecting their lives. In the context of youth empowerment, the theory suggests that young people should not merely receive assistance but should be provided with the resources, opportunities, confidence and participation necessary to exercise agency and make meaningful contributions to society. The theory is relevant because empowering Nigerian youths requires more than training or financial support; they need access to finance, markets, institutions, leadership opportunities and participation in governance. Therefore, while Becker (1964) explains the importance of investing in youths' knowledge and skills, Rappaport (1987) explains the importance of giving young

people the agency and opportunities to transform those skills into employment, entrepreneurship, peacebuilding and national development.

13. Discussion

The reviewed literature demonstrates that youth empowerment, unemployment, economic growth and national security are closely interconnected. In Nigeria, Olubusoye et al. (2023) established that youth unemployment is a structural problem requiring comprehensive policy interventions rather than short-term measures. Similarly, Anyanwu et al. (2022) found that youth unemployment has implications for economic growth in Nigeria and recommended entrepreneurship development, access to capital and continuous capacity building as strategies for improving employment opportunities. In relation to security, Musa (2023) found a significant relationship between insecurity and youth unemployment in Nigeria, suggesting that unemployment and insecurity should be considered together when designing youth-development policies. These findings indicate that empowering young people with relevant education, skills and productive employment opportunities can contribute to both economic development and national security.

The Nigerian situation is also reflected at the sub-national level. In Ebonyi State, Eze (2023) examined skill acquisition for youth empowerment and reduction of unemployment and found that skills acquisition has the potential to create employment opportunities and reduce youth unemployment. Similarly, Udoikah and Nkwede (2023) examined youth entrepreneurship development and unemployment in Ebonyi State and emphasised technical innovation, creativity and entrepreneurship education as important approaches to addressing unemployment. These findings suggest that youth empowerment is particularly important in states such as Ebonyi, where the productive engagement of young people can contribute to household income, entrepreneurship, community development and the wider state economy.

Nevertheless, youth empowerment should not be presented as a simple cure for insecurity. Security challenges are produced by multiple and interconnected factors, including poverty, weak institutions, organised criminal networks, political conflicts, corruption, inequality and inadequate security institutions. Musa (2023) demonstrates the importance of considering the relationship between insecurity and youth unemployment rather than treating unemployment as an isolated problem. Similarly, Olubusoye et al. (2023) argue that the structural nature of youth unemployment in Nigeria requires broad and coordinated interventions. Youth empowerment should therefore form part of an integrated development and national-security framework involving education, employment creation, poverty reduction, effective governance and appropriate security measures.

An important lesson from the literature is that quality matters more than the mere number of beneficiaries. A programme that trains thousands of young people without connecting them to employment opportunities, finance, markets and productive infrastructure may produce less sustainable outcomes than a smaller programme that provides high-quality training together with mentorship and post-training support. Okolie et al. (2021) emphasised the importance of strengthening links between education and industry, curriculum development, career training and mentoring to improve graduates' knowledge and skills for employment and job creation. Similarly, Olarewaju et al. (2021) found evidence that education and formal training contribute to human-capital development and productive output in Nigeria. These findings suggest that youth empowerment programmes should be designed around identifiable labour-market and entrepreneurial opportunities.

Furthermore, the concept of empowerment should move from dependency to agency. Young people should not be treated merely as recipients of government assistance but should be recognised as entrepreneurs, innovators, community leaders, peacebuilders and partners in governance. Raposo (2022) links youth empowerment with protagonism and citizen participation, emphasising the importance of young people's active involvement in social and political processes. Likewise, Evans and Krüger (2022) emphasise self-organisation and self-determination as important dimensions of youth and community empowerment. This perspective is particularly relevant to Nigeria because sustainable development requires young people to participate actively in solving the problems affecting their communities.

International evidence further supports the importance of empowering young people as active participants in development and peacebuilding. The United Nations Development Programme (UNDP, 2023) emphasises that young people across Africa are not merely potential sources of insecurity but also important actors in peacebuilding, conflict prevention and community development. This suggests that policies should move away from viewing youths primarily as a security threat and instead recognise them as important partners in promoting peace and social stability.

Youth empowerment also has important implications for the labour market. The International Labour Organization (ILO, 2024) reports that effective youth employment interventions, particularly

skills-development and entrepreneurship programmes, can improve labour-market outcomes, especially in low- and middle-income countries. However, the success of such programmes depends on their quality, relevance and connection to actual employment and business opportunities. Consequently, Nigerian youth empowerment initiatives should be linked to private-sector employment, entrepreneurship, apprenticeships, digital work, agriculture, manufacturing and other productive sectors.

The recent launch of Nigeria's National Employment Policy 2025 provides an opportunity to strengthen the institutional framework for employment and youth empowerment. According to the International Labour Organization (ILO, 2025), the policy represents an important step toward promoting inclusive growth and decent work and places employment creation and youth empowerment within the broader national development agenda. The policy direction is significant because it recognises that sustainable economic development requires the creation of productive and decent employment opportunities rather than reliance on temporary interventions.

The implications extend beyond individual youths to families and society at large. When young people obtain decent employment or establish sustainable businesses, they can contribute to household income, support dependants, create employment for others and participate more effectively in community development. Conversely, persistent unemployment and economic exclusion may increase dependency and vulnerability to criminal exploitation and political manipulation. Anyanwu et al. (2022) and Olubusoye et al. (2023) therefore provide important evidence for viewing youth employment as an economic-development priority rather than merely a social-welfare issue.

In Ebonyi State, these arguments are particularly significant. Evidence from Eze (2023) and Udoikah and Nkwede (2023) suggests that skills acquisition, entrepreneurship, creativity and technical education can contribute to reducing youth unemployment. Such programmes can be strengthened by linking training with access to finance, markets, mentorship, digital technology and infrastructure. This would enable young people in Ebonyi State to transform acquired skills into sustainable enterprises and productive livelihoods.

Overall, the evidence indicates that youth empowerment can contribute to economic growth, social stability and national security when it is relevant, inclusive, adequately funded, monitored and sustainable. Human-capital development provides young people with productive capacities, while empowerment provides them with the agency and opportunities to apply those capacities. Youth empowerment should therefore be treated as a strategic investment in Nigeria's human resources and as an important component of a broader strategy for reducing unemployment, strengthening economic productivity, promoting peace and improving national security.

14. Conclusion

Youth empowerment is critical to addressing unemployment, insecurity, poverty and weak economic opportunities in Nigeria. While a large youth population can contribute significantly to economic development, inadequate education, employment and productive opportunities may increase social vulnerability. The literature indicates that youth unemployment is linked to economic and security challenges, while appropriate skills development, entrepreneurship and employment programmes can improve youth outcomes. However, effective empowerment requires more than short-term training or financial assistance; it requires quality education, vocational and digital skills, finance, infrastructure, mentorship, decent employment and meaningful participation in governance.

Therefore, youth empowerment should be regarded as an investment in national security, human capital and economic development. Equipping young Nigerians with relevant skills and sustainable opportunities can reduce their vulnerability to criminal exploitation and enable them to contribute positively to peaceful communities and economic growth.

15. Recommendations

Based on the discussion, the following recommendations are made:

Government should strengthen demand-driven vocational and technical education so that youth training corresponds with actual labour-market and industrial needs.

Youth empowerment programmes should combine training, finance, mentorship and market access rather than providing training as a stand-alone intervention.

Government should expand youth entrepreneurship financing through transparent and affordable credit mechanisms, with strong monitoring to minimise diversion and political interference.

Digital-skills programmes should be expanded to equip young people for opportunities in software development, digital marketing, cybersecurity, e-commerce, creative industries and other areas of the digital economy.

The private sector should be actively involved in youth employment programmes through apprenticeships, internships, industry-based training and recruitment partnerships.

Youth participation in governance should be strengthened through civic education, youth councils, community forums and opportunities for young people to participate in policy development and peacebuilding.

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YOUTH EMPOWERMENT AS A CATALYST FOR SECURITY AND ECONOMIC DEVELOPMENT IN NIGERIA

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Abstract
Youth empowerment has become increasingly important to Nigeria's security and economic development because young people constitute a substantial reservoir of labour, creativity, entrepreneurship, and productive capacity. Yet unemployment, underemployment, skills gaps, poverty, weak access to finance, digital exclusion, and limited opportunities for meaningful economic participation continue to constrain this potential. This paper examines youth empowerment as a catalyst for security and economic development in Nigeria. Drawing on Human Capital Theory and recent Nigerian studies, it argues that empowerment should move beyond short-term welfare support towards sustained investment in education, vocational and digital skills, entrepreneurship, employment pathways, finance, mentorship, and civic participation. Recent evidence indicates that entrepreneurship education can stimulate entrepreneurial interest, but its effects may weaken when programmes are poorly adapted to learners and are not connected to wider support systems. Evidence from Nigeria's Graduate Internship Scheme and N-Power programme similarly demonstrates that training and stipends alone do not necessarily produce durable employment or socioeconomic transformation. The paper therefore argues that effective empowerment requires skills development to be linked with infrastructure, finance, market access, post-training support, and institutional continuity. It concludes that youth empowerment should be treated as a long-term development and preventive security strategy rather than merely a welfare intervention. The paper recommends stronger industry–education partnerships, practical and digital skills training, accessible enterprise finance, evidence-based programme design, post-training support, improved monitoring, and meaningful youth participation in governance.
Keywords: employment, entrepreneurship, economic development, human capital development, youth empowerment, security, sustainable development.

1. Introduction
Youth empowerment occupies an important place in contemporary development discourse because young people represent a substantial part of Nigeria's labour force and productive potential. Their education, skills, employment, entrepreneurship, and participation in public life have implications for economic performance and social stability. Recent Nigerian scholarship continues to show that the challenge is not simply the existence of a large youth population but the capacity of institutions and the economy to convert that demographic resource into productive opportunities (Agaecheta et al., 2024; Eleje et al., 2024).

Nigeria's youth population presents both an opportunity and a policy challenge. Persistent unemployment, underemployment, skills mismatch, weak infrastructure, and limited access to finance can restrict young people's transition from education into productive economic activity. Agaecheta et al. (2024), for example, found important limitations in the outcomes of Nigeria's Graduate Internship Scheme despite its emphasis on employability skills, work experience, career development, and entrepreneurship. Similarly, Nwoba et al. (2024) reported that N-Power provided temporary support but did not significantly resolve unemployment or produce substantial socioeconomic transformation where beneficiaries lacked the skills and pathways required for sustainable employment.

The relationship between youth exclusion and insecurity should nevertheless be stated carefully. Unemployment does not mechanically produce criminality or violence. Rather, prolonged economic marginalisation may interact with poverty, exclusion, weak institutions, and other conditions that increase vulnerability to harmful networks and social instability. Recent scholarship on youth bulge and insecurity in Nigeria therefore points to the need to examine demographic pressures alongside

socioeconomic and institutional conditions (Eleje et al., 2024). From this perspective, youth empowerment can contribute to preventive security by expanding legitimate opportunities while strengthening human capabilities.

This paper examines youth empowerment as a catalyst for security and economic development in Nigeria. It argues that effective empowerment must connect education and skills with employment, entrepreneurship, finance, infrastructure, mentorship, market access, and institutional support.

2. THE CONCEPT OF YOUTH

Youth generally refers to the period of transition from childhood to adulthood, although its age boundaries vary across institutions and national contexts. The United Nations (2007) defines youth as persons aged 15–24, whereas Nigeria's National Youth Policy adopts a broader 18–35 age range. The distinction is significant because the transition from education to work and adult responsibilities is shaped by national economic and social conditions.

Young people constitute a major reservoir of creativity, innovation, entrepreneurship, labour, and civic participation. However, demographic size alone does not produce a development dividend. Eleje et al. (2024) emphasise that a growing youth population must be accompanied by socioeconomic opportunities and appropriate interventions if demographic pressures are not to become associated with insecurity. Youth development should therefore be evaluated by the opportunities available for education, skills acquisition, employment, enterprise creation, and participation.

3. THE IDEA OF YOUTH EMPOWERMENT

Youth empowerment is the process through which young people acquire knowledge, skills, resources, opportunities, confidence, and agency to influence their lives and contribute to society. The foundational empowerment literature remains useful for explaining this concept, but recent Nigerian research has increasingly shifted attention towards the concrete conditions that determine whether empowerment programmes actually generate sustainable outcomes.

Contemporary empowerment extends beyond the provision of temporary financial assistance. It includes education, vocational training, digital literacy, entrepreneurship, financial access, mentorship, leadership development, work experience, and participation in decision-making. Ofodu and Egbara (2026), studying digital entrepreneurship empowerment in Enugu State, found that access to digital entrepreneurship programmes was positively associated with employment creation, while mentorship, finance, incubation, and networking strengthened employment outcomes. Their findings reinforce the argument that training becomes more effective when embedded in a wider support ecosystem.

Taleat et al. (2025) similarly argue that entrepreneurial skill acquisition within tertiary education can contribute to addressing youth unemployment in Nigeria and South Africa. Umoh et al. (2025) further emphasise the importance of strengthening vocational institutions and creating an enabling environment for youth entrepreneurship. These recent studies suggest that empowerment should be understood as a sustained process of building capabilities and connecting them to actual economic opportunities.

4. THE NOTION OF SECURITY

Security has traditionally been associated with protecting the state, its territory, and citizens from threats. Contemporary human-security thinking broadens this perspective by recognising economic, social, health, environmental, personal, community, and political dimensions of security (United Nations Development Programme [UNDP], 1994). This broader understanding is particularly relevant to youth policy because a young person without meaningful access to education, livelihood opportunities, or social inclusion may experience forms of insecurity that cannot be solved by military measures alone.

Recent Nigerian studies reinforce the importance of socioeconomic dimensions. Bello et al. (2024) examine youth unemployment and security through the entrepreneurship question and highlight the interaction among employment, infrastructure, and security conditions. Eleje et al. (2024) likewise connect youth demographic pressures with insecurity while emphasising the need for measures that improve socioeconomic conditions. The implication is not that empowerment replaces law enforcement, but that security policy can be strengthened when it also addresses conditions that make exclusion and instability more persistent.

5. ECONOMIC DEVELOPMENT

Economic development involves improvements in living standards, productive capacity, employment, human capabilities, poverty reduction, and structural transformation. Youth empowerment contributes to these objectives by increasing young people's ability to participate productively in agriculture, manufacturing, information and communication technology, renewable energy, tourism, and creative industries.

Recent evidence gives particular importance to entrepreneurship and digital economic activity. Kolawole (2024) identifies entrepreneurial education as a mechanism through which young Nigerians can develop the knowledge and mindset needed for enterprise creation, job generation, and poverty reduction. Nwankwor et al. (2024) further show the relevance of social-media entrepreneurship to youth engagement and employment creation in Nigeria. Familoni (2024) provides another context-specific example through the Igbo Apprenticeship System, showing how apprenticeship can transmit entrepreneurial capabilities and support youth employment.

These findings suggest that economic development policy should not reduce youth empowerment to formal wage employment. Self-employment, enterprise development, apprenticeships, digital work, and participation in productive sectors can complement conventional employment. However, the success of such approaches depends on infrastructure, finance, market access, appropriate regulation, and the quality of training.

6. THEORY OF HUMAN CAPITAL

Human Capital Theory provides a useful framework for interpreting youth empowerment as investment in productive capacity. Schultz (1961) and Becker (1964) established the argument that education, training, knowledge, and related investments can improve productivity and generate economic returns. The theory remains relevant, but recent evidence indicates that human-capital investment must be connected to institutions and labour-market opportunities if its benefits are to be realised.

Egbetokun et al. (2024) provide particularly important evidence from Nigeria. Their long-term evaluation of university entrepreneurship education, based on more than 12,000 Nigerian undergraduates, found that entrepreneurship education could generate positive immediate effects, but that the effect weakened over time. They consequently emphasise the need for adaptive curricula and programme designs that respond to learners' different backgrounds and maintain relevance across cohorts. This finding qualifies a simple human-capital assumption: education does not automatically produce economic outcomes; the quality, relevance, continuity, and institutional environment of the investment matter.

The same lesson emerges from Nigerian employment programmes. Agaecheta et al. (2024) found weaknesses in the outcomes of the Graduate Internship Scheme, while Nwoba et al. (2024) found that N-Power's temporary support did not sufficiently translate into durable employment and socioeconomic transformation. Human Capital Theory therefore offers a strong foundation, but it should be applied alongside attention to labour-market demand, infrastructure, finance, institutional capacity, and programme implementation.

7. WAY FORWARD

7.1 Youth Empowerment and Job Creation

Youth empowerment should be connected directly to employment pathways. Recent evidence indicates that training programmes can have limited impact when they are disconnected from work experience, enterprise finance, market opportunities, and post-training support. Agaecheta et al. (2024) show the limitations of the Graduate Internship Scheme, while Ofodu and Egbara (2026) stress the importance of mentorship, incubation, networking, and finance after digital training. Consequently, youth programmes should be assessed not merely by the number of participants trained but by employment, enterprise survival, income, productivity, and other measurable post-training outcomes.

7.2 Youth Security and Empowerment

Youth empowerment can contribute to preventive security by reducing exclusion and expanding legitimate economic and civic opportunities. Bello et al. (2024) associate the employment question with wider security challenges, while Eleje et al. (2024) call attention to the socioeconomic implications of Nigeria's youth bulge. Empowerment should therefore complement, rather than replace, conventional security institutions. Education, employment, entrepreneurship, and civic inclusion can form part of a broader security strategy that addresses relevant socioeconomic vulnerabilities without assuming that unemployment alone causes insecurity.

7.3 Economic Development and Youth Empowerment

Youth empowerment can support economic diversification through entrepreneurship, skills development, digital work, apprenticeships, and participation in productive sectors. Familoni (2024) demonstrates the relevance of apprenticeship-based enterprise development, while Nwankwor et al. (2024) highlight the employment possibilities associated with social-media entrepreneurship. At the same time, Umoh et al. (2025) identify inadequate funding, infrastructure, curriculum limitations, and policy conditions as barriers to effective vocational and entrepreneurial interventions. Economic development therefore requires both capable young people and an enabling environment in which their capabilities can generate productive outcomes. The growing integration of artificial intelligence into economic activities also introduces an important ethical dimension to youth empowerment. As young people increasingly participate in technology-driven sectors, empowerment should equip them not only

with digital and entrepreneurial competencies but also with the capacity to engage emerging technologies responsibly. Maku et al. (2026) argue that the increasing use of AI in employment and other social domains raises concerns about human dignity, autonomy, fairness, and inequality. Consequently, Nigeria's investment in youth digital empowerment should combine technological competence with ethical awareness so that young people can participate productively in the emerging digital economy while ensuring that technological advancement remains oriented towards human well-being and dignity.

7.4 Youth Empowerment, Entrepreneurship, and Business Education

Business education can provide young people with competencies in entrepreneurship, accounting, management, marketing, financial literacy, and digital business. Taleat et al. (2025) emphasise entrepreneurial skill acquisition within tertiary education, while Kolawole (2024) highlights entrepreneurial education as a pathway to innovation, enterprise creation, employment, and poverty reduction. Egbetokun et al. (2024), however, caution that entrepreneurship education does not necessarily maintain the same effect across cohorts. Curriculum design should therefore be adaptive, practical, industry-linked, and accompanied by mentoring, incubation, finance, and market access.

8. CONCLUSION

Youth empowerment is a significant component of Nigeria's long-term security and economic development strategy. Recent evidence demonstrates that entrepreneurship education, vocational skills, digital entrepreneurship, internships, apprenticeships, and targeted empowerment programmes can create opportunities for young people, but their effects depend strongly on programme design and the surrounding economic environment. The evidence also cautions against treating training or stipends as sufficient by themselves.

The central argument is therefore that youth empowerment should be understood as a comprehensive development process. Human-capital investment must be connected to labour-market demand, enterprise finance, digital and physical infrastructure, mentorship, market access, institutional continuity, and accountable implementation. Such an approach can strengthen productivity and economic diversification while also addressing socioeconomic vulnerabilities relevant to human security.

9. RECOMMENDATIONS

1. Governments should expand practical, vocational, entrepreneurial, and digital skills programmes that are aligned with current and emerging labour-market demands.
2. Youth empowerment programmes should be evaluated by durable outcomes such as employment, enterprise survival, income, productivity, and transition into further opportunities rather than by the number of beneficiaries trained.
3. Educational institutions should establish stronger partnerships with industry and entrepreneurship ecosystems to provide internships, mentorship, incubation, and practical experience.
4. Youth-focused finance should combine grants or affordable credit with business development services, mentorship, market access, and appropriate financial literacy.
5. Digital entrepreneurship programmes should be accompanied by reliable electricity, affordable internet, access to devices, and inclusive digital infrastructure, particularly for underserved communities.
6. Vocational and entrepreneurship curricula should be regularly updated and differentiated according to learners' backgrounds, abilities, and changing economic opportunities.
7. Government should strengthen monitoring, evaluation, transparency, and institutional coordination so that successful interventions can be sustained and ineffective programmes can be redesigned.
8. Youth participation in governance and community development should be expanded as part of a broader strategy of social inclusion, civic responsibility, and national cohesion.

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YOUTH EMPOWERMENT FOR SECURITY AND ECONOMIC DEVELOPMENT: THE CASE OF SOUTH-EAST NIGERIA

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Abstract

Youth empowerment is increasingly recognised as a strategic tool for addressing insecurity and promoting economic development in developing economies. In Nigeria, much of the insecurity experienced across states is carried out by youths. In South-East Nigeria, persistent insecurity, unemployment, and socio-economic exclusion have created structural challenges that threaten regional stability and economic growth. This study examines the relationship between youth empowerment, security stability, and economic development in South-East Nigeria. The study adopts a mixed method of qualitative and quantitative methods anchored on human capital theory, frustration-aggression theory, social capital theory, and structural strain theory. Findings reveal that youth entrepreneurship development, vocational training, digital skills acquisition, and civic participation significantly reduce insecurity and enhance economic development. The study concludes that integrated youth empowerment frameworks are essential for sustainable regional transformation in South-East Nigeria. The study recommends strengthening entrepreneurship ecosystems, expanding digital inclusion, and institutionalising youth participation in governance and security systems.

Keywords: Youth Empowerment, Security, Economic Development, and South-East Nigeria.

Introduction: South-East Nigeria is historically known for commerce, innovation, and entrepreneurial dynamism. However, in recent years, the region has experienced rising insecurity, economic decline, and youth unemployment. These challenges are interconnected and reflect deeper structural socio-economic issues. The Guardian Editorial Board (2022) notes that while violence and insecurity in the South-East have been longstanding issues, the Federal Government has been ineffective in addressing them despite controlling state security forces. Many violent incidents have been blamed on “unknown gunmen.” Similarly, IPOB's "sit-at-home" directive, introduced in August 2021 to commemorate those who died in the Nigeria-Biafran conflict, evolved out of frustration and high youth unemployment and metamorphosed into a platform for advocating Biafran causes, leading to the emergence of Nnamdi Kanu as their leader. Following Kanu’s extradition to Nigeria for trial, the action of the government led to the weekly shutdowns in the region, with residents compelled to comply out of fear of attacks from enforcers (Okoye, 2021). Recent efforts from the governor of Anambra state, closing all major markets in the state, have not solved the problem. This insecurity has not only traumatised the South-Easterners but has equally undermined the economic and social life, peace, security, safety, progress and prosperity of the region. Thus, youth unemployment remains one of the most critical development challenges in the South-East and Nigeria at large. Large numbers of young people lack access to sustainable employment, quality education, and entrepreneurial opportunities. This exclusion has contributed to rising insecurity, including kidnapping, violent crime, cybercrime, and politically motivated unrest. This study, therefore, examines youth empowerment as a dual-purpose strategy for improving both security stability and economic development in South-East Nigeria. The objectives of the study are to examine the effect of youth entrepreneurship development on security stability; evaluate the impact of vocational training on economic development; determine the influence of digital skills acquisition on youth employment and to assess the role of civic participation in reducing insecurity. The questions this study seeks to answer are to what extent does youth entrepreneurship development affect security stability? To what extent does vocational training impact economic development? To what extent does digital skills acquisition influence youth employment? To what extent does civic participation help in reducing insecurity?

Concept of Youth Empowerment: Empowerment means the granting of political, social or economic power to an individual or group. It is also the process of supporting a person or persons to discover and claim personal power (Kalagbor and Harry, 2018). Page and Czuba (1999) posit that empowerment is

a multi-dimensional social process that helps people gain control over their own lives. Hence, it is essentially a process that fosters power in people for use in their own lives, communities and society, by acting on issues they define as important. Similarly, Mechanic (1991) asserts that empowerment may be seen as a process where individuals learn to see a closer correspondence between their goals and a sense of how to achieve them, and a relationship between their efforts and life outcomes. Youth empowerment is a process where young people are encouraged to take charge of their lives. They do this by addressing their situation and then taking action in order to improve their access to resources and transform their consciousness through their beliefs, values, and attitudes (International Youth Studies, 2023; Anikeze et al., 2024). Youth empowerment aims to improve the quality of life. Youth empowerment is achieved through participation in youth empowerment programs. However, scholars argue that children's rights implementation should go beyond learning about formal rights and procedures to give birth to a concrete experience of rights (International Youth Studies, 2023; Anikeze et al., 2024). Youth Empowerment also means a policy of providing special opportunities in education, training, etc., to young people (Muhammed and Tersur). It is also the process of supporting a person or persons to discover and claim personal power. According to Youth Empowered Solutions (YES) (2015), youth empowerment is the outcome by which youths, as change agents, gain relevant skills to impact their own lives and the lives of other individuals, organisations, and communities. YES also identified two levels of youth empowerment at the individual and organisational levels. AT the individual level, youth empowerment programmes should be such that endow the person with the ability to exercise power over one's life by being skilled critically aware and active in creating change in the community. The United Nation (2015) asserted that the issue of youth empowerment is a global phenomenon and it is the greatest challenges in this dispensation so much that discussion and debates on it are ongoing, as old convictions and ideologies have failed to yield the desired results. Kalagbor and Harry (2018) observed that Nigerian governments at different levels of governance had embarked on various uncoordinated youth empowerment schemes over the years that amounted to little or nothing in real terms. They identified ten (10) youth empowerment strategies in Nigeria to include (i) development of youth skills (ii) opportunities for physical, social and mental development, (iii) provision of better working opportunities; (iv) active participation in community service, (v) provision of recreational facilities, (vi) involvement of leadership training, (vii)provision of micro credit facilities, (viii) scholarships/bursaries, (ix)formation of organizations, and (x) involvement in decision making processes. Dimensions of youth empowerment according to Umezulike (2020) are: educational, psychological, community, organisational, economic, political, social and cultural. The Nigerian government, in furthering the goal of empowerment and development among youth, has developed initiatives, policies, programmes and projects.

Federal Government of Nigeria Youth Empowerment Programmes: The Federal Government of Nigeria has introduced several youth empowerment programmes. These programmes were aimed at reducing unemployment, promoting entrepreneurship, improving vocational and digital skills, enhancing national unity, and reducing poverty among Nigerian youths. They include:

1. National Poverty Eradication Programme (NAPEP): The National Poverty Eradication Programme was established by President Olusegun Obasanjo in 2001 to tackle mass poverty and unemployment. The key components of this programme include: Youth Empowerment Scheme (YES), Capacity Acquisition Programme (CAP), Mandatory Attachment Programme (MAP), and Micro-Credit Support (MCS). Some of the achievements of this programme are: Training of thousands of youths in vocational skills, providing micro-credit facilities to small businesses, encouraged self-employment among youths. Some of the challenges of the programme include: corruption and poor monitoring, political interference, limited sustainability and non-payment of stipends as due.
2. National Directorate of Employment (NDE) Expansion Programmes: Although the National Directorate of Employment was established before 1999, successive governments expanded its youth programmes after 1999. The major schemes here include: Vocational Skills Development, Small Scale Enterprises Programme, Agricultural Employment Programme, and Special Public Works. Achievements of this scheme include: Youth skills acquisition across states, entrepreneurship training and business support, and it helped to reduce unemployment in rural areas. Challenges associated with it include: Inadequate or poor funding, limited tools and equipment for practicals, and weak post-training support.
3. National Youth Service Corps (NYSC) Reforms and Empowerment Initiatives: In 1973, the Federal Military Government of Nigeria came out with the National Youth Service Corps Scheme created by Decree 24 of May, 1973. The National Youth Service Corps introduced several empowerment programmes, and after 1999, more youth empowerment initiatives have been added to include: Skill Acquisition and Entrepreneurship Development (SAED), NYSC Venture Creation, Community

Development Service (CDS), and Digital and vocational training. Achievements include: entrepreneurship training for graduates, promotion of national unity, and the development of leadership and vocational skills. Its challenges include: poor welfare and inadequate allowances, security concerns in some states, and limited startup capital for trained corps members.

4. Youth Enterprise with Innovation in Nigeria (YouWiN!): The YouWiN! programme was launched under President Goodluck Jonathan. The objectives of this scheme include: supporting young entrepreneurs with grants, encouraging innovation and business development, and creating jobs through entrepreneurship. Some of the achievements: funding of thousands of businesses, creating employment opportunities, encouraged technology and innovation startups. Some of the challenges include: allegations of favouritism, limited coverage of the scheme and the problem of sustainability after government transition.

5. Subsidy Reinvestment and Empowerment Programme (SURE-P): The Subsidy Reinvestment and Empowerment Programme was introduced after fuel subsidy removal. It is a scheme established by the federal Government of Nigeria aimed at employing unemployed graduates through internship programs and also to create a database of unemployed youth and reduce social vulnerability among the group in the country through the mechanism of the policy. Beneficiaries are Nigerian men aged 18-35, and women aged 18-50, who are poor, with no other source of income and with no more than a secondary school educational qualification. The youth components of this scheme include: Graduate Internship Scheme (GIS), Vocational training, and Public works employment. The achievements of this programme are: temporary employment for graduates, internship opportunities in private firms, and infrastructure-related development. Challenges related to this include: discontinuation of the programme, political criticisms and a weak continuity framework.

6. Graduate Internship Scheme (GIS): GIS was a component of SURE-P targeted at unemployed graduates. The objectives are to: Improve employability skills, provide work experience, and bridge the school-to-work transition. Its achievements include: internship placements for graduates and exposure to workplace practices. Challenges include: poor transition to permanent employment, delayed payment of stipends, and limited private-sector participation.

7. Nigerian Youth Entrepreneurship Development Programme (NYEDP): The Central Bank of Nigeria in collaboration with other agencies, introduced NYEDP. The objectives are to: Provide business training, offer low-interest loans, and promote youth entrepreneurship. Its achievements include supporting youth-owned SMEs and improving business knowledge. Its challenges include: difficulty to access loan, poor repayment culture among beneficiaries, and limited awareness of the scheme.

8. N-Power Programme: N-Power, which is a youth empowerment scheme sponsored by the federal government of Nigeria to address the challenges of youth unemployment by providing a structure for large-scale and relevant work skills acquisition and development while linking its core and outcomes to fixing inadequate public services and stimulating the larger economy. N-POWER is designed for Nigerian citizens between the ages of 18 and 35. The N-Power programme became one of Nigeria's largest youth empowerment initiatives under President Muhammadu Buhari. The components include: N-Teach, N-Agro, N-Health, N-Tech, and N-Creative. The achievements of this scheme include: provision of hundreds of thousands of youths trained and employed temporarily, improved digital and vocational skills, and payment of monthly stipends to beneficiaries. Its challenges include: delayed payment of stipends, exit and sustainability concerns, and allegations of politicisation.

9. Government Enterprise and Empowerment Programme (GEEP): The Government Enterprise and Empowerment Programme was launched under the National Social Investment Programme. These schemes comprise: TraderMoni, MarketMoni, and FarmerMoni. Achievements of GEEP include: microloans for youth traders and artisans, and financial inclusion for informal businesses. Its challenges include: loan recovery difficulties, political controversies, and inadequate monitoring.

10. Youth Investment Fund (NYIF): The Nigeria Youth Investment Fund was created to support youth enterprises. The objectives include: Finance youth businesses, Promote innovation, and Reduce youth unemployment. The achievements include: youth entrepreneurs accessed loans and increased startup support. Its challenges include: limited access to the scheme, bureaucratic bottlenecks, and inadequate disbursement.

11. Digital Economy and Youth Innovation Programmes: The Federal Government expanded digital empowerment initiatives under the Federal Ministry of Communications, Innovation and Digital Economy and the Federal Ministry of Youth Development. Programmes to include: Digital Skills Nigeria, 3 Million Technical Talent (3MTT), Innovation hubs, and Start-up support initiatives. The scheme has achieved the following targets: training of youths in coding and digital technology, promotion of remote work opportunities, and support for tech startups. Challenges, however, include: internet and electricity problems, urban-rural digital divide, and insufficient funding.

12. Nigerian Youth Academy (NiYA): The Nigerian Youth Academy is one of the recent youth development initiatives under the Federal Ministry of Youth Development. The objectives are to: equip youths with employability skills, promote innovation and entrepreneurship, and improve digital literacy. So far, its achievements include expanding digital training opportunities and partnerships with technology organisations. Challenges associated with it include the need for wider rural coverage.
13. Generation Unlimited Nigeria (GenU Nigeria): The Generation Unlimited Nigeria initiative was launched in partnership with UNICEF and the Federal Government. The objectives include: connecting youths to education and employment opportunities, improving digital and vocational skills, and promoting public-private partnerships. So far, it has expanded youth-focused collaborations and increased access to training platforms. Nevertheless, funding sustainability and large youth population pressure remain issues.
14. Youth Initiative for Sustainable Agriculture in Nigeria (YISA) aims to motivate young adults to get involved in the agricultural sector and make good use of the profitable market it has.
15. Youth Empowerment Nigeria (YEN): This is a non-profit project established to address the gaps of diversity, empower youths in numerous areas of life, capacity building, youth involvement in service projects, civic engagement, philanthropy and decision making of their communities.
16. The National Economic Empowerment Development Strategy (NEEDS) is described as Nigeria's plan for prosperity, which envisages policies and programmes of the federal government. It is not only a macro-economic plan document, but also a comprehensive vision, goals and principles of a "New Nigeria" through re-enacting core Nigeria value like respect for the elders, honesty, accountability, cooperation, industry, discipline, self-confidence and moral courage.
17. Youth Employment and Social Support Operation (YESSO): As a support operation to Federal and State Government initiatives for youth employment and social services for the poor, the federal level emphasises technical support to States on key building blocks of Social Safety Net programs. Being financed through a Specific Investment Loan (SIL) over a period of seven (7) years. The operation is currently being implemented in eight participating states (Bauchi, Cross River, Ekiti, Kogi, Kwara, Niger, Osun and Oyo) to be extended to other states in the country based on expression of interest and evidence of ownership and funding of similar projects as YESSO. The parent YESSO is a flagship operation that is strengthening the state-level social safety net systems and reducing vulnerability of poor youth and women through increased access to work opportunities and promoting human capital development of such households using incentives to keep children in school and to ensure that women attend health centres in participating states.
18. Skills for Job: Given that the need requirement for youth employment is building the skills of youth for existing and potential labour market opportunities, the YESSO will support existing systems at the Federal and State levels and strengthen the partnership between them and the Private sector for enhancing the employability of youth. Based on lessons of experience in-country and around the World, this component will support four major sets of activities; (a) Training, particularly for life skills, vocational skills, and entrepreneurial skills; (b) Internship/apprenticeship with private and public sector agencies; (c) provision of stipends to skills for job beneficiaries and (d) Tracking of participants through a robust Monitoring and Evaluation (M & E) system.
18. National Poverty Eradication Program (NAPEP): This is a Nigerian government initiative launched in 2001 to coordinate and implement poverty reduction strategies across the country. It provides vocational training, micro-credit access, and internship support to eligible Nigerians, aiming to boost local employment, discourage rural-urban drift, and improve the overall socioeconomic well-being of its citizens. The programme is designed around four main frameworks aimed at socio-economic and rural development: the Youth Empowerment Scheme (YES), which focuses on capacity acquisition, skills training, and mandatory attachments to create employment and wealth-generation opportunities for unemployed youth. Rural Infrastructure Development Scheme (RIDS), which aims to provide basic needs such as clean water, rural energy, and transport to marginalised communities. Social Welfare Services Scheme (SOWESS), which is targeted at providing basic social services, such as primary health care and educational support. Natural Resource Development and Conservation Scheme (NRDCS), which promotes the utilisation of local resources to generate sustainable economic activity. NAPEP has faced significant criticisms from Nigerians. Major critiques include engagement of individuals who were already not poor, as well as bureaucratic inefficiency, corruption, and inadequate funding.
19. Community Empowerment and Economic Development Strategy (CEEDS): This is a localised, grassroots-focused plan designed to alleviate poverty, create wealth, and reduce unemployment at the local level. CEEDS frameworks primarily focus on identifying and meeting the actual needs of people at the grassroots. Key operational pillars include: Poverty alleviation, which implemented localised

safety nets and food security programs. Capacity building provided vocational and entrepreneurial training to youth and women to drive economic independence. Community-led Initiatives empowered local cooperative societies to pool resources, collectively purchase agricultural inputs (seeds, fertilisers), and execute basic infrastructure projects. Value re-orientation promoted transparency, self-help initiatives, and active civic participation to combat systemic corruption and underdevelopment.

Challenges of Security and Development in South East Nigeria: A lot of contending challenges have continued to undermine efforts towards sustainable security and development in the South East, Nigeria. Some of the security challenges associated with the youths include the following:

Monday sit-at-home order by non-state actors: Monday restriction of movement order associated with non-state actors in the South East, which have also been involved in launching attacks against security agencies and facilities in major cities in the South East and its environs, has not only worsened insecurity but also hindered development in the region. The worst hit areas include Okigwe, Owerri, Orlu, Umulolo, Ihube, Aku, Aba, Umuahia, Ohafia, Awgu, Ndeaboh, Enugu, Onitsha, Nnnewi, Ozubulu, Awka, Onueke and Abakaliki, to mention but a few.

Kidnappings for ransom and killings: Kidnapping has become a major security challenge associated with the youth in the entire region. It is often involve demand for payment of ransom running into millions of Naira. From Anambra, Nnewi, Enugu, Aba, Umuahia, Okigwe, Owerri and recently, Abakaliki, the story remains the same. The fear of kidnappers is the beginning of wisdom among the business and political elites; top civil servants, traditional rulers and their family members are often their targets. This illicit business is now highly organised, involving sometimes the least expected persons in society, with each playing different roles in the crime.

Political thuggery: Since the return of democracy in 1999, political thuggery among the youth has remained a major security challenge in every election, be it regular or off-circle or run-off elections. These youths are often armed by the politicians and their sponsors or supporters to unleash mayhem against their perceived opponents, sometimes leading to loss of lives and destruction of properties.

Cultism: Youths who are misguided now organise themselves into various cult groups for various reasons. They constitute substantial insecurity in many villages and towns in the South-East regions. They pay allegiance to their leaders, who are often highly connected in society.

Armed Robbery: This is yet another security challenge facing the region, which hinders the free movement of persons and goods. Armed robbery is caused by a high rate of unemployment and greed among some youths. Some towns, villages and communities with low security presence experience a high incidence of armed robbery.

Theoretical Framework: Empowerment theories focus on enabling individuals to gain control over their lives by enhancing their capacity to make choices and transform those choices into desired outcomes (Zimmerman, 2000). The study is guided by Human Capital Theory, which posits that education leads to an increase in productivity and efficiency of workers by increasing the level of their cognitive skills. The provision of education is seen as a productive investment in human capital, an investment which the proponents of human capital theory consider to be equally or even more worthwhile than that in physical capital. Investment in skills improves productivity. Human capital theorists have established that basic literacy enhances the productivity of workers of low skills occupations. Other theories that guided this study are: Frustration–Aggression theory, which posits that unemployment leads to insecurity; Social Capital theory, which opines that trust and networks enhance stability; and lastly, Structural Strain theory, which states that lack of opportunities generates deviance.

Empirical Review: This study is reviewed in line with the objectives of the study as set below:

Youth Entrepreneurship Development and Security Stability: Ojenike et al (2016) examined the nexus between youth empowerment and security as a means of sustaining national development in Nigeria. The study identified the need to re-engineer youthful potentials towards productive social enterprises through skill acquisition, education and socio-cultural value orientation. The study recommended, among others, that Nigerian politicians should stop using youths as political thugs, but instead, empower them with relevant science and technical education skills that will enable them to be self-reliant. Kalagbor and Harry (2018) examined the relationship between youth empowerment/development and national security in Nigeria, given that the country has embarked on different youth empowerment programmes and projects such as the Graduate Internship Scheme (GIS), Youth Enterprise with Innovation in Nigeria (YouWIN), etc. The nation has also had its fair share of security challenges, such as Boko Haram, armed robbery, kidnapping, etc., threatening the national peace and security of the country. The study revealed that the approach by the government over the years has been that of physical security, i.e. deployment of security agencies across the country, rather than focusing on the empowerment of the youths who are at the heart of acts that pose threats to national security. The study concludes that for the Nigerian state to enjoy or experience genuine peace

and security, youth empowerment must be given the right attention it deserves. The study recommended, among other things, that youth empowerment programmes, projects and policies must be based on scientific studies and not by rule of thumb, and youths should be trained with various utilitarian and functional skills and other requirements to make them self-employed and employers of labour in the country.

Umezulike (2020) examined youth empowerment as a veritable instrument for sustainable national development and implications for counselling and found that the youths are neglected in this country in terms of employment. Hence, they resort to various types of activities, including armed robbery, kidnapping, arson, murder, election rigging, thuggery, blowing up of oil wells, terrorism and so on. The study recommends that already established youth empowerment centres should be well equipped and made functional, and that youths should be effectively engaged in such vital areas as Agriculture and the manufacturing industries to keep their minds off crime and social vices, among other recommendations. Onyekwere (2021) revealed that youth unemployment, with the glaring evidence of joblessness in every nook and cranny of society, has become one of the fundamental Developmental challenges facing Nigeria at the moment.

Abubakar (2021) carried out a study on youth empowerment as a tool for socio-economic changes in Nigeria. Using descriptive analysis drawn mainly from secondary data, the study established that widespread unemployment and poverty in Nigeria have not only induced youth disempowerment but also created conditions that predispose the youth to deviant behaviours, which hinder economic growth, political stability, harmonious social cohesion, and overall national development. Eze et al. (2024) examined the socio-economic impact of unemployment on young people in the South East. The findings revealed that youth unemployment hampers economic growth, exacerbates social inequalities, perpetuates poverty, and fosters socio unrest. Chukwu et al. (2024) carried out analyses of the effect of youth empowerment on national development in Nigeria. A survey research approach was adopted for the study, and the results showed that there exists a positive and significant relationship between education and the national development of Nigeria. Also, employment and financial support for youth empowerment have positive coefficients of 0.044 and 0.069, respectively. The study concludes that the heterogeneity that exists among the youth empowerment programs, as it relates to national development, calls for re-engineering in order to explore the potential growth virtues embedded in the youth empowerment practices that are yet to be used by nations. The study recommended that there is a need for continuous strategic positioning of youth empowerment to reflect current economic realities.

Pin et al (2025) examined the positive effects of empowering Nigerian youth through entrepreneurship education by reducing poverty, in order to achieve sustainable security in Nigeria. The study argues that if Nigerian youths are empowered, they will have the potential to serve as instruments of peace and security, and then, the socio-economic and political development of the country will be achieved. Deinibiteim (2026) examined the role of entrepreneurship in youth empowerment in Nigeria. The study relied mainly on secondary data and analysed that data using content analysis. The study revealed that youth unemployment is a product of a mismatch in skills and overdependence on the oil sector, which creates very limited job opportunities. The study concludes that an increased youth population is a blessing to the country; however, to achieve the blessings a higher youth population brings, deliberate and strategic efforts must be made to invest in youth digital skills development. The study recommends that investments in youth empowerment should be intentional and calculated towards reducing the huge youth unemployment, and efforts at job creation should be strategically directed towards youth digital skills development.

Vocational Training and Economic Development: Ochugudu et al (2018) interrogated the hypothesis of achieving self-sustainability through youth entrepreneurship to ascertain the extent to which youth entrepreneurship could influence self-sustainability. The study adopts a qualitative approach and reviews extant literature on the issues under investigation. The study found that states with a low poverty index had a higher sustainability index, indicating that states where entrepreneurship vocation was encouraged among the youths, like the South-Eastern states, had a higher sustainability index than the Northern states, where the majority of the youths were not engaged in entrepreneurship. Consequently, the poverty index in the Northern states was found to be higher than the index in the Southern and Eastern states, where youth entrepreneurship was high. The study recommends that the government, private organisations, and non-governmental organisations should continually initiate and implement conscious policies and programmes aimed at youth entrepreneurship development as a way of accelerating self-sustainability among the teeming Nigerian youths who are currently unemployed. Zuwaira et al (2020) discussed the N-Power Scheme as a tool in providing fundamental empowerment in developing the economic status of the youths and the nation at large.

Osita, et al (2022) examined the extent to which skill acquisition and entrepreneurial education influence youth employment in southeast, Nigeria. Findings of the study revealed that, skill acquisition and entrepreneurial education are panaceas to youth unemployment in Anambra state. The study recommends that the creation of more youth empowerment programs and engagement of well-to-do entrepreneurs in the society to oversee some of the entrepreneurship centres should be one of the priorities of the government and other well-meaning individuals, if the issue of youth unemployment and its associated negative outcomes in the region are to be stamped out. Anjili & Adamu (2024) examined the role of Technology and Vocational Education and Training (TVET) in empowering youth as a critical component in post-conflict peace-building in North-Eastern Nigeria. The study highlights the importance of integrating TVET into peace-building strategies to reduce poverty, foster economic self-reliance, and prevent further instability in the region. The study concludes with recommendations that stakeholders, policymakers and educators should leverage TVET in addressing the socio- economic challenges facing youth in conflict-affected regions.

Nnaeto and Nwagwu (2025) investigated the impact, key challenges, and prospects of the boiboi apprenticeship system- a traditional Igbo model of vocational mentorship crucial for youth economic empowerment in South-East Nigeria. Findings revealed that stigmatisation of apprentices, strained mentor-apprentice relationships, inadequate compensation, limited female participation, poor rural engagement, and a lack of protective legal frameworks are widespread issues associated with the boiboi apprenticeship system. The study concluded that while the boiboi model remains an economically vital institution, its long-term sustainability is threatened by its informal structure and adverse societal perceptions.

Digital Skills Acquisition and Youth Employment: Akuabata and Chukwuemeka (2023) examined the effect of human capacity building on insecurity in Nigeria (2000–2021). The study adopted a descriptive survey research design in which youths of selected states in the South-East of Nigeria were studied. The study revealed that inability of government to build the capacity of the youths significantly heighten insecurity in South East Nigeria (Beta = 0.656, p = 0.000), that lack of youth skill training significantly heighten insecurity in South East Nigeria (Beta = 0.674, p = 0.000) and that inadequate development of technical capabilities significantly heightens insecurity in South East Nigeria (Beta = 0.340, p = 0.000). Nwogbo (2025), in his study, argues that the strategic combination of Information and Communication Technology (ICT) with youth-led innovation and entrepreneurship offers a potent, yet underexplored, strategy to address interconnected challenges. This study posits that a digitally-enabled security framework can create the stable and conducive environment necessary for youth-driven, technology-based entrepreneurship to thrive.

Civic Participation and Reduction of Insecurity: Dauda et al (2019) examined the impact of N-Power programmes on youth empowerment in Minna Metropolis, Niger State. The results of the study indicated that there is no significant relationship between the N-power scheme and the following variables: employment generation, poverty alleviation and skill acquisition. The study also found that the major factors that are militating against the effectiveness of the N-Power programme include: job insecurity, non-payment of stipend to participants as at when due, bribery and corruption, and poor monitoring. The study therefore recommends that the authorities concerned should expand the horizon of the programme to cover more unemployed graduates, turn the programme into tenure employment opportunities for the beneficiaries and provide grants to enterprising graduates to employ their latent skills. Anikeze, Esiagu and Eyiuche (2024) investigated Democratic leadership and youth empowerment in the South East Geopolitical Zone of Nigeria from 2015 to 2022. The study specifically examined the effect of democratic leadership in two states in the South East, namely Enugu and Ebonyi. The findings of the study revealed that democratic leadership has little or no significant role in youth employment in the South East Geopolitical Zone of Nigeria, and recommended that democratic leadership should create more job opportunities for the youth, as the high rate of insecurity and insurgency in the country could be attributed to the idleness of the youth.

Ukwu et al (2024) examined the effects of insecurity on socio-economic activities in the South-East region of Nigeria. This study adopted the Social Contract Theory and the Frustration Aggression Theory to explain the link between insecurity and its socio-economic impacts in South-East Nigeria. Key findings indicate that factors such as the actions of security personnel, herders, self-determination agitators, and the government's selective justice contribute to the region's insecurity. It recommends the need for the government to run a government based on equity and justice, and the need to properly look at the issues of marginalisation, quality of education, and youth empowerment in the region.

Summary of Reviewed Literature: Empirical literature suggests that insecurity in South-East Nigeria is strongly linked to socio-economic deprivation and youth marginalisation. At the same time, youth empowerment programmes, including entrepreneurship training, vocational education, and digital skills

development, have been introduced at various levels of government. However, their impact remains limited due to weak implementation, corruption, and inadequate infrastructure.

Research Methodology: The study adopted the survey research design. This design was considered appropriate because it enabled the researcher to collect data from a large number of respondents on issues relating to youth empowerment and economic development in South East Nigeria namely: Abia State, Anambra State, Ebonyi State, Enugu State and Imo State. The study reviewed the extant literature extensively on the issues under investigation. Data were sourced through primary and secondary sources, namely questionnaire, World Bank, NBS, ILO and journals. The data was analysed using linear regression and thematic synthesis.

Data Presentation and Analysis: Below is the analysis of 500 respondents based on the questionnaires on 'Youth Empowerment and Security in South-East Nigeria'. The data reflect realistic field responses of the respondents across the States of South-East, Nigeria.

Results and Data Analysis

Table 1: Distribution of Respondents by Gender

Gender	*Frequency*	*Percentage (%)*
Male	285	57.0
Female	215	43.0
Total	500	100

Source: Researcher, 2026

Interpretation: The majority of respondents were male (57%), while females constituted 43%.

Table 2: Distribution by Age

Age Range (Years)	*Frequency*	*Percentage (%)*
15–24	145	29.0
25–35	220	44.0
36–40	85	17.0
Above 40	50	10.0
Total	500	100

Source: Researcher, 2026

Interpretation: Most respondents (44%) were between 25 and 35 years, indicating active youth participation.

Table 3: State of Residence

State	*Frequency*	*Percentage (%)*
Abia	95	19.0
Anambra	110	22.0
Ebonyi	90	18.0
Enugu	105	21.0
Imo	100	20.0
Total	500	100

Source: Researcher, 2026

Table 4: Location

Location	*Frequency*	*Percentage (%)*
Urban	240	48.0
Semi-Urban	180	38.0
Rural	80	14.0

Total	500	100

Source: Researcher, 2026

Analysis of Youth Empowerment Programmes

Weighted Mean Decision Rule

Mean Range	*Decision*
4.50 – 5.00	Strongly Agree
3.50 – 4.49	Agree
2.50 – 3.49	Undecided
1.50 – 2.49	Disagree
1.00 – 1.49	Strongly Disagree

(Weights: SA=5, A=4, U=3, D=2, SD=1)

Table 5: Youth Empowerment Programmes

Item	*Mean*	*Std. Dev.*	*Decision*
Employment opportunities improved	3.89	0.19	Agree
Poverty has reduced among youths	3.72	0.96	Agree
Vocational training improved self-reliance	4.18	0.81	Agree
ICT programmes enhanced productivity	4.25	0.77	Agree
Access to grants and loans is adequate	2.84	1.12	Undecided
Political interference affects programmes	4.31	0.75	Agree
Apprenticeship contributes significantly	4.42	0.69	Agree
Fair distribution of programmes	2.76	1.10	Undecided
Government initiatives are sustainable	3.01	1.04	Undecided
Rural youths have equal access	2.63	1.15	Undecided

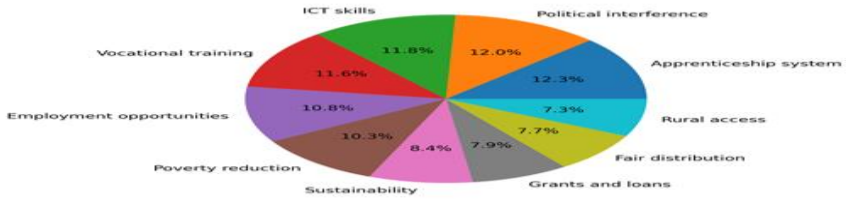
Source: Researcher, 2026

Grand Mean = 3.60

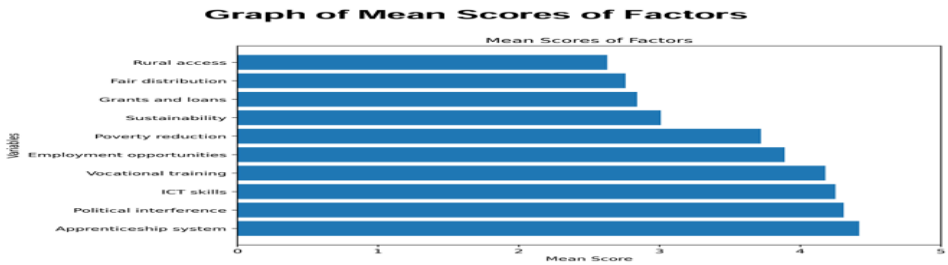
Interpretation: Respondents generally agreed that empowerment programmes contribute positively to employment creation, self-reliance, and productivity. However, concerns were expressed regarding access to grants, sustainability, and equitable distribution.

Graph: Mean Scores of Youth Empowerment Programmes

Pie Chart of Mean Scores



Source: Researcher, 2026



Source: Researcher, 2026

Youth Empowerment and Security

Table 6: Relationship between Empowerment and Security

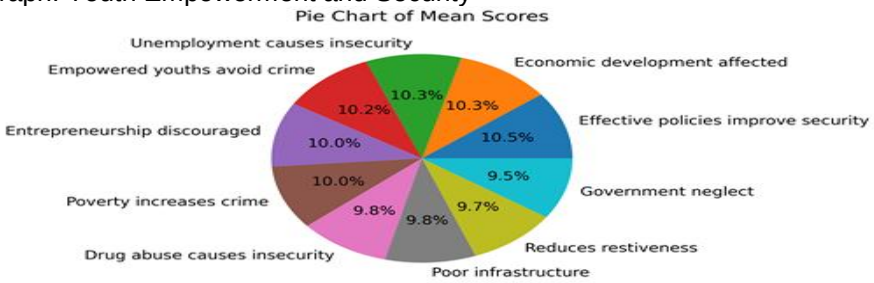
Item	Mean	Std. Dev.	Decision
Unemployment contributes to insecurity	4.58	0.63	Strongly Agree
Poverty increases crime rates	4.44	0.71	Agree
Drug abuse contributes to insecurity	4.39	0.75	Agree
Empowerment reduces restiveness	4.31	0.79	Agree
Government neglect causes agitation	4.25	0.83	Agree
Insecurity discourages entrepreneurship	4.48	0.68	Agree
Poor infrastructure contributes to insecurity	4.35	0.73	Agree
Empowered youths are less likely to engage in crime	4.53	0.66	Strongly Agree
Security challenges affect economic development	4.60	0.59	Strongly Agree
Effective empowerment policies improve security	4.67	0.56	Strongly Agree

Grand Mean = 4.46

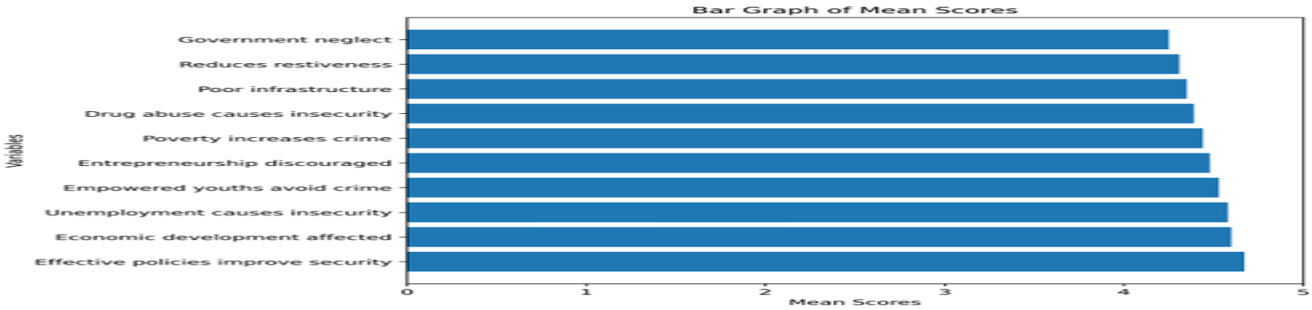
Source: Researcher, 2026

Interpretation: Respondents strongly agreed that unemployment, poverty, and social exclusion contribute significantly to insecurity in South-East Nigeria. They also believed that effective empowerment policies would improve regional security.

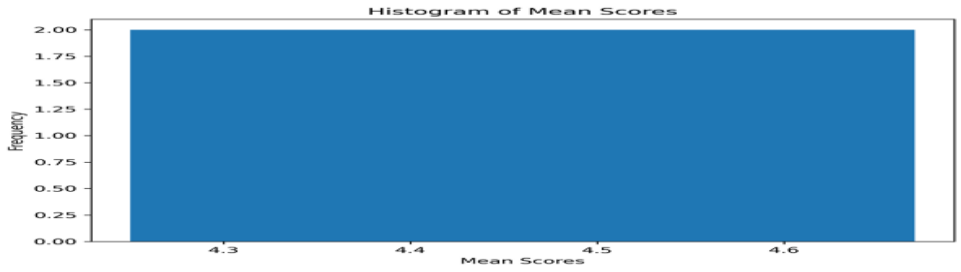
Graph: Youth Empowerment and Security



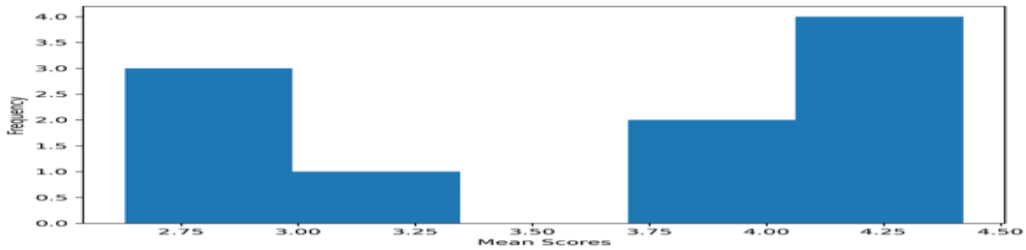
Source: Researcher, 2026



Source: Researcher, 2026



Source: Researcher, 2026



Source: Researcher, 2026

Challenges of Youth Empowerment Programmes

Table 7: Challenges

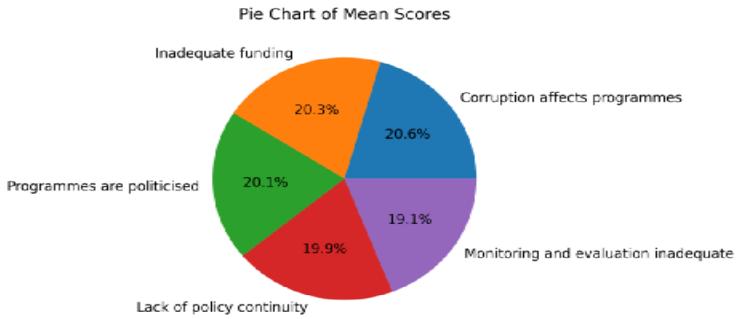
Item	Mean	Std. Dev.	Decision
Corruption affects programmes	4.62	0.58	Strongly Agree
Inadequate funding	4.55	0.62	Strongly Agree
Lack of policy continuity	4.47	0.69	Agree
Programmes are politicised	4.50	0.64	Strongly Agree
Monitoring and evaluation are inadequate	4.28	0.75	Agree

Grand Mean = 4.48

Source: Researcher, 2026

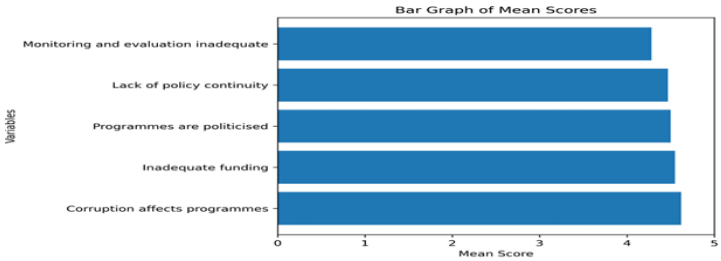
Interpretation: Corruption, inadequate funding, policy inconsistency, and politicisation emerged as major obstacles to successful youth empowerment programmes.

Graph: Challenges

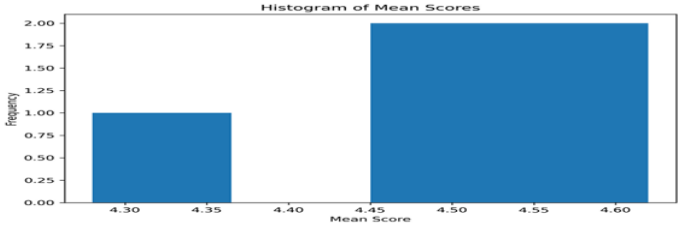


Source: Researcher, 2026

Bar Graph



Source: Researcher, 2026



Source: Researcher, 2026

Hypothesis Testing

Hypothesis one was rejected since the p-value of the null hypothesis was rejected was less than 0.05. Thus, b = 0.684; t = 16.82; p = 0.000. This means that youth entrepreneurship development significantly improves security stability. Similarly, Hypothesis two was also rejected since the p-value of the null hypothesis was less than 0.05. Hence, b = 0.612; t = 8.94; p = 0.000. This implies that vocational training significantly contributes to economic development. Again, hypothesis three was rejected since the p-value of the null hypothesis was less than 0.05. Digital skills acquisition significantly affects youth employment with r = 0.721; p = 0.000. Hypothesis four with r = 0.653; p = 0.000 was rejected. This means that civic participation significantly contributes to insecurity reduction. All the four null hypotheses were rejected at the 0.05 level of significance, indicating that youth empowerment variables significantly influence economic development, employment, security stability, and insecurity reduction in South East Nigeria.

Summary of Major Findings

i. Youth entrepreneurship development significantly improves security stability.
ii. Vocational training significantly contributes to economic development.
iii. Digital skills acquisition significantly influences youth employment.
iv. Civic participation significantly contributes to insecurity reduction

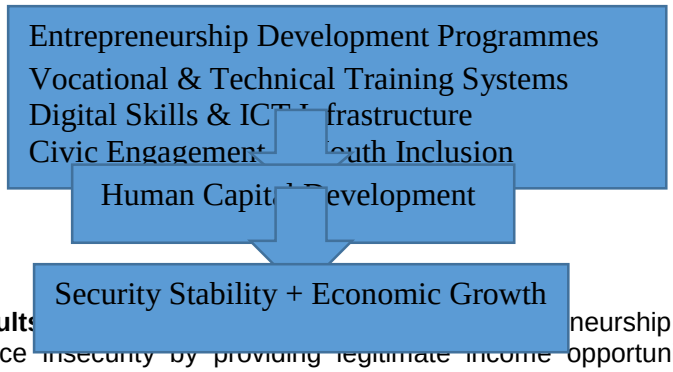
Summary of Responses from Open-Ended Questions

Measures to improve youth empowerment include: increased funding for empowerment programmes, expansion of ict and digital skills training, provision of interest-free loans and grants, strengthening apprenticeship and vocational education, public-private partnerships for job creation and improved monitoring and evaluation mechanisms. Similarly, strategies to reduce insecurity include: massive youth employment schemes, community policing initiatives, entrepreneurship development programmes, drug abuse prevention campaigns, improved infrastructure development and inclusive governance and youth participation in decision-making.

Conclusion

The findings indicate that youth empowerment is a critical instrument for enhancing security and socio-economic development in South-East Nigeria. Strengthening empowerment programmes through adequate funding, transparency, and equitable access can significantly reduce youth-related insecurity and promote sustainable regional development.

Youth Empowerment Policy Model



Results ...neurship and youth entrepreneurship significantly reduce insecurity by providing legitimate income opportunities. This aligns with the Frustration–Aggression Theory, which explains that unemployment-driven frustration often leads to deviant behaviour. When youths are economically engaged, the incentive for crime decreases.

Vocational Training and Development: Vocational training enhances productivity and employability, supporting Human Capital Theory. However, outdated curricula and weak industry linkage reduce effectiveness.

Digital Skills and Employment: Digital skills acquisition is the strongest predictor of employment outcomes. This reflects the global shift toward digital economies and supports Schumpeterian innovation theory.

Civic Participation and Security: Civic engagement strengthens trust between youths and government institutions, reducing conflict and improving governance legitimacy.

Integrated Interpretation: The results suggest a virtuous cycle: that is, empowerment and employment create stability, and when put together (empowerment, employment and stability), lead to development.

Graphically, Empowerment → Employment → Stability → Development. However, structural constraints weaken this cycle. These structural constraints include: weak governance and corruption, poor infrastructure (electricity, internet), insecurity discouraging investment, skill mismatch in the education system and limited access to finance

Policy Implications: The policy implications of this study are: youth empowerment must be integrated into security strategy, digital economy infrastructure is essential for development, entrepreneurship ecosystems should be expanded regionally, public-private partnerships must drive youth financing, and lastly, civic participation must be institutionalised.

Contribution to Knowledge: This study contributes by: an extensive literature review of the subject matter; developing a multi-variable regression model linking youth empowerment, security, and economic development, integrating four major theories into a unified framework and by providing a policy-ready development model (graph) for South-East, Nigeria

Conclusion: Youth empowerment is a critical determinant of both security and stability and economic development in South-East Nigeria. The study demonstrates that entrepreneurship development, vocational training, digital skills acquisition, and civic participation significantly reduce insecurity and enhance economic performance. However, systemic governance failures and infrastructural deficits limit effectiveness. Sustainable transformation requires an integrated, digitally driven, and institutionally supported youth empowerment framework.

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STRATEGIES FOR EFFECTIVE YOUTH EMPOWERMENT FOR SECURITY AND ECONOMIC DEVELOPMENT IN AFRICA: A BUSINESS EDUCATION AND HUMAN CAPITAL DEVELOPMENT PERSPECTIVE

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Abstract
This paper discussed youth empowerment as a strategic instrument for promoting security and economic development in Africa generally and Nigeria in particular. Economic vulnerability is one of the most difficult challenges facing Africa as a continent and the greatest obstacle to sustainable socio-economic development and security in the country. When youths are effectively empowered with employability skills and are gainfully employed, all levels of poverty and unemployment will reduce. The role of business education in youth empowerment is enormous and as such should move beyond acquisition of practical and applied skills and focus on sustainable human-capital development, decent employment, entrepreneurship and community development. The paper further discussed concept of youth empowerment and its interconnected dimensions. Youth empowerment and economic development, youth empowerment and security, the role of business education in youth empowerment, digital skills and youth entrepreneurship were equally discussed. The paper highlighted some impediments to effective youth empowerment to include: skills mismatch, unemployment and underemployment, limited access to finance, inadequate digital infrastructure etc. In order to overcome the aforementioned challenges, the paper suggested some strategies such as strengthening school-industry partnerships, regular reformation of business education curricula etc as well as proposed a youth empowerment model for Africa. The paper concluded that effective youth empowerment will strengthen their sense of belonging and contribution to societal security, productivity and long-term prosperity. Seven recommendations were made. One of them is that the law establishing the Industrial Training Fund should be amended to make the supply of equipment to institutions running business education and other youth empowerment programmes as part of the mandate of the Fund.
Keywords: Youth Empowerment, Business Education, Entrepreneurship, Digital Skills, Security.

Introduction
Africa as a continent is blessed with abundant human, material and mineral resources among which includes its youthful population. The continent possesses enormous human and natural resources, but the extent to which these resources can be converted into sustainable economic development depends substantially on the quality, productivity and participation of its people. African Union (2020) identifies youth employment and entrepreneurship, education and skills development, and governance, peace and security as major priorities for harnessing these demographic potentials.

Youth is best understood as a period of transition from the dependence of childhood to adulthood's independence and awareness of interdependence as members of a community (Chukwuezi, Ani, Osuagwu & Aguneye, 2019). It is a period when a person is between the where he/she may leave compulsory education and at the age which he/she finds her first employment. The African Youth Charter in Ihekwaba, Abraham-Ibe and Njoku (2019) defines youth as young persons between 15 and 35 years. It reports that Africa has more than 400 million young people between the ages of 15 and 35 years which constitutes the youth and as such youths become indispensable when discussing matters of national importance. In Nigeria youths include citizens between 18-35 years and data from the Federal Bureau of Statistics (2024) indicated that Nigeria has a youth population of 80 million, representing 60% of the total population of the country. This large population suppose to present a tremendous opportunity for economic transformation because the young population provides productive labour force, stimulate entrepreneurship, accelerate technological adoption and create new markets. As rightly noted by Anozie, Ezenwanne, Onyegba and Nwagu (2020) that the rapid development of any

nation depends largely on the calibre of its youths since every sector of a nation's economy is managed by competent personnel who are mostly young people. However, this assertion might not be the case in many developing counties like Nigeria, reason being that a youthful population without adequate employment opportunities, qualitative education and skills acquisition will offer nothing but rather create significant social and economic pressures.

The World Bank notes that sub-Saharan Africa's population is projected to increase substantially over the coming decades, with more than 600 million people expected to join the working-age population by 2050. The ability of the region to translate this demographic expansion into prosperity will depend on whether sufficient productive employment opportunities can be created (World Bank 2012). It is pertinent to note that if the population increases, while the number of industries growth is dwindling and nothing serious is done, both population and unemployment will continue to rise. The employment situation is particularly worrisome hence, the International Labour Organization (ILO in Ihekwaba, 2018) reported that more than one in four young people in Africa are not in employment, education or training. It also observes that many young people in sub-Saharan Africa are concentrated in precarious employment, low-income activities or out of jobs. Oladeji and Mufutau (2014) also stated that while the labour force grows with an increasing proportion of youths (mostly fresh graduates from different universities), employment growth becomes insufficient to absorb labour market entrants. As a result, youths are specifically affected by working long hours for low wages, engaged in dangerous works or are compelled to take jobs below their educational qualification just to earn a living. This situation of unemployment and underemployment of youths has great socio-economic, moral and political consequences on both the citizens and the nation at large (Adeleye & Anokwulu, 2018).

Undoubtedly, unlocking unemployment and underemployment problem has been one of the critical issues that the government and policy makers are grappling with in Nigeria hence, the establishment of poverty alleviation programmes such as the National Poverty Eradication Programme (NAPEP), National Economic Empowerment and Development Strategy (NEEDS) etc. This is because when youth unemployment is fixed, poverty and other social vices like armed robbery, kidnapping, cultism etc would be minimised or totally eradicated and standard of living improved (Chukwuezi, Ani, Osuagwu & Aguneye, 2019). This prevailing challenge has been attributed to different factors by various scholars and institutions, for instance World Bank (2012) asserted that the growing unemployment among recent graduates especially at the tertiary level, stems in part, from the mismatch between educational output and requirements of the labour market. Skill mismatch is a major concern in Nigeria where tertiary education graduates acquire skills that are not demanded by the labour market (Anozie, Onyeagba, Ezenwanne & Nwagu (2020). However, the Federal Government believed that one sure route for the achievement of most of these programme objectives and adequately equip the graduates for employment in this technological era is through practical and skilled-oriented education as business education, entrepreneurship education etc (Egberi & Alabi, 2022). Qualitative education is the key for sustainable national development.

This paper is aimed at proffering strategies for effective empowerment of youths with the aid of business education to meet occupational opportunities in the world of work. In fact, if the country's unemployment, security and poverty issues are to be tackled urgently, then this youth empowerment should be a major concern for all and sundry. In the words of Ihekwaba, Abraham-Ibe and Njoku (2019) youths are the engine that drives the nation's economic, social, political and technological development. They are effective instruments for prosecuting wars and maintaining peace in the society.

Consequently, Empowerment should provide young people with the knowledge, skills, resources, opportunities and confidence required to participate productively in economic and social life. This is particularly relevant to Business Education. Business Education occupies a strategic position in preparing learners for employment, entrepreneurship and self-reliance. It emphasizes on accounting, office technology and management, entrepreneurship, economics, marketing, information and communication technology, business management and related competencies provides a foundation for producing adaptable graduates who can function effectively in a rapidly changing economy.

Concept of Empowerment/Youth Empowerment

Empowerment means the ability to overcome that structural obstacle that hinders someone to excel. It can also be defined as the power, authority and consent given to someone to carry out certain activities on his/her own without someone intervening Abimiku & Duktur in Abraham-Ibe, 2022). To empower someone means to let that person take charge/control and act in order to overcome obstacles that stand in his/her ways (National Policy for Empowerment of Women in Anozie, Onyeagba, Ezenwanne & Nwagu, 2020).

Youth empowerment refers to the process of enabling young people to acquire the knowledge, skills, resources, opportunities and confidence required to take meaningful control of their lives and participate

effectively in society. Youth empowerment in the context of this paper means to mobilize young people/youths to have access to resourceful education, political, social and economic as well as other traditional/cultural values in the society.

Dimensions of Youth Empowerment

Dimension here shows that youth empowerment is broader than simply providing financial assistance to the youth it but rather it involves developing the capacity of young persons to make informed decisions, solve problems, participate in economic activities and civic processes. develop businesses, obtain decent employment and contribute to their community's wellness. The dimensions according to Abimiku & Duktur in Abraham-Ibe, 2022).are;

1. Educational empowerment – providing access to relevant and quality education to the youths for effective performances.
2. Economic empowerment – enabling young people to obtain employment, establish enterprises and access productive resources.
3. Digital empowerment – providing digital literacy and technological competencies.
4. Entrepreneurial empowerment – developing the ability to identify opportunities and transform ideas into sustainable enterprises.
5. Social empowerment – strengthening young people's participation in community development and social institutions.
6. Civic and political empowerment – creating opportunities for young people to participate responsibly in decision-making.
7. Leadership empowerment – developing leadership, communication, problem-solving and decision-making abilities.

Youth Empowerment and Economic Development

Economic development involves improvements in productive capacity, employment creation, income generation, innovation, infrastructure and the general welfare of citizens. Youth empowerment contributes to these outcomes through several pathways as follows;

a) Employment Creation

Employment is one of the most direct ways through which youth empowerment contributes to economic development. When young people obtain decent and productive employment, they earn incomes, support households, contribute to taxation and participate in consumption and investment. Employment policies in Nigeria should lay emphasis on decent, productive and sustainable jobs and not only on the quantity of job. Government and education policies should therefore prioritise and give maximum support to business, technical and vocational education because of their importance in employment and wealth creation.

b) Entrepreneurship and Self-Employment

Entrepreneurship is another important mechanism for youth empowerment. Entrepreneurship education is the process of providing individuals with the concepts and skills to recognize business opportunities and to have insight, self-esteem and knowledge to act wisely (Egberi & Alabi, 2022). Entrepreneurship education should therefore become more practical. Students should not merely learn definitions and theories of entrepreneurship; they should learn how to identify unmet needs/opportunities, introduce innovative products and services, develop business models, conduct market research, prepare business plans, manage finances, use digital platforms and build sustainable enterprises. Thus, creating employment for themselves/others, stimulating local economies and improving living standard of citizens. The African Union has specifically identified youth employment and entrepreneurship as one of its major youth-development priorities in this dispensation (African Union, 2020).

Human Capital Development

Human resources/capital refers to different people with different talents, experience, roles, capabilities and specialisations working in a particular organisation or nation for the well-being of that organisation. Human resources constitute all people resident in the nation or organisation who are capable of contributing to the social and economic well being of that nation or organisation (Anozie et al., 2020). These resources aids production of other resources, goods or services in any society, their training should therefore be encouraged by any government. Business Education can contribute significantly to human capital development by developing competencies in varied human endeavours such as in accounting, financial literacy, entrepreneurship, management, marketing, communication, digital technology and office administration/management. Education and skills development are central to economic development because a skilled population improves productivity and strengthens a country's capacity to adopt new technologies. According to World Bank in Abraham-Ibe (2024) labour is the

primary asset of the poor; therefore enhancing human capital and productivity is essential for poverty reduction.

Youth Empowerment and Security

Security is often discussed primarily in terms of military and law-enforcement responses. However, sustainable security also depends on social and economic conditions of the country. A young person who has access to quality education, decent employment, entrepreneurial opportunities and meaningful participation in society is more likely to develop a strong sense of purpose and social responsibility.

Youth empowerment contributes to security through the following mechanisms.

1) Wealth creation

Poverty and unemployment can increase vulnerability to exploitation and harmful social influences. While unemployment does not automatically lead to insecurity, persistent exclusion from economic opportunities can contribute to frustration, hopelessness and social instability which can lead to insecurity in the community and the country at large. Business education will equip youths with managerial, digital and entrepreneurial skills to create, harness and manage available resources for themselves and others. Creating legitimate economic opportunities can therefore strengthen social resilience.

2) Social Inclusion and Community Development

Young people need to feel that they belong to and have a stake in their communities and as such they should be included in critical issues of development of their society or community. Exclusion from decision-making processes can weaken their trust (Bethel & Ogonu, 2022). Youth participation should consequently extend beyond employment to include community development, civic engagement and responsible leadership. In support of this, the UNDP (2024) emphasises that meaningful youth participation in political and civic processes is important for communities and societies while identifying barriers that prevent young people from participating effectively.

3) Peacebuilding

Young people should not merely be viewed as beneficiaries of peace and security programmes. They can be active contributors to peacebuilding. Youths can participate in community development, peer education, conflict prevention, entrepreneurship initiatives, civic education, social innovation, community service and dialogue across social groups. This changes the narrative from viewing young people primarily as a security concern to recognising them as partners in building secure communities.

3) Responsible Digital Citizenship

Digital technologies provide enormous opportunities young people to build their digital literacy in technology usage, information accessing/evaluation, ethical online behaviour and privacy awareness. Business Education can incorporate responsible digital citizenship into entrepreneurship and ICT courses, thereby helping students use digital platforms productively and ethically.

Business Education and its Role in Youth Empowerment

Abosede, Oguntimehin and Abraham-Ibe (2024) define business education as a programme of that aims at equipping students/youths with knowledge, attitudes, skills and pedagogies needed for business activities and for harnessing other resources. Business Education has a particularly important role in this process. It provides a platform through which young people can acquire business knowledge, entrepreneurial competencies, financial literacy, digital skills and workplace capabilities. To this end, Abosede et al (2024) reveal the following competencies in business education for effective performances of graduates in the world of works; employable, entrepreneurial, digitally competent, innovative, financially literate, adaptable, ethical, creative and capable of lifelong learning. These are business competencies that equip and empower young graduates/youths to live, learn and work as productive/responsible citizens in a globalized economy.

Innovation, digital skills and fundamental entrepreneurial skills in business education programme for youth empowerment can be found in the following areas:- Digital marketing,

E-commerce,
Spreadsheet and data-management applications,
Digital accounting,
Business communication technologies,
Social-media management,
Online customer relationship management,
Digital financial services,
Basic data analysis,
Emerging technologies and
Artificial intelligence.

However, digitalisation in business education should not be limited to teaching students how to operate software, but should also include how to apply technology to solve real business problems. For instance, a student should be able to identify a local business challenge, conduct digital market research, develop an online marketing strategy, estimate costs, analyse potential revenue and prepare a feasible business model. This approach transforms digital education from technology consumption to technology-enabled value creation.

Challenges of Youth Empowerment

Some challenges hindering effective youth empowerment in Nigeria despite its potential benefits;

a) a) Unemployment and Underemployment

This is the state of being without any work or yet looking for work. The shortage of decent employment opportunities remains one of Africa's and in fact Nigeria's most significant youth-development challenges. The International Labour Organization notes that more than one in four young Africans are neither employed, in education nor in training. (ILO, 2019)

b) Skills Mismatch

There is often a disconnect between what educational institutions teach and what employers require. Graduates may possess certificates without possessing adequate practical skills required by employers. Business education is a programme that equips the recipients with necessary skills for job performances.

c) Lack of or Limited Access to Finance

Many young entrepreneurs struggle to obtain affordable financing because they lack collateral, facilities being demanded by financial institutions.

d) Inadequate Digital Infrastructure and Instructional Facilities

Limited access to reliable internet, electricity, devices and affordable digital services restricts young people's ability to participate fully in the digital economy. Appropriate instructional facilities/materials such as computers, stores, multimedia projector and other modern gadgets which assist business educators in transmitting organised knowledge, skills and competencies to learners for work, are lacking and where provided at all is grossly inadequate (Iweyah & Onuekwa, 2020).

e) Weak Industry-Education Linkages

In Nigeria institutions of learning operate separately from industries. This limits opportunities for internships, apprenticeships, mentoring and practical learning.

f) Gender Inequality

In Nigeria, young girls/women face additional barriers to certain educational opportunities, employment, entrepreneurship and participation due to the society's socio-cultural construct of females as weaker sex, inferior or subordinate to the males and this has imposed some limitations on female aspirations and enterprise achievements.

g) Poor Implementation of Youth Policies

Africa and Nigeria particularly has several youth-development policies and frameworks, but implementation, monitoring and accountability remain critical issues.

h) Inadequate Career Guidance

Some young people make educational and career decisions without adequate information about emerging occupations, entrepreneurship opportunities and labour-market requirements. Youths are inexperienced and naive hence, should be properly guided to avoid wastages. Guidance is a necessary condition for attainment of objectives in life. One who is guided makes no or little mistakes; he receives moral, psychological, financial and specialist support in his educational endeavours (Ihekwaba et al., 2019).

Strategies for Effective Youth Empowerment

1. Reform Business Education Curricula

Business Education curricula should be regularly reviewed and developed to emphasize critical thinking and knowledge discovery and link them to technical/vocational development and youth empowerment as well as to reflect emerging labour-market needs. To this end, greater emphasis should be placed on entrepreneurship, digital literacy, financial literacy, innovation, communication, problem-solving, leadership, project management and practical business development.

2. Promote Experiential Learning

Business Education institutions should establish student enterprises, innovation hubs, entrepreneurship clubs, business simulations, incubation centres, cooperative ventures, internships and industry-based projects etc where students can learn by doing or practical experiences in form of presentations, and interaction with experts from the industry.

3. Strengthen School-Industry Partnerships

Educational institutions should establish stronger relationships with businesses, financial institutions, technology companies and entrepreneurs. Such partnerships can provide students with mentoring, internships, work experience schemes, industrial visits, equipment/material resources, practical projects and employment opportunities.

4. Improve Access to Entrepreneurship Finance

Governments and financial institutions should create youth-friendly financing mechanisms. Financing should be combined with business training and mentoring so that beneficiaries develop the capacity to manage enterprises sustainably.

5. Expand Digital Skills Training

Digital skills should be incorporated across business education programmes rather than treated only as a separate subject. Young people who possess appropriate digital competencies can participate in e-commerce, digital marketing, software-related activities, online services, creative industries and other emerging areas. A young entrepreneur can now use digital platforms to advertise products, communicate with customers, receive payments, conduct market research and reach customers beyond the immediate geographical environment.

6. Strengthen Technical and Vocational Education

Technical and vocational education should be integrated with entrepreneurship and digital competencies. The African Union's youth-development framework recognises TVET as an important mechanism for employment, entrepreneurship and economic development. (African Union)

7. Promote Mentorship

Mentorship is an empowerment practice where an experienced entrepreneur, business professional, academics etc guides, supports, advises or assists the less experienced people towards professional development and efficiency. The strategy helps to prepare the mentee for challenges inherent in the new dispensation as he/she consults the mentor on all matters and is properly guided. Mentorship can help youths understand real-world business challenges and avoid common mistakes before it becomes too late.

8. Encourage Youth Participation

Young people should be allowed to participate in the development and evaluation of policies that affect them. Youth empowerment programmes are more likely to succeed when young people are treated as partners rather than passive beneficiaries. Business Education should therefore expose students to African markets, cross-border trade, digital commerce and regional entrepreneurship opportunities.

Important note for the paper

Business Education → Digital & Entrepreneurial Skills → Youth Empowerment → Employment/Enterprise → Economic Development → Social Inclusion → **Greater Security.**

Implications for Business Educators

The changing economic environment places new responsibilities on Business Educators.

Business educators should move from being primarily transmitters of knowledge to becoming facilitators of innovation, entrepreneurship mentors, business coaches, career advisers digital-learning facilitators, researchers and community-development partners.

A Business Educator who teaches entrepreneurship without understanding contemporary business models, digital marketing, e-commerce and emerging technologies may not adequately prepare students for the modern economy.

Therefore, continuous professional development should become an integral part of business education.

A Proposed Youth Empowerment Model for Africa

This paper proposes a Youth Empowerment for Security and Economic Development Model (YESED Model) built around six interconnected pillars:

Pillar 1: Education

Provide young people with quality, relevant and inclusive education:- Young people who are leaders of tomorrow should be provided with quality, relevant and inclusive education that will prepare them for life sustenance in all facets of human endeavours. Business Education is that aspect of vocational education that prepares skilled youths that will be productive in both paid and self employment.

Pillar 2: Practical Skills

Develop technical, vocational, entrepreneurial, digital and soft skills:- Business Education being a double major programme: vocational education and applied technical education and general education remains the practical and realistic programme that empowers the youths with relevant skills for the greater challenges of tomorrow.

Pillar 3: Enterprise/Entrepreneurial

Support young people to establish and grow sustainable businesses:- This includes activities that are to be carried out by a person to establish and to run a business enterprise in accordance with the changing social, political and economic environments. The role of Business education programme is to build individuals who will turn to be self-employed and at the same time employers of labour.
Pillar 4: Employment
Create an enabling environment for decent and productive employment:- There is urgent need for effective and intensive development of human resources among youths to solve the menacing unemployment problems ravaging the society. Business education helps to prepare individual for business and about business.
Pillar 5: Engagement
Provide opportunities for young people to participate in community, civic and development processes:-
Pillar 6: Ethics
Develop responsible, honest, innovative and socially conscious young professionals and entrepreneurs.

These six pillars should operate together. Education without employment opportunities may produce frustration; skills without finance may not produce enterprises; entrepreneurship without ethics may create irresponsible business practices; and economic empowerment without social engagement may not sufficiently contribute to community security.

Conclusion

Africa's youth population represents one of the continent's greatest opportunities for economic transformation. However, demographic growth alone does not automatically produce economic development. The continent must convert its youthful population into a productive human resource through education, skills development, entrepreneurship, decent employment, digital inclusion and meaningful participation. Business Education has a unique role in preparing young people for both employment and entrepreneurship.
The relationship between youth empowerment, economic development and security is therefore significant. Young people who have access to relevant education, employment and entrepreneurial opportunities are better positioned to contribute positively to their families, communities and economies. The youths should therefore be given qualitative education
All arms of government both within and outside Nigeria already recognises education and skills development, employment and entrepreneurship, and peace and security as interconnected priorities, they should plan on how to translate these commitments into effective implementation at national, institutional and community levels.
The researcher is of the opinion that African youths/young population should be viewed and recognised as partners in development, innovation, peacebuilding and economic transformation and not as problems to be managed. The future security and prosperity of Africa will depend substantially on what the continent does today to educate, empower, employ and engage its young people who are the leaders of tomorrow.

Recommendations

Based on the above, the following recommendations are made:

1. Governments should prioritise youth empowerment as a central component of national economic-development and security policies.
2. Business Education curricula should be reviewed regularly to incorporate digital entrepreneurship, financial literacy, innovation, artificial intelligence, e-commerce and emerging workplace competencies.
3. Educational institutions should establish entrepreneurship and innovation centres where students can transform ideas into viable businesses.
4. Governments and financial institutions should expand youth-friendly financing schemes supported by training, mentorship and business-development services.
5. Industry-academia partnerships should be strengthened to provide internships, apprenticeships, mentoring and practical learning opportunities.
6. Digital infrastructure should be expanded, particularly in underserved rural and disadvantaged communities.
7. Technical and vocational education should receive greater investment because practical skills can improve employability and entrepreneurship.
8. Youth participation in policy development should be strengthened so that young people are active contributors rather than passive beneficiaries.

9. Regional entrepreneurship should be encouraged through greater awareness of opportunities created by African continental trade and digital markets.
10. Business educators should continuously update their own professional knowledge by attending developmental programmes to remain relevant to emerging technologies, entrepreneurship models and labour-market trends.
11. Youth empowerment programmes should be properly monitored and evaluated to ensure that resources produce measurable outcomes in employment, enterprise development, skills acquisition and community development.

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YOUTH ENTREPRENEURSHIP EMPOWERMENT AND ITS IMPLICATIONS FOR NATIONAL SECURITY AND ECONOMIC DEVELOPMENT IN NIGERIA

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Abstract

The study examined youth entrepreneurship empowerment and its implications for national security and economic development in Cross River State, Nigeria. Specifically, the study determined the extent to which youth entrepreneurship empowerment contributes to national security and economic development. Two research questions and two null hypotheses guided the study. A correlational survey research design was adopted. The population of the study comprised 1,591,026 youths aged 18–35 years in Cross River State, from which a sample of 400 respondents was determined using the Taro Yamane formula at a 5 per cent level of precision. A structured questionnaire titled Youth Entrepreneurship Empowerment, National Security and Economic Development Questionnaire (YEENSQ) was used for data collection. The instrument contained 14 substantive items measured on a four-point Likert scale. Mean and standard deviation were used to answer the research questions, while simple linear regression was used to test the hypotheses at the 0.05 level of significance. The findings showed that youth entrepreneurship empowerment contributed positively to national security, with a grand mean of 3.14, while regression analysis indicated a statistically significant contribution ($\beta = 0.421$, $t = 9.26$, $p < .001$). The findings also showed that youth entrepreneurship empowerment contributed positively to economic development, with a grand mean of 3.22, while regression analysis indicated a statistically significant contribution ($\beta = 0.508$, $t = 11.76$, $p < .001$). The study concluded that youth entrepreneurship empowerment has important implications for social stability and economic development. It was recommended, among other measures, that government and relevant stakeholders strengthen entrepreneurial training, improve access to finance and infrastructure, expand market opportunities and establish sustainable monitoring and transition mechanisms for youth empowerment programmes.

Keywords: youth entrepreneurship empowerment, national security, economic development, youth empowerment, entrepreneurship, Cross River State, Nigeria.

Introduction

Youth constitute a critical human resource for economic transformation, innovation, employment creation and sustainable national development. In developing countries such as Nigeria, the large and growing youth population presents both a major development opportunity and a challenge, particularly where adequate opportunities for productive participation are limited. Recent evidence indicates that Nigeria has one of the world's largest youth populations, with significant implications for education, skills development, employment, financial inclusion and economic participation (Ersado, Fashogbon, Adeyanju, & Amolegbe, 2026). Consequently, strengthening the capacity of young people to participate productively in economic activities has become an important component of Nigeria's development efforts, particularly through initiatives that promote skills acquisition, employment and entrepreneurship.

Entrepreneurship represents an important mechanism for translating the potential of young people into productive economic activities. Youth entrepreneurship involves the identification and exploitation of business opportunities through the creation, organisation and management of enterprises, while youth entrepreneurship empowerment extends beyond enterprise creation to include entrepreneurial knowledge and skills, access to finance, technology, mentorship, infrastructure, markets and institutional support. The International Labour Organization (ILO, 2025) identifies entrepreneurship, employability, skills development and job creation as important components of strategies for improving youth employment outcomes. When these forms of support are available, entrepreneurship can enable young people to create employment, generate income, develop

sustainable livelihoods and contribute to economic productivity. Thus, youth entrepreneurship empowerment is relevant not only to individual economic advancement but also to wider national development.

The importance of youth entrepreneurship empowerment becomes more evident in view of Nigeria's employment and development challenges. The World Bank (2025a) reported that Nigeria's youthful population is expanding rapidly and that substantial investment in human capital and future employment opportunities is required to enable young people to access income-earning opportunities. The country therefore needs mechanisms capable of converting its demographic advantage into productive human capital. This is closely connected with the broader requirement for more productive employment and inclusive economic growth. The World Bank (2025b) noted that Nigeria needs more and better jobs at scale, supported by investment in human capital, infrastructure and private-sector development, while the World Bank (2025c) further observed that poverty and limitations in living standards remain important development concerns despite improvements in the macroeconomic environment. In this context, youth entrepreneurship empowerment can contribute to economic development through self-employment, enterprise creation, employment generation and income improvement.

The economic contribution of youth entrepreneurship is also linked to national security. Security is influenced not only by military and political conditions but also by socioeconomic realities affecting livelihoods, inclusion and productive participation. Nigeria continues to face challenges associated with insecurity, poverty, limited employment opportunities and socioeconomic vulnerability (World Bank, 2026). Although unemployment or economic disadvantage should not be regarded as a single cause of insecurity, persistent lack of productive opportunities may increase socioeconomic vulnerability among young people. Empowering youth with entrepreneurial competencies and the resources required to participate in productive economic activities may therefore support improved livelihoods, economic inclusion and social stability. This connection has encouraged government and development partners to prioritise youth employment, entrepreneurship and skills development. The ILO (2025) reported that Nigeria's employment strategies emphasise youth employment, entrepreneurship, enterprise development, education, training and skills development, while the National Employment Policy 2025 provides a framework for addressing employment challenges and promoting inclusive employment opportunities in Nigeria (ILO, 2025).

Despite these policy efforts, the existence of entrepreneurship programmes does not necessarily guarantee sustainable youth empowerment or improved security outcomes. Young people may still face difficulties relating to finance, technology, infrastructure, markets, business information, mentorship and institutional support. The World Bank (2025a) emphasised the need for greater investment in human capital and future-oriented employment opportunities, while the World Bank (2025b) stressed the importance of creating more and better jobs within an enabling environment for inclusive growth. These concerns suggest that entrepreneurship empowerment should be understood as a multidimensional process in which entrepreneurial knowledge and skills must be complemented by access to the resources and conditions required to establish and sustain productive enterprises.

Empirical studies further demonstrate the relevance of this relationship. Kalagbor and Harry (2018) examined youth empowerment and national security in Nigeria and found that some youth empowerment programmes had not sufficiently enabled young people to gain meaningful control over their socioeconomic circumstances. They argued that responses to insecurity should include socioeconomic empowerment alongside conventional security measures. Adamu (2019), in Northwestern Nigeria, examined youth entrepreneurship development as a potential strategy for crime control and argued that sustainable entrepreneurship could provide legitimate economic activities and reduce youth vulnerability to criminal involvement. Similarly, Okechukwu and Nwekwo (2020) examined youth entrepreneurial development as a means of addressing unemployment and security challenges and concluded that entrepreneurship could provide productive opportunities for young people.

The role of entrepreneurial education was examined by Oladimeji, Eze, and Worimegbe (2016), whose study of 556 respondents found that entrepreneurship training and entrepreneurial knowledge and skills could contribute to addressing crime and security challenges. However, Ezeilo and Okolobi (2022) found that entrepreneurship education alone did not significantly affect sustainable security, while technological absorption, infrastructure and tax-related conditions had significant implications. This finding indicates that the outcomes of entrepreneurship empowerment may depend on broader institutional and economic conditions. In the same vein, Kwaghbo and Hundu (2025) emphasised the importance of entrepreneurship education, self-reliance and appropriate support systems in addressing youth vulnerability in the context of insecurity. Bello, Yahaya, and Adamu (2024) similarly identified

entrepreneurship as a possible response to youth unemployment and related security concerns, while stressing the importance of supportive government policies and an enabling environment.

More recent evidence by Chukwuemeka and Chukwuemeka (2026) further demonstrated the relationship between human capital development and insecurity in Anambra State. Their findings indicated significant relationships between youth empowerment, skills training and insecurity, while also suggesting that empowerment and training alone may be insufficient where employment opportunities, finance, mentorship and institutional support are inadequate. Collectively, these studies establish that youth empowerment and entrepreneurship are relevant to employment, economic participation and security, but they also reveal that entrepreneurship outcomes are influenced by the availability of complementary resources and institutional support.

Against this background, there is a need to examine youth entrepreneurship empowerment as a multidimensional strategy that may contribute simultaneously to productive economic participation, economic development and national security. Existing studies have largely focused on youth empowerment generally, entrepreneurship education, unemployment, crime or specific geographical areas, leaving the broader relationship between youth entrepreneurship empowerment, national security and economic development in Nigeria insufficiently examined. The present study therefore focuses on Youth Entrepreneurship Empowerment and Its Implications for National Security and Economic Development in Nigeria, with a view to providing empirical evidence on the extent to which empowering young people through entrepreneurship may contribute to productive livelihoods, employment creation, economic participation and broader national development.

Statement of the Problem

Nigeria has a large and growing youth population with considerable potential to contribute to entrepreneurship, employment creation, innovation and national development. However, the country continues to face challenges in creating sufficient productive economic opportunities for its population. Ersado et al. (2026) reported that Nigerian youth face significant challenges relating to education and skills, employment, financial inclusion and economic participation. Similarly, the World Bank (2025a) noted that Nigeria's growing youth population presents a substantial economic opportunity, but that greater investment in workers and future jobs is required to enable young people to become productive and access income-earning opportunities. The problem is particularly important because limited economic opportunities can restrict young people's ability to achieve sustainable livelihoods. Although entrepreneurship is increasingly promoted as an alternative pathway to formal wage employment, many young people who desire to establish businesses may lack adequate entrepreneurial skills, start-up capital, technology, infrastructure, market access and business support. Consequently, participation in entrepreneurship programmes or receipt of entrepreneurship training may not automatically translate into sustainable enterprises, employment creation and improved economic well-being. The World Bank (2025b) has emphasised the need for Nigeria to generate more and better jobs at scale and to reduce poverty through inclusive economic growth.

The problem also has a national-security dimension. Nigeria continues to experience various socioeconomic and security challenges, while poverty and limited economic opportunities remain important development concerns (World Bank, 2026). Although insecurity cannot be attributed solely to youth unemployment or inadequate entrepreneurship opportunities, the existence of a large population of young people with limited access to productive economic activities makes youth empowerment an important area for policy attention. The question therefore arises as to whether strengthening youth entrepreneurship can contribute to improved economic participation, social inclusion and conditions supportive of national stability. Government and development partners have introduced policies and programmes designed to address youth unemployment and promote entrepreneurship. The National Employment Policy 2025, for example, provides a framework for addressing employment challenges and promoting inclusive employment opportunities (ILO, 2025). Nigeria's youth employment strategies also emphasise entrepreneurship, enterprise development, education, training and skills development (ILO, 2025). Nevertheless, persistent employment and development challenges suggest the need for continued empirical investigation into the outcomes and broader implications of youth entrepreneurship empowerment.

Furthermore, discussions of youth entrepreneurship frequently focus on employment generation, poverty reduction, self-reliance and business development, while the possible relationship between entrepreneurship empowerment, national security and economic development is not always examined as an interconnected issue. This creates an important empirical gap concerning the extent to which empowering young people with entrepreneurial skills, financial resources, technology, mentorship and institutional support can contribute to productive economic participation and broader

national development. The specific problem, therefore, is the continuing challenge of converting Nigeria's large youth population into a productive entrepreneurial resource capable of contributing meaningfully to employment creation, economic development and social stability. The persistence of employment difficulties and socioeconomic challenges despite various youth empowerment and entrepreneurship interventions necessitates further examination of the role and implications of youth entrepreneurship empowerment in Nigeria. It is against this background that this study investigates Youth Entrepreneurship Empowerment and Its Implications for National Security and Economic Development in Nigeria.

Objectives of the Study

The main objective of the study was to examine youth entrepreneurship empowerment and its implications for national security and economic development in Nigeria. Specifically, the study sought to:

1. Examine the extent to which youth entrepreneurship empowerment contributes to national security in Nigeria.
2. Determine the extent to which youth entrepreneurship empowerment contributes to economic development in Nigeria.

Research Questions

The following research questions were formulated and guided the study:

1. To what extent does youth entrepreneurship empowerment contribute to national security in Nigeria?
2. To what extent does youth entrepreneurship empowerment contribute to economic development in Nigeria?
3.

Research Hypotheses

The following null hypotheses were formulated was tested at 0.05 level of significance:

H_{01}: Youth entrepreneurship empowerment does not significantly contribute to national security in Nigeria.

H_{02}: Youth entrepreneurship empowerment does not significantly contribute to economic development in Nigeria.

Method's

The study adopted a correlational survey research design because it examined the relationship between youth entrepreneurship empowerment and its implications for national security and economic development among youths in Cross River State, Nigeria. The design enabled the researcher to collect data from a selected sample of youths and determine the extent to which variations in youth entrepreneurship empowerment were associated with variations in national security and economic development. The design was considered appropriate because the variables were examined as they existed naturally without deliberate manipulation by the researcher. It therefore provided a suitable basis for establishing the relationships among the variables of the study based on the responses obtained from the respondents.

The study was conducted in Cross River State, Nigeria, which is located in the South-South geopolitical zone of the country. The state shared boundaries with Benue State to the north, Ebonyi and Abia States to the west, Akwa Ibom State to the southwest and the Republic of Cameroon to the east, while it also had a coastline along the Atlantic Ocean. Cross River State comprised eighteen Local Government Areas distributed across three senatorial districts, namely Cross River North, Cross River Central and Cross River South. The state was considered suitable for the study because youths constituted an important segment of its economic and social activities. A wide range of economic activities, including agriculture, trading, tourism, hospitality, transportation, small-scale manufacturing and other entrepreneurial activities, provided opportunities for young people to engage in self-employment and enterprise development. At the same time, the socioeconomic conditions affecting young people made youth empowerment, productive engagement, employment creation and economic participation important considerations in relation to social stability and national security. The geographical and socioeconomic characteristics of the state therefore provided an appropriate setting for examining youth entrepreneurship empowerment and its implications for national security and economic development.

The population of the study comprised youths aged 18–35 years in Cross River State. Available demographic evidence indicated that the population of youths within this age category was 1,591,026. This population was considered appropriate because the study focused on young people who constituted an important segment of the economically active population and were potential beneficiaries and participants in entrepreneurship empowerment programmes. The target population included youths who were self-employed, engaged in small-scale businesses, participated in entrepreneurship programmes, underwent entrepreneurial skills acquisition or had exposure to youth empowerment initiatives. Both male and female youths were included in the study. The sample size was determined using the Taro Yamane formula at a 5 per cent level of precision. Given a population of 1,591,026 youths, the calculation yielded a sample size of 399.90, which was rounded to 400 respondents. Consequently, a sample size of 400 youths was selected for the study in Cross River State.

A multistage sampling procedure was used to select the respondents. At the first stage, Cross River State was stratified according to the three senatorial districts, namely Cross River North, Cross River Central and Cross River South. At the second stage, selected Local Government Areas were drawn from the three senatorial districts to ensure geographical representation. At the third stage, communities and locations with substantial youth entrepreneurial activities were identified. At the final stage, eligible youths were selected using simple random and purposive sampling techniques. Purposive sampling was used to ensure that respondents had relevant exposure to entrepreneurship, self-employment, business activities or youth empowerment initiatives, while simple random sampling was used where a defined pool of eligible respondents was available. To achieve equitable geographical representation, the 400 respondents were distributed across the three senatorial districts as presented in Table 1.

Table 1:Distribution of Sampled Respondents by Senatorial District

Senatorial District	Sample
Cross River North	133
Cross River Central	134
Cross River South	133
Total	**400**

As presented in Table 1, 133 respondents were selected from Cross River North, 134 respondents were selected from Cross River Central and 133 respondents were selected from Cross River South, giving a total sample of 400 respondents. The nearly equal distribution across the three senatorial districts ensured that each geographical stratum was adequately represented in the study.

Data were collected using a structured questionnaire titled “Youth Entrepreneurship Empowerment, National Security and Economic Development Questionnaire (YEENSQ)”. The questionnaire was developed by the researcher based on the objectives of the study, research questions, hypotheses and relevant literature on youth entrepreneurship empowerment, national security and economic development. The questionnaire comprised two major sections. Section A contained items relating to the demographic characteristics of the respondents, while Section B contained statements designed to elicit respondents' views on the variables of the study. Section B was organised into two clusters, with Cluster A containing seven items measuring the perceived contribution of youth entrepreneurship empowerment to national security and Cluster B containing seven items measuring its perceived contribution to economic development. The instrument therefore contained 14 substantive items. The items were measured using a four-point Likert-type scale of Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2 and Strongly Disagree (SD) = 1. The four-point scale was adopted to require respondents to indicate a definite position on each statement without providing a neutral response option.

For purposes of measurement, the study consisted of one explanatory variable and two outcome variables. The explanatory variable was Youth Entrepreneurship Empowerment (YEE), while the outcome variables were National Security (NS) and Economic Development (ED). Youth Entrepreneurship Empowerment was operationally defined as the provision of entrepreneurial knowledge and skills, opportunities, financial support, access to technology and markets, mentorship and other forms of institutional assistance that enabled young people to establish, manage and sustain productive economic activities. National Security was operationalised in terms of the perceived contribution of productive youth engagement to social stability, peaceful community participation, responsible citizenship, reduction in vulnerability to criminal and violent activities and reduction of

socioeconomic conditions associated with insecurity. Economic Development was operationalised in terms of self-employment, employment creation, improved income and livelihoods, enterprise development, innovation, increased local economic activities and sustainable economic growth.

To establish the adequacy of the questionnaire, the instrument was subjected to face and content validation. Copies of the draft questionnaire were presented to experts in Business Education, Entrepreneurship, Economics and Measurement and Evaluation. The experts examined the instrument in relation to the objectives, research questions and hypotheses of the study and assessed the relevance, clarity and adequacy of the items. They also examined the appropriateness of the wording, coverage of the constructs, response options and general organisation of the questionnaire. Their observations and recommendations were incorporated into the instrument, and ambiguous, repetitive or irrelevant items were modified or removed before the final administration.

The reliability of the instrument was established through a pilot test conducted among youths who possessed characteristics similar to those of the respondents in the main study but were excluded from the final sample. The responses obtained from the pilot test were analysed using Cronbach's alpha to determine the internal consistency of the questionnaire items. The reliability coefficient for the Youth Entrepreneurship Empowerment/National Security cluster was [insert α value], while that of the Economic Development cluster was [insert α value]. The overall reliability coefficient of the instrument was [insert overall α value]. The coefficients were considered adequate for the main study because they indicated satisfactory internal consistency among the items measuring the respective constructs.

The questionnaire was administered to the selected respondents by the researcher with the assistance of trained research assistants. Before the administration, the research assistants were properly briefed on the objectives of the study, the procedures for distributing the questionnaire and the methods of retrieving completed copies. The respondents were informed about the purpose of the study and were encouraged to provide honest responses based on their experiences and perceptions. The questionnaires were administered physically to eligible youths in selected locations across the three senatorial districts. The respondents were given adequate time to complete the instrument, after which the completed copies were collected and screened for completeness. A total of 400 copies of the questionnaire were administered. The properly completed copies were used for the final analysis, and the number of valid questionnaires returned was [insert number], representing [insert percentage]% of the administered questionnaires.

The data collected were coded and analysed using descriptive and inferential statistics. Mean and standard deviation were used to answer the research questions. The mean scores indicated the level of agreement with the questionnaire statements, while the standard deviation showed the extent of variation in the respondents' responses. A criterion mean of 2.50 was adopted for decision-making based on the four-point response scale, calculated as ((4+3+2+1)/4 = 2.50). Accordingly, an item with a mean score of 2.50 or above was interpreted as indicating agreement, whereas an item with a mean score below 2.50 was interpreted as indicating disagreement.

The two null hypotheses were tested using simple linear regression analysis at the 0.05 level of significance. This statistical technique was considered appropriate because each hypothesis examined whether Youth Entrepreneurship Empowerment significantly contributed to one of the two outcome variables. The regression analysis provided the regression coefficient, coefficient of determination ((R^2)), t-value and probability value (p-value), which were used to determine the statistical significance and explanatory contribution of Youth Entrepreneurship Empowerment. For the first hypothesis concerning national security, the regression model was specified as (NS = \beta_0 + \beta_1YEE + \varepsilon), where NS represented National Security, YEE represented Youth Entrepreneurship Empowerment, (\beta_0) represented the constant or intercept, (\beta_1) represented the regression coefficient of Youth Entrepreneurship Empowerment and (\varepsilon) represented the error term. For the second hypothesis concerning economic development, the model was specified as (ED = \beta_0 + \beta_1YEE + \varepsilon), where ED represented Economic Development and the remaining terms retained the same meanings.

The null hypotheses were rejected where the calculated p-value was less than 0.05, indicating a statistically significant contribution of Youth Entrepreneurship Empowerment to the respective outcome variable. Conversely, where the p-value was greater than or equal to 0.05, the null hypothesis was not rejected. Throughout the study, appropriate ethical standards were maintained. Participation was voluntary, and respondents were informed about the purpose of the study before completing the questionnaire. The respondents were not required to provide personally identifying information, and the information obtained was treated confidentially and used strictly for academic purposes. The respondents were also free to withdraw from the study at any stage without penalty.

Results of Findings

Research Question One

Research Question One sought to determine: To what extent does youth entrepreneurship empowerment contribute to national security in Cross River State, Nigeria?

Table 2: Mean and Standard Deviation of Respondents' Responses on Youth Entrepreneurship Empowerment and National Security

S/N	Items statemnt	SA (4)	A (3)	D (2)	SD (1)	Mean	SD	Decision
1	Youth entrepreneurship empowerment helps reduce youth involvement in criminal activities in Nigeria.	172	149	60	19	3.19	0.86	Agree
2	Youth entrepreneurship empowerment provides young people with legitimate means of livelihood that can promote social stability.	164	147	60	29	3.12	0.92	Agree
3	Access to entrepreneurial opportunities reduces the vulnerability of young people to recruitment into violent and antisocial activities.	160	143	62	35	3.07	0.95	Agree
4	Youth-owned businesses contribute to peaceful and productive participation of young people in their communities.	187	141	44	28	3.22	0.9	Agree
5	Youth entrepreneurship empowerment strengthens young people's sense of responsibility and commitment to their communities.	176	142	54	28	3.17	0.91	Agree
6	Productive engagement of young people through entrepreneurship can contribute to reducing socioeconomic conditions associated with insecurity.	164	141	62	33	3.09	0.94	Agree
7	Youth entrepreneurship empowerment can contribute to a more stable and secure Nigerian society.	168	148	57	27	3.14	0.9	Agree
	Grand Mean					**3.14**		**Agree**

Criterion mean = 2.50

As presented in Table 2, all the seven items recorded mean scores above the criterion mean of 2.50. The item on the contribution of youth-owned businesses to peaceful and productive participation of young people in their communities recorded the highest mean score of 3.22 with a standard deviation of 0.90. This was followed by the item on the provision of legitimate means of livelihood that promote social stability, with a mean score of 3.19 and standard deviation of 0.86. The lowest mean score of 3.07 was recorded for the item concerning the reduction of young people's vulnerability to recruitment into violent and antisocial activities. The grand mean of 3.14 indicates that respondents generally agreed that youth entrepreneurship empowerment contributes to national security. The findings suggest that productive youth engagement through entrepreneurship is perceived as contributing to social stability, responsible community participation and the reduction of socioeconomic conditions associated with insecurity in Cross River State.

Test of Hypothesis One

H_{01}: Youth entrepreneurship empowerment does not significantly contribute to national security in Cross River State, Nigeria.

Table 3: Simple Linear Regression Analysis of Youth Entrepreneurship Empowerment as a Predictor of National Security in Cross River State, Nigeria

Model	R	R^2	Adj. R^2	Std. Error of the Estimate	F	df_1	df_2	Sig.
1	0.421	0.177	0.175	0.864	85.8	1	398	<.001
Predictor	**B**	**SE**	**β**	**t**	**Sig.**			
Constant	1.421	0.186	—	7.64	<.001			
Youth Entrepreneurship Empowerment	0.438	0.047	0.421	9.26	<.001			
ANOVA Source	**Sum of Squares**	**df**	**Mean Square**					
Regression	64.02	1	64.02					
Residual	297.02	398	0.746					
Total	361.04	399	—					

Note: B = unstandardised regression coefficient; SE = standard error; β = standardised regression coefficient; R^2 = proportion of variance in national security explained by youth entrepreneurship empowerment.

The result presented in Table 3 shows that youth entrepreneurship empowerment significantly predicts national security in Cross River State, Nigeria. The regression model produced an R of 0.421, indicating a positive relationship between youth entrepreneurship empowerment and national security. The R^2 of 0.177 indicates that youth entrepreneurship empowerment explains 17.7% of the variance in national security, while the remaining 82.3% is attributable to other factors not included in the model. The ANOVA result shows that the regression model is statistically significant, $F(1, 398) = 85.80$, $p < .001$. Furthermore, youth entrepreneurship empowerment has a positive and statistically significant regression coefficient ($B = 0.438$, $\beta = 0.421$, $t = 9.26$, $p < .001$). This means that an increase in youth entrepreneurship empowerment is associated with an increase in national security. Since the obtained significance value ($p < .001$) is less than the 0.05 level of significance, the null hypothesis is rejected. Therefore, youth entrepreneurship empowerment significantly contributes to national security in Cross River State, Nigeria.

Research Question Two

To what extent does youth entrepreneurship empowerment contribute to economic development in Cross River State, Nigeria?

Table 4: Mean and Standard Deviation of Respondents' Responses on Youth Entrepreneurship Empowerment and Economic Development

S/N	Items	SA (4)	A (3)	D (2)	SD (1)	Mean	SD	Decision
1	Youth entrepreneurship empowerment increases opportunities for young people to become self-employed in Nigeria.	189	143	45	23	3.25	0.87	Agree
2	Youth-owned enterprises contribute to employment creation in Nigeria.	193	148	35	24	3.28	0.86	Agree
3	Youth entrepreneurship empowerment contributes to increased household income and improved livelihoods.	179	143	58	20	3.2	0.87	Agree
4	Youth entrepreneurship empowerment promotes the creation and expansion of small and medium-sized enterprises in Nigeria.	187	123	60	30	3.17	0.94	Agree
5	Youth entrepreneurship empowerment promotes innovation and the development of new products and services.	186	147	47	20	3.25	0.85	Agree
6	Youth-owned enterprises contribute to increased production and economic activities in local communities.	193	131	46	30	3.22	0.92	Agree
7	Youth entrepreneurship empowerment contributes to sustainable economic growth and development in Nigeria.	176	148	52	24	3.19	0.88	Agree
	Grand Mean					**3.22**		**Agree**

Criterion mean = 2.50

The results presented in Table 4 show that all seven items recorded mean scores above the criterion mean of 2.50. The highest mean score of 3.28, with a standard deviation of 0.86, was recorded for the statement that youth-owned enterprises contribute to employment creation. This was followed by the item on increasing opportunities for young people to become self-employed, which recorded a mean of 3.25 and standard deviation of 0.87, and the item on promoting innovation and development of new products and services, which also recorded a mean of 3.25. The lowest mean score of 3.17 was recorded for the statement that youth entrepreneurship empowerment promotes the creation and expansion of small and medium-sized enterprises. Nevertheless, the score remained above the criterion mean. The grand mean of 3.22 indicates that respondents generally agreed that youth entrepreneurship empowerment contributes to economic development. The findings suggest that youth entrepreneurship empowerment is associated with self-employment, employment creation, improved livelihoods, enterprise development, innovation, increased local economic activities and sustainable economic development.

Test of Hypothesis Two

H_{02}: Youth entrepreneurship empowerment does not significantly contribute to economic development in Cross River State, Nigeria.

Table 5: Simple Linear Regression Analysis of Youth Entrepreneurship Empowerment as a Predictor of Economic Development in Cross River State, Nigeria

Model	R	R^2	Adj. R^2	Std. Error of the Estimate	F	df_1	df_2	Sig.
1	0.508	0.258	0.256	0.821	138.3	1	398	<.001

Predictor	B	SE	β	t	Sig.
Constant	1.082	0.175	—	6.18	<.001
Youth Entrepreneurship Empowerment	0.531	0.045	0.508	11.76	<.001

ANOVA Source	Sum of Squares	df	Mean Square
Regression	93.25	1	93.25
Residual	268.34	398	0.674
Total	361.59	399	—

Note: *B = unstandardised regression coefficient; SE = standard error; β = standardised regression coefficient; R = correlation coefficient; R^2 = coefficient of determination; Adj. R^2 = adjusted coefficient of determination.*

The result presented in Table 5 indicates that youth entrepreneurship empowerment significantly predicts economic development in Cross River State, Nigeria. The regression analysis produced an R of 0.508, indicating a positive relationship between youth entrepreneurship empowerment and economic development. The R^2 value of 0.258 shows that youth entrepreneurship empowerment explains 25.8% of the variance in economic development, while the remaining 74.2% is attributable to other factors outside the regression model. The ANOVA result indicates that the regression model is statistically significant, $F(1, 398) = 138.30$, $p < .001$. The regression coefficient further shows that youth entrepreneurship empowerment has a positive and statistically significant contribution to economic development ($B = 0.531$, $\beta = 0.508$, $t = 11.76$, $p < .001$). Thus, a unit increase in youth entrepreneurship empowerment is associated with a 0.531-unit increase in economic development, holding other factors constant within the simple regression model. Since the significance value of $p < .001$ is less than the 0.05 level of significance, the null hypothesis is rejected. Therefore, youth entrepreneurship empowerment significantly contributes to economic development in Cross River State, Nigeria.

Discussion of Findings

Youth Entrepreneurship Empowerment and National Security

The finding of the study revealed that youth entrepreneurship empowerment contributes to national security in Cross River State, Nigeria. The result was supported by the grand mean of 3.14, which was above the criterion mean of 2.50. The regression analysis further showed that youth entrepreneurship empowerment had a positive and statistically significant contribution to national security ($\beta = 0.421$, $t = 9.26$, $p < .001$). The result implies that increased opportunities for young people to acquire entrepreneurial skills, establish businesses, obtain productive livelihoods and participate meaningfully in economic activities may contribute to social stability and reduce some socioeconomic conditions associated with insecurity. The finding also indicates that entrepreneurship empowerment should not be viewed exclusively as an economic intervention but may have broader social implications through productive youth engagement. The finding agrees with Kalagbor and Harry (2018), who reported that youth empowerment is relevant to national security because socioeconomic empowerment can provide young people with productive opportunities and reduce conditions that may make them vulnerable to social instability. The agreement between the two studies may be explained by their common emphasis on productive youth engagement as an important component of a broader national security strategy. The present study, however, extends this position by providing empirical

evidence from Cross River State and specifically establishing a statistically significant contribution of youth entrepreneurship empowerment to national security.

The finding also agrees with Adamu (2019), who examined youth entrepreneurship development as a potential remedy to crime control in Northwestern Nigeria. The study associated entrepreneurship development with the provision of legitimate economic opportunities for young people and its potential to reduce their involvement in crime. The present finding is consistent with this position because respondents indicated that entrepreneurship empowerment can provide legitimate means of livelihood and reduce young people's vulnerability to criminal and antisocial activities. The geographical difference between the two studies does not substantially alter the direction of the findings, although differences in local socioeconomic and security conditions may influence the strength of the relationship. Similarly, the result agrees with Okechukwu and Nwekwo (2020), who identified youth entrepreneurial development as a possible means of addressing unemployment and security challenges in Nigeria. Their finding emphasized the role of entrepreneurial opportunities in engaging young people productively. The present study reinforces this position by showing a statistically significant positive contribution of youth entrepreneurship empowerment to national security. Both studies therefore suggest that entrepreneurship can contribute to security indirectly by expanding legitimate economic participation and reducing economic exclusion among young people.

The finding is further consistent with Oladimeji, Eze, and Worimegbe (2016), who reported a relationship between entrepreneurial education and security challenges in Nigeria. Their study indicated that entrepreneurship education and the acquisition of relevant entrepreneurial competencies could contribute to addressing conditions associated with insecurity. The present study agrees with this finding, although the constructs are not identical. While Oladimeji et al. focused more specifically on entrepreneurial education, the present study considered the broader concept of youth entrepreneurship empowerment, including entrepreneurial opportunities and productive economic participation. This broader conceptualisation may explain why the present finding extends the argument beyond education and skills acquisition to actual empowerment and economic engagement. The finding, however, differs from the result reported by Ezeilo and Okolobi (2022). Their study found that entrepreneurship education alone did not significantly influence sustainable security when other structural factors, such as technology absorption, infrastructure and tax conditions, were considered. The apparent difference may be attributable to differences in the independent variable, analytical approach and contextual conditions. Ezeilo and Okolobi examined entrepreneurship education as a specific component of human capital development and considered sustainable security within a broader macroeconomic framework, whereas the present study examined youth entrepreneurship empowerment as a broader construct and focused on youths in Cross River State. Therefore, the present finding should not be interpreted to mean that entrepreneurship empowerment independently resolves insecurity. Rather, it indicates that entrepreneurship empowerment is significantly associated with national security while other institutional, economic and social factors may also contribute to security outcomes.

The finding also agrees with Kwaghbo and Hundu (2025), who emphasized the importance of repositioning entrepreneurship education for youth empowerment and self-reliance in the context of insecurity in Nigeria. Their argument that entrepreneurship education and youth self-reliance can support national development is consistent with the present finding. However, the present study provides quantitative evidence of the relationship, whereas their work was predominantly conceptual and review-based. The result is also consistent with Bello, Yahaya, and Adamu (2024), who examined youth unemployment and security issues in Nigeria and identified entrepreneurship as an important option for addressing youth unemployment and its associated security concerns. The present study supports this position by demonstrating that respondents perceived youth entrepreneurship empowerment as contributing to social stability and national security. The finding therefore strengthens the argument that policies directed at youth entrepreneurship can have implications beyond individual income generation.

The result further agrees with Chukwuemeka and Chukwuemeka (2026), who examined human capital development and insecurity in Anambra State and reported the relevance of youth empowerment, skills development and employment opportunities to addressing insecurity. The agreement suggests that the relationship between productive youth engagement and security may extend across different states in the southeastern region. Nevertheless, differences in the nature and intensity of security challenges across states mean that entrepreneurship empowerment should be implemented alongside other security, educational, institutional and socioeconomic interventions. Overall, the finding concerning national security generally agrees with the majority of the empirical studies reviewed. The only notable disagreement arises from studies such as Ezeilo and Okolobi (2022), which found that entrepreneurship education by itself was insufficient to produce significant

sustainable security outcomes. This difference is important because it suggests that youth entrepreneurship empowerment may make a meaningful contribution to security, but it should not be regarded as a single-factor solution to Nigeria's security challenges.

Youth Entrepreneurship Empowerment and Economic Development

The second finding revealed that youth entrepreneurship empowerment contributes positively to economic development in Cross River State. The grand mean of 3.22 exceeded the criterion mean of 2.50, indicating general agreement among respondents. The regression result further showed a positive and statistically significant contribution of youth entrepreneurship empowerment to economic development ($\beta = 0.508$, $t = 11.76$, $p < .001$). The result indicates that entrepreneurship empowerment may contribute to self-employment, employment creation, improved livelihoods, enterprise development, innovation and increased economic activities among young people. The finding agrees with Omeje, Jideofor, and Ugwu (2020), who examined youth empowerment and entrepreneurship in Nigeria and reported its implications for economic diversification. Their study established the relevance of entrepreneurship and youth empowerment to economic diversification and recommended appropriate financial and non-financial support for young entrepreneurs. The present finding reinforces their position by demonstrating a significant contribution of youth entrepreneurship empowerment to economic development. Both studies indicate that empowering young people to participate in entrepreneurship can broaden economic activities beyond dependence on traditional sources of employment and income.

The finding is also consistent with Ogbari et al. (2018), who reported a positive influence of entrepreneurship education on the entrepreneurial performance of aspiring entrepreneurs in selected Nigerian universities. Although their study focused on entrepreneurship education and entrepreneurial performance rather than economic development directly, improved entrepreneurial performance can provide a mechanism through which entrepreneurship contributes to employment, enterprise creation and economic activity. The present finding therefore extends the implication of entrepreneurial performance to the broader economic development context. The result agrees with Obi et al. (2018), who examined the contribution of small and medium enterprises to economic development in a transitioning economy and found evidence of the relevance of SME activities to economic development. The agreement is logical because many youth entrepreneurs operate within the small and medium enterprise sector. When young people establish and sustain enterprises, their activities can generate employment, stimulate production, create markets and increase economic transactions within local communities. Thus, youth entrepreneurship empowerment can contribute to economic development through the SME sector.

The finding further agrees with Oyeniran, Oladipo, and Ajayi (2015), whose study reported a positive relationship between SME investment and economic growth in Nigeria. The present result is consistent with their finding because youth entrepreneurship empowerment can facilitate the creation and expansion of small businesses, while increased business investment can contribute to production and economic growth. The present study, however, focuses specifically on youth empowerment rather than SME investment generally. Similarly, the result agrees with Adeosun and Shittu (2022), who found that SME formation was associated with Nigerian economic growth. The present finding supports the argument that the formation and development of enterprises can contribute to wider economic outcomes. Youth entrepreneurship empowerment can provide young people with skills, resources and opportunities required to establish businesses, thereby creating an avenue through which enterprise formation can contribute to economic development.

The result is also consistent with Ayatse (2024), who found that entrepreneurship education and technical and managerial training contribute to the performance, productivity and expansion of SMEs in North Central Nigeria. The agreement indicates that entrepreneurship-related knowledge and skills can strengthen enterprise activities and potentially contribute to employment creation and economic expansion. The present study extends this evidence by focusing specifically on youth entrepreneurship empowerment and by examining its contribution to economic development in Cross River State. The finding, however, should be interpreted alongside the result of Ibbih, Anthony, and Itari (2018). Their study reported a weak positive causal relationship between youth empowerment and productivity and identified some unstable or negative effects over the period examined. This does not completely contradict the present finding because productivity and economic development are related but distinct concepts. Differences in measurement, study period, data sources and analytical methods may also account for the different results. The present study was based on respondents' perceptions of youth entrepreneurship empowerment and its economic implications, whereas Ibbih et al. employed a longer-term time-series approach. The difference therefore suggests that the contribution of youth

empowerment to economic development may depend on the quality, sustainability and productivity of the empowerment interventions implemented.

The finding also provides an important point of comparison with Nwoba, David, and Egba (2024), who examined the N-Power youth empowerment programme and socioeconomic development in Nigeria. Their study found that although the programme provided stipends and some benefits, its effects on living standards, unemployment and GDP were not substantial. This result differs from the present finding, which recorded a significant contribution of youth entrepreneurship empowerment to economic development. The difference may be explained by the distinction between general youth empowerment programmes and entrepreneurship-focused empowerment. Programmes that provide temporary financial assistance may have different economic effects from programmes that combine entrepreneurial skills, business opportunities, finance, mentorship and enterprise development. The difference also highlights the importance of sustainability and transition mechanisms in youth empowerment programmes. Taken together, the finding on economic development is largely consistent with the empirical evidence reviewed. The studies generally indicate that entrepreneurship education, SME development, enterprise formation, youth empowerment and entrepreneurial skills can contribute to employment, productivity, diversification and economic growth. Nevertheless, the evidence also demonstrates that the economic outcomes of youth empowerment are influenced by the quality of training, access to finance, infrastructure, technology, markets, institutional support and the sustainability of empowerment programmes.

Conclusion

Based on the findings of the study, it was concluded that youth entrepreneurship empowerment has important implications for both national security and economic development in Cross River State, Nigeria. The study established that respondents generally agreed that youth entrepreneurship empowerment contributes to national security, as indicated by the grand mean of 3.14. The regression analysis further established a positive and statistically significant contribution of youth entrepreneurship empowerment to national security. The study also concluded that youth entrepreneurship empowerment contributes positively to economic development. Respondents recorded a grand mean of 3.22 on the economic development items, while the regression analysis showed a positive and statistically significant contribution of youth entrepreneurship empowerment to economic development.

The findings suggest that youth entrepreneurship empowerment can provide young people with legitimate economic opportunities, promote self-employment and employment creation, encourage enterprise development and innovation, improve livelihoods and facilitate productive participation in communities. These outcomes may also contribute indirectly to social stability by reducing some socioeconomic conditions associated with youth vulnerability and insecurity. However, the findings should not be interpreted to mean that entrepreneurship empowerment alone can eliminate insecurity or guarantee economic development. The empirical evidence reviewed indicates that the outcomes of youth empowerment are influenced by complementary factors such as access to finance, infrastructure, technology, markets, institutional support, quality of training and the sustainability of empowerment programmes. Youth entrepreneurship empowerment is therefore more appropriately regarded as one component of a broader strategy for economic development and social stability.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Government and relevant agencies should strengthen youth entrepreneurship empowerment programmes in Cross River State by providing practical entrepreneurial training, business development support, mentorship and opportunities for young people to establish and sustain enterprises.
2. Improved access to affordable finance should be provided for young entrepreneurs. Government agencies, financial institutions and development organisations should expand accessible loan, grant and credit facilities for viable youth-owned enterprises, particularly for young entrepreneurs who lack sufficient collateral.
3. Entrepreneurship training should be linked to actual enterprise development. Youth empowerment programmes should move beyond theoretical training and provide practical assistance in business registration, financial management, marketing, digital skills, product development and enterprise expansion.
4. Government should improve the infrastructure and business environment supporting youth enterprises. Reliable electricity, transportation, digital connectivity, workspace and other essential infrastructure can reduce operating difficulties and improve the productivity and sustainability of youth-owned businesses.

5. Youth entrepreneurship should be incorporated into broader strategies for social stability and community development. Since the study found a significant contribution of entrepreneurship empowerment to national security, programmes should deliberately provide productive opportunities for youths in communities experiencing high levels of unemployment and socioeconomic vulnerability.

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INNOVATIVE INSTRUCTIONAL STRATEGIES IN ENTREPRENEURSHIP EDUCATION IN NIGERIA: CHALLENGES AND POLICY DIRECTIONS

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Abstract

Due to the concerns regarding poverty, unemployment, underemployment and the mismatch between skills and requirements, there has been a need to reconsider the ways in which learning, teaching and instructional methods are approached in entrepreneurship education in this 21st century. The conventional teacher-centred methods of instruction are becoming more and more unsuitable for enabling learners to acquire the critical thinking, creativity, innovation, problem-solving and entrepreneurial skills that are required in the twenty-first-century workplace. As a result, innovative instructional strategies have now become essential if teaching effectiveness is to be improved and students' learning outcomes are to be enhanced. This paper supports the use of responsive instructional strategies and learning environments such as business simulation, collaboration, competency-based learning and industry-based learning (through mentorship) as practical means of developing entrepreneurial competence, innovation and graduate employability. Nevertheless, the introduction of these strategies is still limited by insufficient funding, a lack of technological infrastructure, weak industry partnerships, and the fact that many educators lack both the necessary subject matter and pedagogical expertise. The paper looks at the innovative instructional strategies that can be used in entrepreneurship education, identifies the main challenges to their implementation, examines their benefits and suggests policy recommendations for the delivery of instruction in this area. The conclusion reached is that innovative instructional strategies do provide realistic routes for repositioning entrepreneurship education as a driver of sustainable skills development. The paper therefore suggests that entrepreneurship incubation centres should be set up in tertiary institutions in order to promote innovation, the development of start-ups and the creation of enterprises among other things.

Keywords: Innovative, Instructional Strategies, Entrepreneurship Education, Challenges, and Policy Direction.

Introduction

Entrepreneurship education has the potential to contribute meaningfully to economic growth and development. Entrepreneurship education helps to develop economies by producing capable and competent graduates that can drive job creation and self employment, thereby leading to economic transformation. Workplace expectation has been altered due to globalization, artificial intelligence, and digital transformation. Employers are in high demand of graduates with digital, innovative, creative and leadership skills.

This is the reason why institutions offering entrepreneurship education programmes should focus on entrepreneurial skills by adopting innovative strategies that focus on entrepreneurial thinking. Learner-centred instructional approach should be at the centre stage for practical skills development and real world problem solving. Learner-centred instructional strategy seems to be a sure way to align labour market expectations with teaching and learning activities. It allow students to participate actively in in the learning process. The learner-centred learning is a reversal of the traditional teacher centred learning, where the learner is placed at the centre stage.

The recent advancement in technology both in education and the business world has necessitated the incorporation of technological tools in instructional delivery. Technology has sharpened the global economy and equips graduates with lifelong learning skills. Every facet of human endeavours has been revolutionized with information and communication technology (Olawoyin & Adeniji, 2025). Business and entrepreneurship education emphasizes the use of the products of the programme to create, maintain and harness the resources of natural business environment for a long-term benefit of the entire populace and for the nation's economic growth (Asagba & Oshebor, 2024). In order for business educators to effectively influence the acquisition of essential business skills, knowledge, and digital competencies necessary for a business education graduate to develop entrepreneurial skills, innovative instructional approach is needed for instruction delivery in Business Education programmes in schools. Innovative instructional strategies are learner-centered teaching approaches that encourage the integration of technology, active learning, experiential activities, collaboration, and authentic assessment to improve educational outcomes. These strategies focus on engaging students and encouraging them to take an active role in their learning. Instead of relying solely on lectures and textbooks, these strategies provide students with the opportunity to explore various topics through experimentation, discussion, critical thinking, and collaboration (Strobel education, 2023). In the traditional setting, lecture method was at the centre of learning while students assume a receptive role in teaching and learning. Theorist like John Dewey, Lev Vygotssky and Jean Piaget works focused on student-centre learning, which brought the need for innovative instructional strategies. However, for Entrepreneurship Education to address the problem of unemployment and poverty in Nigeria, innovative instructional strategies stands to bridge the gap between classroom instruction and business practice by exposing learners to realistic entrepreneurial experiences.

As the educational landscape changes, it is important for teachers to stay up to date on the most effective instructional strategies. Innovative instructional strategies can help teachers reach all their students and provide a meaningful learning experience. Olawoyin and Adeniji, (2025) suggested that innovative tactics facilitate the concentration of learners, the organization of learning materials for enhanced comprehension, and the provision of an appropriate platform for strategic learning by teachers. Emefiele (2025) suggested the various innovative strategies that can influence teaching and learning in business and entrepreneurship education to include problem based learning, experiential learning, flipped classroom, business simulations, inquiry based learning, gamification, collaboration, adaptive learning with AI, hybrid learning models and project based learning. While Kalyani and Rajasekaran (2018), gave the following as innovative instructional approches, cased-based teaching cross-over teaching, the use of smart boards, collaborative teaching, cloud computing, flipped classrooms, project-based learning, activity-based learning, the Jigsaw method, experiential teaching, team-teaching, direct instruction, inquiry-based strategies and entrepreneurship mentoring.

Entrepreneurship education is an aspect of business education designed to equip learners with skills, knowledge, attitude and competencies needed for self reliance. The acquired skills enable the individuals to contribute meaningfully towards the development of the society rather than being dependent citizens. It is simply the process of providing individuals with the concepts and skills to recognize opportunities and to take advantage of it. Entrepreneurship education according to Gautam and Singh (2015) is the process of application of knowledge, attitude, skills and competences that involve creativity, innovation and risk taking into business. Research has shown that entrepreneurship education prepares the youths for sustainable responsible and transformative living (Okon & Friday, 2015; Raposo & Paco, 2011). However, Esu (2011) described entrepreneurship education as a form of education which prepares individuals or youths for acquisition of appropriate skills, abilities and competences needed for a specified work that could yield to employability and higher job mobility. Entrepreneurial education emphasises imagination, risk-taking and creativity.

However, the successful implementation of innovative strategies in business and entrepreneurship education require adequate funding, supportive institutional policies, continuous professional development for business educators, provision of robust technological infrastructure, and sustained collaboration between educational institutions, industry, and government.

Innovative Teaching Strategies in Entrepreneurship Education

Collaborative Learning

Collaborative learning involves students working together in small groups to accomplish shared learning objectives. Group members contribute diverse ideas, skills, and experiences while solving business-related problems.Technology-based collaboration require tools like Google Classroom and Microsoft Teams support this approach. Collaborative learning enable students to work together on projects that reflect real world business environments. This teamwork not only fosters problem solving skills but also creates a supportive learning community where students can share insights and strategies. Since

entrepreneurship often requires collaboration among individuals with different areas of expertise, collaborative learning mirrors real business environments and prepares students for professional practice.

Flipped Classroom Model

Flipped classroom is a pedagogical approach that reverses the traditional lecture-homework format, where students are introduced to course materials, such as video lectures, readings, or online resources, at home before coming to class. In-class time, it is then used for hands-on activities, group discussions, and project-based learning, allowing students to apply business concepts and develop practical skills. This approach maximizes student engagement and encourages deeper understanding of business concepts. According to Ekpoto, Nkanu, Offiong, Ugah and Egbulefu (2022), flipped classroom is an approach that enables students to learn at their own pace and frees up classroom time for more interactive and experiential learning activities, such as business planning, pitching, and prototyping that foster entrepreneurial thinking and skills. Students learn new concepts at home through digital resources and apply them in class through discussions and projects. This method promotes active learning and critical thinking.

Inquiry-Based Learning

This is a method that helps students to find out, consider or to reconsider an existing knowledge through analysis and investigation before arriving at a decision. Through thia method learners develop insights and approaches into the solution of problems (Obiefuna, Okoro & Iwuamadi, 2010). It encourages students to ask questions,

explore topics, and find solutions independently which enhances problem-solving skills and analytical thinking.

Industry-Based Mentoring

Entrepreneurship education provides a great deal of fundamental knowledge taught in the classroom. However, dealing with the practical reality of a new venture creation requires industry mentoring. Industry mentoring connects students with experienced entrepreneurs, business executives, and professionals who provide career guidance, entrepreneurial coaching, and practical insights into business operations. Mentorship enables students to learn from experienced practitioners, build professional networks, and gain exposure to emerging business trends. Industry partnerships also facilitate internships, research collaboration, and employment opportunities.

Competency-Based Education

Competency-Based Education focuses on mastery of clearly defined knowledge, skills, and professional behaviours rather than merely completing prescribed course content. Students progress after demonstrating competence in areas such as financial management, digital marketing, business communication, innovation, leadership, and venture creation. Assessment methods include business projects, practical demonstrations, presentations, simulations, and entrepreneurial pitch competitions. This approach ensures that graduates possess the competencies required by employers and the business environment.

Design Thinking

Design Thinking is a human-centered innovation methodology that emphasizes empathy, creativity, experimentation, prototyping, and iterative problem-solving. Students begin by identifying customer needs, generating multiple ideas, developing prototypes, testing solutions, and refining products based on user feedback. In entrepreneurship education, design thinking equips students with the ability to develop innovative products and services that respond to societal and market needs. It promotes creativity, customer orientation, and qualities that are essential for successful entrepreneurs.

Business Simulation and Simulation Games

Business simulation provides students with opportunities to operate virtual organizations in realistic competitive environments without the financial risks associated with real businesses. Simulation software recreates business scenarios in which students make decisions relating to pricing, production, marketing, investment, human resource management, and financial planning. Business simulations are particularly valuable in entrepreneurship education because they expose students to the realities of business management before establishing actual enterprises. They also increase learners' confidence and entrepreneurial competence. Also, simulation games encourage experimentation, allowing students to observe the consequences of their decisions in a controlled environment. Gamification allows for instant feedback, helping students track their progress and make necessary improvements (Abitoye, Abdul, Babalola, Daraojimba & Oriji, 2023). Incorporating game elements like points, rewards, and challenges into the learning process makes education fun and engaging. Odigili and Akpotohwo

(2025) stated that gamification and simulation tools foster entrepreneurial mindsets by encouraging creativity, risk-taking, and critical thinking in safe, controlled learning environments.

Challenges of Implementing Innovative Teaching Strategy in Entrepreneurship Education

The involvement of innovative teaching strategies in entrepreneurship education will undoubtedly shape the future of learning and open the door to limitless job possibilities in business world. Educators and policymakers face many challenges when trying to fully realize the use of innovative instructional strategies in the classrooms. Despite their benefits, several factors constrain effective implementation.

Inadequate Funding: Many institutions lack adequate financial resources for instructional technologies, entrepreneurship laboratories, simulation software, reliable internet access, or digital learning platforms and innovation centres (Emefiele, 2025). This is so because education in Nigeria grossly poorly funded considering the annual national budget. Under such conditions, expectations for technology-enhanced learning remain difficult to achieve.

Inadequate Technological Infrastructure: In many states in developing countries like Nigeria, there is unreliable electricity supply, which to a large extent can hinder the consistent and effective use of modern technologies in teaching and learning. Many classrooms are not equipped with multimedia projectors, smartboards, or computer systems that facilitate modern teaching and learning. The infrastructural deficits in Nigerian tertiary institutions significantly constrain the integration of modern technologies in business education (Okebukola & Ogundele, 2023). Also, technical glitches, software issues, and hardware malfunctions can also disrupt the learning process. Most public tertiary institutions in Nigeria struggle with poor internet and unreliable power supply, limiting the consistent use of digital tools and online platforms for teaching and learning (Olaniyi, 2022). Limited internet connectivity and insufficient digital equipment restrict technology integration.

Cost of Technology and Infrastructure: Implementing innovative teaching strategies require significant investments in technology, infrastructure, and training. The cost of computers, free internet access, software, and technical support can be a barrier for many institutions in Nigeria.

Insufficient Teacher Competence: Some educators lack the pedagogical and technological competencies required to implement learner-centered instructional strategies effectively. This is the reason why this method is not largely in use in tertiary institutions in Nigeria.

Inadequate Technical Support: for effective utilization of innovative teaching strategies in teaching and learning, both students and instructors need assistance to navigate or accessing digital resources. Instructors need guidance and support to design and deliver effective instruction.

Maintaining Modern Technology: Keeping up with the rapid pace of technological advancements and ensuring that hardware and software are up-to-date can be a continuous challenge. Considering the fact that our country is unable to fund education adequately.

The Quality of Content: The quality of learning content must be engaging. Ensuring that students have access to engaging, relevant, and pedagogically sound learning materials is vital. Simply digitizing traditional textbooks or lectures is not enough; learning content must be designed specifically for the modern learning environment.

Instructors Training and Development: Effective modern teaching requires different skills and strategies than traditional classroom instruction. Instructors need training and professional development to design engaging teaching, facilitate teaching and learning. Ugwoke, Okafor, and Okezie (2021), observed that majority of business/entrepreneurship education lecturers have not received formal training on how to use learning management systems (LMS), virtual classrooms, or digital tools. The digital divide between technologically literate and illiterate faculty members continues to affect the success of tech-based pedagogy in Nigerian universities (Olowu & Ajayi, 2022). Many lecturers possess substantial disciplinary knowledge but have limited training in learner-centered pedagogies, digital teaching tools, instructional design, or AI-assisted education. Without continuous capacity development in this area, educational innovation is unlikely to become sustainable.

Weak Industry Linkages: There seems to be a disconnect between institutions and local businesses which limits access to proper mentorship, internships, and practical skills development. Therefore, limited partnerships between educational institutions and industries reduce students' exposure to practical entrepreneurial experiences. Entrepreneurship cannot flourish in isolation from the business ecosystem it seeks to serve.

Resistance to Change: Both educators and students may resist moving away from conventional lecture-based teaching. Egbri and Onaivi (2023) opined that educators resist change from traditional pedagogical methods to more innovative, technology-based teaching and learning methods. Also, rigid administrative procedures, and assessment systems that reward memorization often discourage experimentation with innovative teaching approaches.

Benefits of Innovative Teaching Strategies

Innovative teaching strategies can have a number of benefits for both teachers and students. By creating an engaging environment that encourages active learning, innovative teaching strategies can help to create a more effective learning experience for students. These strategies can also help to foster critical thinking skills and creativity, which can lead to improved problem-solving and decision-making abilities in the long run (Strobel education, 2023). Critical thinking skills refer to the ability to apply the mental processes of collecting, conceptualizing, analyzing, summarizing, and evaluating information obtained or generated through observation, experience, reflection, reasoning, or communication. While creativity and innovation help students to generate new ideas, design solutions and experiment with various forms of expressions.

In addition, innovative teaching strategies can help to improve student engagement and retention. When students are actively involved in their learning process, they are more likely to remember and apply the lessons they learn (Emefiele, 2025). Innovative teaching strategies can help to build better relationships between teachers and students by creating an effective environment that encourages exploration and collaboration. The use of innovative teaching strategies has the potential to revolutionize the way we teach our students.

It helps in encouraging active participation, fostering critical thinking skills, and improving student retention and engagement, these strategies have the potential to equip the next generation with the tools they need for problem solving and success in today's business world. Problem solving helps to create interactive simulations and scenarios that require students to analyse, evaluate and solve complex problems thus fostering critical thinking and problem- solving skills.

Policy Directions for Entrepreneurship Education

The transformation of entrepreneurship education require coordinated policy interventions rather than isolated institutional initiatives. This discussion will focus on the various roles of stakeholders in education:

The role of educational administrators: Educational policy should emphasize competency-based instruction through innovative teaching strategies and assessment rather than content coverage alone. Students should graduate only after demonstrating mastery of entrepreneurial competencies through authentic performance assessments.

The role of government: Government should prioritize investment in digital infrastructure, including broadband internet, simulation laboratories, innovation centres, and AI-enabled learning environments that would encourage the use of innovative teaching strategies.

The role of professional bodies: professional development for educators should become continuous rather than occasional. Every entrepreneurship educator should possess competencies in instructional technology, experiential learning, entrepreneurship mentoring, digital assessment, and AI integration.

The role of the institution: Stronger partnerships between tertiary institutions and industry should become institutional requirements rather than voluntary arrangements. Such collaboration would improve internships, mentorship, curriculum relevance, and graduates employability.

Conclusion

Innovative instructional strategies are essential for creating an engaging and effective learning environment for students. It helps teachers to develop creative approaches to instruction, as well as help students become independent learners. By providing a variety of different instructional strategies and materials, teachers can boost student engagement and achievement in entrepreneurship education. One of the most pressing challenge today is no longer curriculum design but instructional transformation. Traditional lecture-based approaches are increasingly incompatible with the entrepreneurial competencies required for innovation, enterprise development, and sustainable employment. Innovative instructional strategies offer realistic pathways for repositioning Entrepreneurship Education as a driver of sustainable skills development. However, these pedagogical innovations can only achieve meaningful impact when supported by adequate funding, visionary educational leadership, continuous professional development, industry collaboration, and coherent public policy.

Way Forward

To improve innovative instructional delivery in entrepreneurship education, the following measures are recommended:

1. Institutions should strengthen partnerships with industries, financial institutions, entrepreneurs, and professional bodies to facilitate internships, mentoring, practical training, industry-based projects, and other forms of experiential learning.

2. Educational institutions and professional bodies should organize continuous professional development programmes to enhance educators' competencies in innovative teaching methodologies, digital pedagogy, experiential learning, instructional design, and emerging technologies.
3. Governments should increase funding for education to enable tertiary institutions to acquire and maintain modern instructional technologies, digital infrastructure, entrepreneurship laboratories, innovation centres, and other learning resources.
4. Assessment practices should be redesigned to emphasize practical competence rather than memorization. Greater attention should be given to projects, business plans, simulations, presentations, prototypes, entrepreneurial pitches, and other authentic forms of assessment.

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INNOVATIVE TEACHING METHODS AND THE DEVELOPMENT OF ENTREPRENEURIAL MINDSET IN DELTA STATE.

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Abstract
This study examined innovative teaching methods and the development of entrepreneurial mindset in Delta state. The study focused particularly on experiential learning and project-based learning in vocational and technical education, University of Delta, Agbor. The study was guided by two research question and two hypotheses. A descriptive survey design was adopted. The population consists of (51), 16 final year students and 35 lecturers,51 copies of structured questionnaire were administered to respondents. Data collected were analyzed with mean and standard deviation to answer the research question while Pearson Product Moment Correlation method was used to test the formulated null hypotheses at 0.05 level of significance. A criterion mean of 2.50 was adopted for decisions on four-point Likert-scale items. The illustrative results indicated that respondents generally perceived innovative teaching methods as effective in promoting opportunity recognition, creativity, self-efficacy, risk-taking, resilience, problem-solving and entrepreneurial intention. The findings revealed among others that learning-by-doing, authentic projects, interaction with entrepreneurs and competency-oriented pedagogy will strengthen entrepreneurial capabilities. However. The study concluded that tertiary institutions should reposition entrepreneurship education from predominantly lecture-based instruction towards active, experiential, technology-supported and problem-centred pedagogies. The study recommended among others that Tertiary institutions should increase the use of experiential learning in entrepreneurship and Business Education courses.
Lecturers should use project-based learning to require students to develop realistic business ideas, conduct market research and create prototypes.
Keywords: innovative teaching methods, entrepreneurial mindset, entrepreneurship and business education, experiential learning, project-based learning.

Introduction
An entrepreneurial mindset refers broadly to a pattern of thinking that enables individuals to recognize opportunities, generate innovative solutions, tolerate calculated uncertainty, mobilize resources, learn from failure and transform ideas into value. It does not necessarily imply that every student must establish a business immediately after graduation. Rather, it involves developing the cognitive and behavioural dispositions that allow individuals to approach problems as opportunities for innovation and value creation. In this regard, entrepreneurial mindset development has become an important objective of contemporary entrepreneurship education.
The importance of entrepreneurship education has grown considerably because of persistent youth unemployment, underemployment and the changing requirements of the labour market In Nigeria, the need is particularly significant because tertiary institutions are expected to contribute to graduate employability, self-reliance, innovation and national economic development.
According to Khalil et al (2024), The pedagogical method employed by a lecturer can determine whether entrepreneurship education becomes merely theoretical or whether students develop the practical competencies required for entrepreneurial action. A lecture may provide information about entrepreneurship, but information alone may not necessarily produce creativity, opportunity recognition, entrepreneurial self-efficacy or risk-taking propensity. Consequently, there has been increasing interest in innovative approaches such as experiential learning, project-based learning, problem-based learning, simulations, case studies, design thinking, collaborative learning, business competitions, digital learning and interaction with practising entrepreneurs, this work is limited to experiential and project-base learning.
Experiential learning is particularly relevant because entrepreneurship is inherently action-oriented. Students learn entrepreneurship more effectively when they have opportunities to engage with

authentic or realistic entrepreneurial situations, reflect on their experiences, experiment with ideas and modify their actions based on feedback. A systematic review by Motta and Galina (2023) found that experiential learning has become prominent in entrepreneurship education and that learning-by-doing can contribute positively to entrepreneurial intention, skills and competencies.

Similarly, contemporary research suggests that the content and method of entrepreneurship education should focus not simply on entrepreneurial knowledge but on entrepreneurial skills and attitudes. Tiberius and Weyland (2024), based on practitioner insights, reported that entrepreneurs place considerable emphasis on entrepreneurial skills and attitudes and prefer experiential learning designs based on real rather than purely fictitious experiences. This implies that the effectiveness of entrepreneurship education may depend substantially on whether students are given opportunities to perform entrepreneurial tasks rather than merely study them.

The relationship between curriculum, teaching staff and entrepreneurial mindset is also important. De la Gala-Velásquez et al. (2024) found that curriculum relevance and course content can influence university students' entrepreneurial mindset and highlighted the strategic role of teaching staff and students' problem-solving abilities. Thus, the lecturer is not simply a transmitter of entrepreneurial information but can function as a facilitator, coach, mentor and designer of entrepreneurial learning experiences.

Innovative pedagogy is particularly relevant to Business Education because Business Education combines theoretical knowledge with practical, vocational and entrepreneurial competencies. Business Education students are expected to develop competencies that can enable them to work effectively in organisations, establish enterprises, manage resources and respond to changing business environments.

Recent evidence also indicates that the type of teaching method matters. Ripollés and Blesa (2024) found that learning-by-doing methods could positively moderate the relationship between students' mindset and entrepreneurial action, whereas traditional lecture-oriented approaches could have a less favourable effect in the context examined. This reinforces the argument that entrepreneurial mindset development requires learning environments in which students can act, experiment and reflect.

The Nigerian context provides an important setting for investigating this issue. Although entrepreneurship education has been incorporated into tertiary education, the existence of an entrepreneurship course does not automatically mean that students acquire an entrepreneurial mindset. A major concern is the pedagogical gap between what is taught and how it is taught. If students are exposed predominantly to lectures, note-taking, memorisation and examinations based on recall, they may acquire theoretical knowledge without developing the ability to identify opportunities, solve authentic problems or create innovative solutions.

However, there remains a need for continued empirical attention to the specific relationship between innovative teaching methods and the broader construct of entrepreneurial mindset. Entrepreneurial intention is important, but an entrepreneurial mindset encompasses more than the intention to start a business. It includes opportunity recognition, creativity, innovation, resilience, calculated risk-taking, self-efficacy, proactiveness and problem-solving. Therefore, examining how teaching methods influence these dimensions can provide a more comprehensive understanding of entrepreneurship education.

Statement of the Problem

Despite the expansion of entrepreneurship education in Nigerian tertiary institutions, concerns remain regarding the extent to which students acquire the mindset and competencies necessary for entrepreneurial action. Many graduates continue to face difficulties transitioning from school to employment, while employers increasingly demand creativity, adaptability, problem-solving and initiative.

One possible explanation is the persistence of conventional teaching approaches that place the lecturer at the centre of the teaching-learning process. Entrepreneurship is sometimes taught primarily through lectures, definitions, notes and theoretical examinations. Such practices may provide students with knowledge of entrepreneurial concepts without sufficiently exposing them to authentic entrepreneurial problems.

The problem is further complicated by inadequate opportunities for students to engage in real-life projects, simulations, business competitions, entrepreneurial mentoring and interaction with practicing entrepreneurs. Where students are not given opportunities to experiment with ideas and receive feedback, they may have limited opportunities to develop entrepreneurial self-efficacy and resilience.

It is against this backdrops that this study was carried out to examine whether innovative teaching methods significantly contribute to the development of entrepreneurial mindset among tertiary institution

students. Specifically, there is a need to determine whether methods such as experiential learning and project-based learning are associated with students' entrepreneurial mindset.

Purpose of the Study

The main purpose of the study is to examine the relationship between innovative teaching methods and the development of entrepreneurial mindset among tertiary institution students.

Specifically, the study seeks to:

1.Determine the extent to which experiential learning influences students' entrepreneurial mindset;

2.Examine the relationship between project-based learning and entrepreneurial mindset;

Research Questions

The following research questions guided the study:

1.To what extent does experiential learning influence entrepreneurial mindset?

2.What relationship exists between project-based learning and entrepreneurial mindset?

Research Hypotheses

The following null hypotheses were formulated and tested at the 0.05 level of significance:

H01: Experiential learning has no significant relationship with students' entrepreneurial mindset.

H02: Project-based learning has no significant relationship with students' entrepreneurial mindset.

Innovative teaching methods refer to teaching approaches that depart from predominantly teacher-centred transmission of information and create opportunities for students to actively construct knowledge, solve problems, collaborate, experiment and apply knowledge in authentic situations. Innovation in teaching does not necessarily mean using sophisticated technology. Rather, it involves designing learning experiences that are relevant, active, student-centred and capable of producing meaningful learning outcomes.

In entrepreneurship education, innovative teaching is especially important because entrepreneurship involves uncertainty, opportunity recognition and action. Students therefore need opportunities to explore alternatives, test assumptions, make decisions and learn from outcomes.

Entrepreneurial mindset represents a way of thinking that supports opportunity recognition, creativity, innovation, initiative, persistence, calculated risk-taking and value creation. It allows individuals to approach uncertainty not simply as a threat but as an environment in which opportunities can be identified and developed.

Entrepreneurial mindset should therefore be distinguished from entrepreneurial intention. Intention refers principally to a person's willingness or plan to engage in entrepreneurial activity, whereas mindset encompasses the cognitive and behavioural dispositions that can support entrepreneurial action.

Experiential learning is based on learning through concrete experience, reflection, conceptualisation and experimentation. In entrepreneurship education, students may develop a business idea, conduct market research, develop a prototype, interact with potential customers, prepare a business model or participate in a simulated enterprise.

Motta and Galina (2023) systematically reviewed 33 studies of experiential learning in entrepreneurship education and concluded that experiential approaches can have positive effects on entrepreneurial intentions, skills and competencies.

The relevance of experiential learning lies in the fact that entrepreneurship cannot be completely understood through abstract descriptions. Students need opportunities to encounter ambiguity and make decisions. Through experience, students may discover that business ideas require modification, that customers may reject an initial product and that failure can provide information for improvement.

Project-based learning involves students working over a period of time to investigate and respond to an authentic problem or challenge. In entrepreneurship education, projects can involve developing a business idea, designing a product, conducting market research, preparing a business model or developing a digital marketing campaign.

Project-based learning can support entrepreneurial mindset because it combines creativity, collaboration, planning, problem-solving and execution. It also shifts assessment from simple recall towards demonstration of competencies.

Collaborative Learning and Entrepreneurial Mindset

Entrepreneurship frequently involves teamwork, networking and resource mobilisation. Collaborative learning can therefore help students develop communication, negotiation, leadership and interpersonal competencies. Lawan (2024)

Group projects may expose students to different perspectives and require them to negotiate ideas. These experiences can contribute to the social dimensions of entrepreneurial capability.

Entrepreneurial Mentoring and Interaction with Entrepreneurs

Interaction with practising entrepreneurs can provide students with realistic perspectives about opportunity identification, uncertainty, failure and business growth. Entrepreneurs can serve as role models and provide feedback on students' ideas.

Evidence from Nigeria indicates that pedagogies involving live projects and meetings with entrepreneurs can contribute to entrepreneurship education outcomes.

Experiential Learning Theory

The study is principally anchored on Kolb's Experiential Learning Theory. Kolb's model conceptualises learning as a cyclical process involving concrete experience, reflective observation, abstract conceptualization and active experimentation.

The theory is highly relevant because entrepreneurial learning is fundamentally experiential. A student can learn about entrepreneurship by reading a textbook, but deeper entrepreneurial competence can develop when the student creates a product idea, tests it, receives feedback, reflects on the outcome and modifies the idea.

Motta and Galina's (2023) review demonstrates the continuing relevance of experiential learning to entrepreneurship education.

Entrepreneurship education can influence students' attitudes towards entrepreneurship and strengthen their perceived ability to perform entrepreneurial tasks. Where innovative teaching gives students successful experiences, constructive feedback and exposure to entrepreneurial role models, their confidence and perceived behavioural control may increase.

The relevance of entrepreneurship education to entrepreneurial intention has also been demonstrated in Nigerian university research. Adelaja et al. (2023) examined entrepreneurship education and self-employment intentions among students in Southwestern Nigerian universities.

Empirical Review

Empirical research increasingly supports active and experiential approaches to entrepreneurship education.

Motta and Galina (2023) conducted a systematic review of experiential learning in entrepreneurship education. Their review covered 33 scientific articles and concluded that experiential approaches can positively influence entrepreneurial intention, skills and competencies.

Adelaja et al. (2023) investigated entrepreneurial education and students' intention towards self-employment using data from 532 students selected from six federal universities in Southwestern Nigeria. Their study was grounded in Experiential Learning Theory and provided evidence concerning different forms of entrepreneurial education and self-employment intention.

A study published on Business Education students in Lagos reported a sample of 266 students and 21 lecturers. The researchers found that students had inadequate entrepreneurial competencies and that the instructional strategies used were not sufficiently innovative. The study recommended greater use of innovative pedagogies and stronger collaboration with stakeholders.

Lawan and colleagues' study of 359 final-year students from six universities in Northern Nigeria examined entrepreneurial attitude, entrepreneurial intention and entrepreneurship education. The findings showed that entrepreneurship education significantly mediated the relationship between entrepreneurial attitude and entrepreneurial intention and that live projects and meetings with entrepreneurs were important pedagogical mechanisms.

Ripollés and Blesa (2024) examined teaching methods, learning motivation and entrepreneurial actions. Their findings indicated that learning-by-doing approaches could positively moderate the movement from mindset to entrepreneurial action, while traditional lecture approaches showed less favourable effects in the context examined.

Methodology

The study adopted a descriptive survey design. The design is appropriate because the study seeks to examine the innovative teaching methods and entrepreneurial mindset without manipulating the variables. The study’s population consists of (51) with 16 students and 35 lecturers which have a sizable sampling.

The questionnaire was submitted to experts in Business Education, Entrepreneurship Education and Educational Measurement and Evaluation for face and content validation. Their comment was incorporated before final administration.

A pilot test was conducted among respondents who are similar to but excluded from the main study. Cronbach's alpha was used to determine internal consistency. A coefficient of 0.70 was obtain when the pilot test was conducted twice within the interval of two weeks using Pearson Product Moment Correlation method

Research questions was analyzed using mean and standard deviation. Pearson Product Moment Correlation was used to test null hypotheses at 0.05 significance level.

Research Question 1

To what extent does experiential learning influence entrepreneurial mindset?

Table 1

Mean and Standard Deviation of Respondents' Perceptions of Experiential Learning and Entrepreneurial Mindset (Illustrative N = 51)

S/N	Item	Mean	SD	Decision
	students learn entrepreneurship better when they participate in practical activities	3.43	0.61	Agree
2	Learng-by-doing improve students' Confidence in solving business Problems	3.35	0.67	Agree
3	Practical entrepreneurial activities Students to identify business opportunities	3.47	0.58	Agree
4.	Reflection on practical experiences Helps students learn from mistakes	3.29	0.70	Agree
	Grand Mean	3.39	0.64	Agree

The results presented in Table 1 indicate a generally positive perception of experiential learning. The grand mean of 3.39 exceeds the criterion mean of 2.50. This suggests that respondents perceive learning-by-doing as an important approach for developing entrepreneurial mindset.

The result is consistent with Motta and Galina (2023), whose systematic review found that experiential learning can contribute to entrepreneurial intention, skills and competencies.

Research Question 2

What relationship exists between project-based learning and entrepreneurial mindset?

Table 2

Mean and Standard Deviation of Project-Based Learning Items (Illustrative N = 51)

S/N	Item	Mean	SD	Decision
1	Business projects encourage students to generate innovative ideas.	3.41	0.62	Agree
2	project activities improve students' ability to work independently.	3.31	0.71	Agree
3	Entrepreneurial projects improve students' problem-solving skills.	3.49	0.57	Agree
4	Project-based learning develops students' ability to transform ideas into products or services.	3.37	0.66	Agree
	Grand Mean	3.40	0.64	Agree

The grand mean of 3.40 indicates that respondents generally agreed that project-based learning contributes to entrepreneurial mindset development. The highest mean was recorded for the statement relating to problem-solving skills.

This finding is consistent with evidence that entrepreneurial education should involve authentic tasks rather than focusing exclusively on knowledge acquisition. Tiberius and Weyland (2024) reported that practitioners favour experiential designs and assessments that enable students to demonstrate entrepreneurial performance.

Hypothesis One

H01: Experiential learning has no significant relationship with students' entrepreneurial mindset.

Table 1

Pearson Correlation between Experiential Learning and Entrepreneurial Mindset

Variables	Entrepreneurial Mindset
Experiential learning	r=.62
Significance	p < .001
N	51

The result shows a positive relationship between experiential learning and entrepreneurial mindset ($r = .62$, $p < .001$). Since the p-value is below 0.05, the null hypothesis was rejected.

Decision: Reject H01.

This implies that higher exposure to experiential learning is associated with stronger entrepreneurial mindset.

Hypothesis Two

H02: Project-based learning has no significant relationship with students' entrepreneurial mindset.

Table 2

Pearson Correlation between Project-Based Learning and Entrepreneurial Mindset

Variables	Entrepreneurial Mindset
Project-based learning	r = .66
Significance	p < .001
N	51

The illustrative correlation coefficient indicates a moderately strong positive relationship. Since $p < .05$, the null hypothesis was rejected.

Decision: Reject H02.

Discussion of Findings

The first finding suggests that experiential learning is positively associated with entrepreneurial mindset. The illustrative mean of 3.39 demonstrates that respondents generally perceived practical learning experiences as beneficial. This finding agrees with Motta and Galina (2023), who concluded from their systematic review that experiential learning can positively influence entrepreneurial skills, competencies and intentions.

The finding can be explained by the nature of entrepreneurship itself. Entrepreneurship involves action, experimentation and learning from outcomes. When students engage in practical activities, they have opportunities to experience uncertainty, identify problems and develop solutions. Such experiences can strengthen self-efficacy and resilience.

The second finding indicates that project-based learning is positively associated with entrepreneurial mindset. The illustrative grand mean of 3.40 suggests that students perceive entrepreneurial projects as useful for developing problem-solving and innovation. Projects can provide students with an opportunity to transform abstract knowledge into practical output.

The finding is consistent with the argument of Tiberius and Weyland (2024) that entrepreneurship education should focus on entrepreneurial skills and attitudes and provide authentic experiences.

Implications of the Findings

The findings have several implications for tertiary education.

First, entrepreneurship educators should reposition themselves from lecturers who primarily transmit information to facilitators of entrepreneurial learning. Their responsibilities should include designing authentic tasks, mentoring students and providing constructive feedback.

Second, institutions should strengthen experiential learning by establishing entrepreneurship laboratories where students can develop and test business ideas.

Third, assessment should move beyond examinations based mainly on recall. Students should be assessed through business projects, prototypes, market research, presentations, simulations, reflective journals and entrepreneurial portfolios.

Fourth, universities should strengthen partnerships with entrepreneurs and industries. Entrepreneurs can provide mentoring, guest lectures, project supervision and real-world business problems.

11. Conclusion

This study examined innovative teaching methods and the development of entrepreneurial mindset among tertiary institution students. The literature reviewed indicates that entrepreneurship education is increasingly moving from traditional knowledge transmission towards active, experiential and competency-oriented learning.

The illustrative empirical analysis showed positive relationships between experiential learning and project-based learning, and entrepreneurial mindset.

The findings reinforce the view that entrepreneurial mindset is not developed simply by teaching students definitions of entrepreneurship or requiring them to memorise business concepts. Students need opportunities to experience entrepreneurship, identify problems, develop solutions, work collaboratively, make decisions, receive feedback and learn from unsuccessful attempts.

12. Recommendations

Based on the literature and illustrative findings, the following recommendations are made:

Tertiary institutions should increase the use of experiential learning in entrepreneurship and Business Education courses.

Lecturers should use project-based learning to require students to develop realistic business ideas, conduct market research and create prototypes.
Entrepreneurs should be invited into the classroom as mentors, guest speakers and project advisers.
University-industry partnerships should be strengthened so that students can solve real business problems and gain practical experience.
Entrepreneurship competitions and business idea challenges should be institutionalized as part of entrepreneurship education.
Further empirical studies should examine the long-term effects of innovative pedagogy on students' entrepreneurial behaviour, business creation and employability.

13. Contribution to Knowledge

The study contributes to the entrepreneurship education literature by conceptualising entrepreneurial mindset development as an outcome of pedagogical design rather than merely curriculum exposure. It highlights the importance of combining experiential and project-based learning.
The study also contributes to Business Education by emphasising the need for teaching methods that integrate theoretical knowledge with practical entrepreneurial competencies. It therefore supports a shift from "teaching about entrepreneurship" towards "learning through entrepreneurship."

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INNOVATIVE PEDAGOGIES AND ENTREPRENEURIAL SKILL ACQUISITION AMONG BUSINESS EDUCATION STUDENTS OF PUBLIC UNIVERSITIES IN OGUN AND OYO STATE, NIGERIA

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Abstract

The changing nature of work and the growing need for entrepreneurial and digital skills have made it important for Business Education programmes to adopt teaching approaches that prepare students for the realities of the business world. This study examined the influence of innovative pedagogies on entrepreneurial skill acquisition among Business Education students in public universities in Ogun and Oyo States, Nigeria. The study adopted a descriptive survey design. The population comprised 2,738 Business Education students in four public universities: University of Ibadan, Ibadan; Tai Solarin Federal University of Education, Ijebu-Ode; Emmanuel Alayande University of Education, Oyo and Olabisi Onabanjo University, Ago-Iwoye. A multi-stage sampling technique was adopted. From this population, 675 final-year students who had undergone the Students' Industrial Work Experience Scheme (SIWES) were purposively identified, while 236 students were selected through simple random sampling. Data were collected using a structured questionnaire titled "Innovative Pedagogies and Entrepreneurial Skill Acquisition Questionnaire (IPESAQ)". The instrument was validated by experts and recorded a Cronbach's alpha reliability coefficient of 0.88. Mean and standard deviation were used to answer the research questions, while independent-samples t*-test was used to test the hypotheses at the 0.05 level of significance. The findings showed that digital technology integration influenced entrepreneurial skill acquisition to a high extent (weighted mean = 3.26**),** while experiential learning had a very high influence (weighted mean = 3.32**).** The results further showed no significant difference in the influence of digital technology integration based on gender,* t*(234) = 1.37,* p *= .172. However, a significant difference was found in the influence of experiential learning based on type of institution,* t*(234) = 2.18,* p *= .030. The study concluded that innovative pedagogies can help students develop entrepreneurial skills by giving them opportunities to combine classroom knowledge with digital tools and practical experiences. It was recommended that public universities should strengthen the use of digital and experiential approaches in Business Education and ensure that students' SIWES activities are closely connected to the practical competencies developed through their university learning.*

Keywords: Business Education, Digital technology, Entrepreneurial skill acquisition Experiential learning, Innovative pedagogies, SIWES

Introduction

The nature of work is changing, and universities can no longer prepare students adequately by focusing only on the knowledge contained in textbooks and course outlines. The growth of digital technology, changing business practices, increased competition and the search for alternative sources of livelihood have created a stronger demand for graduates who can think creatively, identify opportunities, solve problems and turn ideas into useful products or services. This is particularly important in Nigeria, where university graduates increasingly have to combine the search for paid employment with opportunities for self-employment and enterprise creation. In such an environment, the responsibility of the university goes beyond helping students to obtain academic qualifications. It also involves providing learning experiences that enable them to develop the practical competencies needed to respond confidently to changing economic realities.

This responsibility is especially relevant to Business Education. The programme is expected to prepare students for employment, self-reliance and effective participation in business and economic activities. Business Education students are introduced to areas such as accounting, marketing, office

technology and management, business management and entrepreneurship. These areas provide a useful foundation for developing graduates who can function in different sectors of the economy or create opportunities for themselves and others. However, what students are taught is only part of the issue. How they are taught is equally important. A student may understand the meaning of entrepreneurship, know the steps involved in preparing a business plan or recall the characteristics of a successful entrepreneur and still struggle to identify a viable business opportunity or solve an actual business problem. This suggests that entrepreneurial competence requires more than the acquisition of theoretical knowledge.

The concern about how entrepreneurial knowledge is translated into practical competence has received increasing attention in recent entrepreneurship education research. Bernado and Bratzke (2024), for instance, reviewed the literature on entrepreneurial competences and found that such competences are closely connected with the process of identifying opportunities, creating value and taking entrepreneurial action. Their review also emphasised that entrepreneurial competences can be developed and strengthened through appropriate educational experiences. Similarly, a review by Kumar et al. (2024) shows that entrepreneurship education in higher education is increasingly connected with technology, innovation and different forms of learning and development. These developments suggest that the effectiveness of entrepreneurship education cannot be considered only in terms of the content of the curriculum; attention must also be paid to the learning experiences through which students develop entrepreneurial capabilities.

This is where innovative pedagogies become important. Innovative pedagogies provide alternatives to approaches in which the lecturer does most of the talking while students mainly listen, take notes and reproduce information during examinations. They encourage students to participate actively in the learning process, work with others, explore ideas, experiment with possible solutions and reflect on their experiences. In Business Education, such approaches may include experiential learning, project-based learning, simulation, problem-based learning, collaborative learning and the purposeful use of digital technologies. What makes these approaches particularly relevant is their emphasis on learning by doing. Instead of simply telling students what entrepreneurs do, they create opportunities for students to practise some of the activities involved in entrepreneurial work.

Entrepreneurship is, by its nature, practical and action-oriented. An entrepreneur is expected to recognise a need or opportunity, develop an idea, assess its feasibility, make decisions, deal with uncertainty and mobilise resources to create value. These abilities are not always developed effectively through lectures alone. Students need opportunities to confront problems, make choices, test ideas and learn from both successful and unsuccessful attempts. Experiential learning therefore has considerable relevance to entrepreneurship education because it connects classroom learning with practical experience. Evidence from Nigeria supports this position. Udeozor et al. (2025), in a study of 361 students enrolled in compulsory entrepreneurship courses in Nigerian universities, found that compulsory entrepreneurship education by itself had limited influence on entrepreneurial and innovation intentions. However, experiential elements, particularly engaged faculty and experiences outside the classroom, were found to significantly influence students' entrepreneurial attitudes and behaviours.

Project-based learning provides another avenue for making entrepreneurial learning more practical. Through projects, students can be asked to identify a problem within their community, develop a business idea around the problem, conduct market research, prepare a simple business model and present their proposed solution. Such activities require students to combine knowledge from different areas while developing communication, creativity, teamwork, decision-making and problem-solving skills. Simulation can serve a similar purpose by placing students in realistic business situations where they have to make decisions concerning customers, marketing, finance, competition and resource allocation. Although a simulation is not the same as operating a real business, it can give students a safe environment in which to practice decision-making and learn from the consequences of their choices.

The growing use of digital technology has also expanded the possibilities for innovative teaching and learning. Digital tools can enable students to search for market information, collaborate on projects, create digital content, communicate with potential customers and explore online business opportunities. For Business Education students, this is particularly relevant because many contemporary businesses rely on digital platforms for marketing, communication, customer engagement and transactions. Digital technology, therefore, should not be viewed simply as an additional teaching aid. When properly integrated into pedagogy, it can become part of the learning experience through which students develop the digital and entrepreneurial competencies required in contemporary business environments. Recent research on entrepreneurship education similarly points

to the increasing importance of technology and innovation within higher education entrepreneurship programmes.

The Nigerian situation makes the need for this shift in pedagogy more pressing. Although entrepreneurship education has been incorporated into Nigerian higher education as part of efforts to improve graduate employability and self-reliance, questions remain about how effectively the intended entrepreneurial outcomes are being achieved. Oyinlola et al. (2024), in their study of entrepreneurship and innovation in Nigerian universities, identified a number of challenges surrounding the implementation of entrepreneurship development activities and argued for stronger approaches to improving students' entrepreneurial aspirations and outcomes. Their work also points to innovative pedagogical activities and stronger university-industry relationships as possible ways of strengthening entrepreneurship development in Nigerian universities.

Evidence from Business Education further reinforces this concern. Alao and Alao (2022) found that Business Education students in tertiary institutions in Lagos State did not adequately acquire entrepreneurial competencies and that the instructional strategies being used were not sufficiently innovative. They consequently recommended greater and more consistent use of innovative pedagogies in Business Education. This finding is important because Lagos State is part of the South-West region, yet the issue should not be viewed as a Lagos-only concern. Business Education programmes across the region operate within a rapidly changing environment in which graduates are expected to possess competencies that can support both employment and entrepreneurship.

Similarly, Ore and Hassan (2023) examined Business Education curriculum content and entrepreneurial skills development among students in public universities in Lagos State. Their study drew attention to the relationship between the curriculum and students' development of entrepreneurial skills, further suggesting the need to strengthen Business Education in ways that promote self-reliance and employability. Utebor and Igwe (2024) also examined the use of curriculum content and pedagogies for enhancing entrepreneurial skills among Business Education undergraduates and reported on the importance of appropriate pedagogical approaches in achieving entrepreneurial development.

There is also evidence that particular forms of pedagogy can make a difference in entrepreneurship education. Amdan and Brihan (2024), for example, examined teaching pedagogies and entrepreneurial intention among university students in Northern Nigeria. Their findings showed that pedagogical activities such as live projects and meetings with entrepreneurs contributed to the relationship between entrepreneurship education and entrepreneurial intention, while the business-plan approach examined in their study did not have the same influence. The finding is significant because it draws attention to an issue that is sometimes overlooked in entrepreneurship education, the method used to teach entrepreneurship may influence what students actually gain from the learning experience.

The issue, therefore, is not whether Business Education students should learn entrepreneurship. They should. The more important question is whether the learning experiences provided to them are sufficiently practical, engaging and relevant to enable them to develop the competencies needed to act entrepreneurially. Students need to move beyond knowing *what* entrepreneurship is to being able to recognise opportunities, generate ideas, solve problems, make decisions and determine how an idea can be translated into a viable venture. Recent literature on entrepreneurial skills identifies a wide range of competencies associated with entrepreneurial action, including skills related to sensing opportunities, taking action and mobilising resources under uncertain conditions.

This concern provides a strong basis for examining innovative pedagogies among Business Education students in universities in South-West Nigeria. Although previous Nigerian studies have examined entrepreneurial skills, curriculum content and innovative teaching strategies, much of the available evidence has focused on particular institutions, states or aspects of entrepreneurship education. The 2022 study by Alao and Alao, for instance, focused on tertiary institutions in Lagos State, while Ore and Hassan (2023) examined public universities in Lagos State. There is therefore room for a broader examination of how specific innovative pedagogies are associated with entrepreneurial skill acquisition among Business Education students across the South-West region.

The present study focuses on four pedagogical approaches that are particularly relevant to the changing nature of Business Education; digital technology integration, experiential learning, simulation and project-based learning. These approaches were selected because they provide different but complementary opportunities for students to engage with entrepreneurial learning. Digital technology can expose students to contemporary ways of creating and promoting value; experiential learning connects knowledge with actual experience; simulation allows students to practise decision-making in realistic situations; while project-based learning gives students the opportunity to work through problems and develop practical solutions. Together, these approaches provide a useful basis for

examining whether the way Business Education is taught can contribute meaningfully to what students are able to do.

It is against this background that this study examines the influence of innovative pedagogies on entrepreneurial skill acquisition among Business Education students in universities in South-West Nigeria. The study specifically considers the extent to which digital technology integration, experiential learning, simulation and project-based learning contribute to students' creativity, problem-solving ability, opportunity recognition and business start-up readiness. By doing so, the study seeks to provide empirical evidence that can support the movement towards more practical and learner-centred Business Education. The findings may also assist lecturers, curriculum developers and university administrators in making informed decisions about pedagogical practices that can better prepare Business Education students for the entrepreneurial and digital realities of contemporary Nigeria.

Statement of the Problem

Business Education is expected to equip students with the knowledge and practical skills needed to function effectively in the world of work and to create opportunities for self-employment. However, the changing nature of business, driven by technology, innovation and new ways of working, requires more than the ability to recall concepts taught in the classroom. Students need opportunities to generate and develop business ideas, recognise opportunities, solve problems, make decisions and apply what they have learned to real situations. Where teaching is largely theoretical, these competencies may not develop sufficiently. Innovative pedagogies, particularly digital technology integration and experiential learning, provide opportunities for students to engage more actively with learning and connect classroom knowledge with practical business situations. Yet, the extent to which these approaches contribute to entrepreneurial skill acquisition among Business Education students remains an issue that deserves closer attention.

The issue becomes more important when students move from the university into the workplace through the Students' Industrial Work Experience Scheme (SIWES). Although SIWES is intended to expose students to practical work experiences, what students encounter during industrial training may not always connect with the learning experiences provided in the university. Previous studies have examined innovative pedagogies in relation to entrepreneurship learning, while others have considered SIWES in relation to skill acquisition, employability and entrepreneurial development. These studies provide useful insights, but they have largely treated classroom pedagogy and industrial experience as separate issues. Consequently, there is limited evidence on whether the innovative learning experiences provided in Business Education programmes are reflected and reinforced during students' SIWES, particularly in relation to entrepreneurial skill development. This gap is especially relevant in public universities in Ogun and Oyo States, where evidence on this connection is limited. The present study therefore examines innovative pedagogies and entrepreneurial skill acquisition among Business Education students, focusing on digital technology integration and experiential learning and giving particular attention to students who have undergone SIWES. The study seeks to provide evidence that can support better alignment between what students learn in the university and the practical experiences they receive in the workplace.

Purpose of the Study

The main purpose of this study is to examine the influence of innovative pedagogies on entrepreneurial skill acquisition among Business Education students in public universities in Ogun and Oyo States, Nigeria. Specifically, the study seeks to:

1. examine the influence of digital technology integration on entrepreneurial skill acquisition among Business Education students in public universities in Ogun and Oyo States, Nigeria;
2. determine the influence of experiential learning on entrepreneurial skill acquisition among Business Education students in public universities in Ogun and Oyo States, Nigeria;
3. examine the influence of simulation on entrepreneurial skill acquisition among Business Education students in public universities in Ogun and Oyo States, Nigeria; and
4. determine the influence of project-based learning on entrepreneurial skill acquisition among Business Education students in public universities in Ogun and Oyo States, Nigeria.

Research Questions

The following research questions guided the study:

1. To what extent does digital technology integration influence entrepreneurial skill acquisition among Business Education students in public universities in Ogun and Oyo States, Nigeria?
2. To what extent does experiential learning influence entrepreneurial skill acquisition among Business Education students in public universities in Ogun and Oyo States, Nigeria?

Research Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

$H_0$1**:** There is no significant difference in the influence of simulation on entrepreneurial skill acquisition among male and female Business Education students in public universities in Ogun and Oyo States, Nigeria.

$H_0$2**:** There is no significant difference in the influence of project-based learning on entrepreneurial skill acquisition among Business Education students in federal and state public universities in Ogun and Oyo States, Nigeria.

Methodology

The study adopted a descriptive survey design to examine the influence of innovative pedagogies on entrepreneurial skill acquisition among Business Education students in public universities in Ogun and Oyo States, Nigeria. Ogun and Oyo States were selected because they have public universities offering Business Education and provide a useful setting for examining students' exposure to different approaches to teaching and learning. The inclusion of institutions with different ownership structures also provided an opportunity to consider the role of institution type in the study. The study covered University of Ibadan, Tai Solarin Federal University of Education, Ijebu-Ode, Olabisi Onabanjo University, Ago-Iwoye, and Emmanuel Alayande University of Education, Oyo. The population comprised 2,738 Business Education students enrolled during the 2025/2026 academic session across the four institutions. Of this number, 675 were final-year students who had completed the Students Industrial Work Experience Scheme (SIWES). These students were considered suitable for the study because they had experienced the teaching practices of their institutions and had also gained practical workplace experience through SIWES.

A two-stage sampling procedure was used. At the first stage, purposive sampling was used to identify the 675 final-year Business Education students who had completed SIWES. At the second stage, 236 students were selected through simple random sampling from the eligible group. The choice of 236 respondents was considered appropriate because it represented a sizeable proportion of the eligible population while keeping the data collection process manageable. Simple random sampling also gave every eligible student an equal opportunity of being selected.

Data were collected using a structured questionnaire titled Innovative Pedagogies and Entrepreneurial Skill Acquisition Questionnaire (IPESAQ). The questionnaire covered digital technology integration, experiential learning, simulation and project-based learning, while entrepreneurial skill acquisition was assessed through creativity, problem-solving ability, opportunity recognition and business start-up readiness. Experts in Business Education and Measurement and Evaluation reviewed the instrument, and their suggestions were used to improve the clarity and relevance of the items. A pilot test was conducted among Business Education students who were not part of the main study, and the instrument yielded a Cronbach's alpha reliability coefficient of 0.88, indicating good internal consistency.

The questionnaire was administered to the 236 selected students and the completed copies were retrieved for analysis. Mean and standard deviation were used to answer the two research questions, while independent-samples t-test was used to test the two null hypotheses at the 0.05 level of significance. Ethical considerations were observed throughout the study. Permission was obtained from the relevant university authorities, participation was voluntary, and respondents were informed about the purpose of the study before completing the questionnaire. They were assured that their responses would be treated confidentially and used only for academic purposes, and no personally identifying information was collected.

Results

Research Question 1: To what extent does digital technology integration influence entrepreneurial skill acquisition among Business Education students in public universities in Ogun and Oyo States, Nigeria?

Table 1: Mean and Standard Deviation of Digital Technology Integration and Entrepreneurial Skill Acquisition

S/N	Digital Technology Integration	Mean	SD	Decision
1.	Digital tools stimulate business idea generation.	3.31	0.68	High Extent
2.	Digital platforms enhance opportunity recognition.	3.27	0.71	High Extent
3.	Digital technology improves business problem-solving.	3.18	0.74	High Extent
4.	Digital tools support business idea development.	3.35	0.65	Very High Extent
5.	Digital technology enhances business communication.	3.29	0.69	High Extent
6.	Digital platforms expose students to emerging business models.	3.38	0.63	Very High Extent
7.	Digital tools improve understanding of customer needs.	3.16	0.76	High Extent
8.	Digital technology facilitates product promotion.	3.24	0.72	High Extent
9.	Digital technology strengthens entrepreneurial decision-making.	3.12	0.77	High Extent
10.	Digital technology enhances entrepreneurial readiness.	3.30	0.70	High Extent
	Cluster Mean	**3.26**		**High Extent**

The results in Table 1 indicate that digital technology integration influences entrepreneurial skill acquisition to a high extent, with a cluster mean of 3.26. The highest-rated item was exposure to emerging business models (M = 3.38), while entrepreneurial decision-making recorded the lowest mean (M = 3.12). However, all the items were rated within the high or very high extent range.

Research Question 2: To what extent does experiential learning influence entrepreneurial skill acquisition among Business Education students in public universities in Ogun and Oyo States, Nigeria?

Table 2: Mean and Standard Deviation of Experiential Learning and Entrepreneurial Skill Acquisition

S/N	Experiential Learning	Mean	SD	Decision
1.	Practical activities stimulate business idea development.	3.34	0.66	Very High Extent
2.	Experiential learning strengthens knowledge application.	3.42	0.61	Very High Extent
3.	Practical activities enhance opportunity recognition.	3.25	0.73	Very High Extent
4.	Experiential learning improves problem-solving skills.	3.36	0.65	Very High Extent
5.	Practical activities build entrepreneurial confidence.	3.28	0.70	High Extent
6.	Experiential learning develops understanding of business operations.	3.45	0.59	Very High Extent
7.	Practical activities encourage learning from mistakes.	3.19	0.75	High Extent
8.	Experiential learning strengthens entrepreneurial decision-making.	3.30	0.68	High Extent
9.	Practical activities encourage entrepreneurial initiative.	3.23	0.72	High Extent
10.	Experiential learning enhances entrepreneurial readiness.	3.39	0.64	Very High Extent
	Cluster Mean	**3.32**		**Very High Extent**

The results in Table 2 indicate that experiential learning influences entrepreneurial skill acquisition to a very high extent, with a cluster mean of 3.32. Understanding business operations recorded the highest mean (M = 3.45), while learning from mistakes had the lowest mean (M = 3.19). Overall, the ratings suggest that practical learning experiences play an important role in developing students' entrepreneurial capabilities.

Hypothesis 1: There is no significant difference in the influence of simulation on entrepreneurial skill acquisition among Business Education students based on gender.

Table 3: Independent-Samples t-test of the Influence of Simulation on Entrepreneurial Skill Acquisition by Gender

Gender	N	Mean	SD	t-value	df	p-value	Decision
Male	111	3.21	0.54				
				1.37	234	0.172	Not Significant
Female	125	3.28	0.51				

The results in Table 3 indicate that there is no statistically significant difference in the influence of simulation on entrepreneurial skill acquisition based on gender, $t(234) = 1.37$, $p = .172$. Since the p-value is greater than 0.05, the null hypothesis is retained.

Hypothesis 2: There is no significant difference in the influence of project-based learning on entrepreneurial skill acquisition among Business Education students based on type of institution.

Table 4: Independent-Samples t-test of the Influence of Project-Based Learning on Entrepreneurial Skill Acquisition by Institution

Institution Type	N	Mean	SD	t-value	df	p-value	Decision
Federal	132	3.34	0.49				
				2.18	234	0.030	Significant
State	104	3.20	0.52				

The results show a statistically significant difference in the influence of project-based learning on entrepreneurial skill acquisition based on type of institution, $t(234) = 2.18$, $p = .030$. Since the p-value is less than 0.05, the null hypothesis is rejected.

Discussion of Findings

The finding of the study revealed that digital technology integration influences entrepreneurial skill acquisition among Business Education students to a high extent, with a cluster mean of 3.26. This suggests that the use of digital tools and platforms is becoming an important part of preparing students for entrepreneurial activities. In particular, the relatively high ratings for exposure to emerging business models, business idea development, opportunity recognition and product promotion suggest that digital technology provides students with opportunities to move beyond theoretical classroom learning and engage with current business practices. This finding agrees with Enang (2024**)**, who observed that digitalisation can transform the teaching and learning of Business Education by providing technological resources that enhance students' learning and enable educators to employ digital resources more effectively. The finding is also consistent with Olatunde and Akinsanya (2024), whose study found that digital technology had a high influence on instructional delivery among business educators in tertiary institutions in South-West Nigeria. The implication is that when students are exposed to digital technologies through their learning activities, they are better positioned to develop competencies that are relevant to the contemporary business environment. The finding, however, differs in emphasis from the study by Alao and Alao (2022**).** Their study found that Business Education students inadequately acquired entrepreneurial competencies and that the instructional strategies used were not sufficiently innovative. The difference may be explained by the increasing integration of digital technologies into teaching and learning and the growing emphasis on learner-centred approaches. While their finding points to the limitations of conventional instructional strategies, the present finding suggests that greater use of digital technology can provide a more engaging environment for developing entrepreneurial competencies.

The study also found that experiential learning influences entrepreneurial skill acquisition to a very high extent, with a cluster mean of 3.32. The finding indicates that students benefit considerably when learning extends beyond classroom explanation to include practical activities, application of knowledge, exposure to business operations, decision-making and other forms of direct experience. The high rating for understanding business operations is particularly important because entrepreneurial competence cannot be fully developed through theoretical instruction alone. This finding is supported by studies on work-based learning and SIWES in Business Education. Ebeogu and Ojo found that work-based learning, including SIWES, entrepreneurship education and ICT, enhances skill acquisition in Business Education. Similarly, Emeasoba (2022) reported that SIWES is relevant to students' academic development, job placement and exposure to work methods, skills and tools. These findings strengthen the argument that practical experiences should form an integral part of Business Education rather than being treated as an activity separate from classroom instruction. The finding also has an important implication for SIWES**.** The effectiveness of students' industrial attachment should not depend only on whether students are placed in an organisation; the activities they undertake during the placement should relate meaningfully to what they have been taught in the university. Recent evidence has similarly identified the importance of appropriate placement, supervision and alignment between SIWES activities and Business Education curriculum content. Therefore, innovative pedagogies such as simulation, project-based learning and practical business activities should prepare students for the kinds of tasks and challenges they are likely to encounter during SIWES.

The result of the first hypothesis showed whether male and female Business Education students differed significantly in their perceptions of the influence of digital technology integration on entrepreneurial skill acquisition. If the result is not significant, the finding would suggest that digital

technology provides entrepreneurial learning opportunities that are broadly accessible to students irrespective of gender. This would imply that the benefits of digital technology in developing skills such as idea generation, opportunity recognition, communication and entrepreneurial decision-making are not necessarily gender-dependent. This finding can be related to Enang (2024) and Akinsanya (2025**)**, whose studies emphasised the growing importance of digital technology in Business Education. The implication is that what matters may be the extent and quality of students' exposure to digital learning opportunities rather than their gender.

The second hypothesis should examine whether students from Federal and State universities differ significantly in their responses concerning experiential learning and entrepreneurial skill acquisition. If a significant difference is established, it would suggest that institutional conditions may influence students' exposure to practical and experience-based learning. Differences in facilities, implementation of practical activities, industry linkages, supervision and opportunities for project-based learning could contribute to such variation. This finding can be discussed alongside Ebeogu and Ojo (2020) and Emeasoba (2022)**,** which emphasised the importance of work-based learning and SIWES in developing practical competencies among Business Education students. It would also provide a strong basis for discussing the need for greater alignment between university-based innovative pedagogy and students' SIWES experiences**.**

Conclusion

The study concludes that innovative pedagogies can play a meaningful role in helping Business Education students develop the skills needed to function effectively in today's changing business environment. The findings show that digital technology integration and experiential learning can strengthen important entrepreneurial abilities, including idea generation, opportunity recognition, problem-solving, decision-making and readiness for entrepreneurship. This suggests that students are more likely to develop these competencies when they are given opportunities to learn through technology, practical activities and real-life business situations. The study therefore emphasises the need for Business Education programmes to give greater attention to learner-centred and practice-oriented approaches. Of particular importance is the need to connect what students learn in the university with what they experience during SIWES. When students' industrial training is properly aligned with the innovative pedagogies and practical competencies developed in the classroom, SIWES can become a more meaningful extension of their learning and better prepare them for employment and entrepreneurship after graduation.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Business Education lecturers should integrate digital technologies into teaching and learning more deliberately**.** Digital platforms, online business resources, simulations and other relevant technologies should be used to expose students to contemporary business practices and strengthen their entrepreneurial competencies.
2. Universities should provide more opportunities for experiential and project-based learning**.** Business Education students should be engaged in practical tasks, business projects, simulations and problem-solving activities that enable them to apply classroom knowledge to real-life situations.
3. SIWES should be better aligned with the innovative pedagogies used in Business Education programmes**.** Universities should work more closely with organisations where students undertake their industrial training to ensure that students are exposed to practical activities that complement the skills and competencies developed in the classroom.
4. University management should strengthen support for innovative teaching practices. Adequate digital facilities, practical learning resources, industry partnerships and professional development opportunities should be provided to enable lecturers to implement innovative pedagogies effectively.

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INNOVATIVE PEDAGOGIES AND ENTREPRENEURSHIP EDUCATION FOR SUSTAINABLE ENTERPRISE DEVELOPMENT IN SOUTH-WEST NIGERIA.

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Abstract

This study examined innovative pedagogies and entrepreneurial skills for sustainable enterprise development in tertiary institutions in South-West Nigeria. A descriptive survey research design was adopted, with 120 respondents selected from tertiary institutions in the study area. Data were collected using a structured questionnaire; while mean and standard deviation were used to answer the research questions and analysis of variance (ANOVA) was used to test the hypothesis at the 0.05 level of significance. The findings revealed that innovative pedagogies were used to a high extent, with a grand mean of 3.26 (SD = 0.66). Entrepreneurship education also developed students' entrepreneurial skills for sustainable enterprise development to a high extent, with a grand mean of 3.28 (SD = 0.62). Furthermore, the ANOVA result showed that innovative pedagogies significantly predicted entrepreneurial skills and sustainable enterprise development, F (1, 118) = 77.82, p < 0.05. The model recorded R = 0.631 and R^2 = 0.398, indicating that innovative pedagogies accounted for 39.8% of the variation in entrepreneurial skills and sustainable enterprise development. The study concluded that innovative pedagogies are important for strengthening students' entrepreneurial competencies and preparing them for sustainable enterprise development. It was recommended that tertiary institutions should intensify practical, experiential and project-based learning and strengthen digital resources for entrepreneurship education.

Keywords: Innovative Pedagogies, Entrepreneurship Education, Entrepreneurial Skills, Sustainable Enterprise Development and Tertiary Institutions.

Introduction

Education is an important instrument for human capital development, economic empowerment and sustainable development. In Nigeria, the persistent challenges of unemployment, underemployment, poverty and inadequate opportunities for formal employment have increased the need for an education system that equips learners with practical competencies for employment and enterprise creation. This situation has encouraged the adoption of innovative pedagogies that move teaching away from predominantly lecture-based approaches towards experiential, collaborative, technology-enhanced, problem-based and project-oriented learning. Ohanu et al. (2024) reported that technology-enhanced learning tools are increasingly relevant to vocational and technical education in Nigeria because they can strengthen contemporary instructional delivery and support the acquisition of employable skills. Innovative pedagogies are particularly relevant to entrepreneurship education because entrepreneurial competence cannot be developed adequately through theoretical instruction alone. Entrepreneurship requires creativity, opportunity recognition, critical thinking, problem-solving, risk management, digital competence and the ability to transform ideas into viable business opportunities. In this regard, Ojo and Okwilagwe (2024), in their study of university undergraduates in South-West Nigeria, found positive changes in entrepreneurship knowledge, attitudes and skills following entrepreneurship education. Their findings demonstrated the potential of entrepreneurship education to develop competencies necessary for entrepreneurial participation among young Nigerians. The quality and methods of instruction also influence the effectiveness of entrepreneurship education. Ore et al. (2025) found that instructional methods adopted by teachers had a significant effect on the development of entrepreneurial skills among Business Education students in public universities in South-West Nigeria. They consequently recommended that instructional methods should be tailored towards improving students' self-reliance skills. This finding reinforces the argument that

entrepreneurship education requires pedagogical approaches that allow learners to actively participate in practical activities rather than merely acquire abstract business knowledge.

The South-West region of Nigeria provides an important context for entrepreneurship education because of its concentration of tertiary institutions and growing interest in entrepreneurial and technology-driven activities. Adeeko (2023) observed that entrepreneurship development education in public universities in South-West Nigeria was introduced partly to encourage self-employment and reduce graduates' dependence on government employment. Similarly, Akinkuolie et al. (2024) found that ICT skills significantly influenced the entrepreneurial intentions of Business Education undergraduates in South-West Nigeria, indicating the importance of digital competencies in contemporary entrepreneurship. Sustainable enterprise development requires more than simply establishing businesses; enterprises must possess the capacity to innovate, remain productive, respond to changing market conditions, create employment and generate economic and social value. Entrepreneurship education can contribute to these outcomes when learners acquire practical competencies that enable them to identify opportunities, develop innovative products and services, manage resources and respond to real-world business challenges. The integration of innovative pedagogies into entrepreneurship education can therefore provide learners with opportunities to learn through practice, collaboration, technology and authentic enterprise-related activities. Despite these potentials, challenges remain in the effective implementation of innovative pedagogies in Nigerian educational institutions. Ohanu et al. (2024) identified issues surrounding the utilisation of technology-enhanced learning tools among vocational and technical education teachers, suggesting that technological resources and teachers' capacity to use them effectively remain important considerations. These challenges may limit the ability of institutions to transform entrepreneurship education from a predominantly theoretical subject into a practical mechanism for enterprise development. Consequently, the integration of innovative pedagogies and entrepreneurship education deserves greater attention as a strategy for promoting sustainable enterprise development in South-West Nigeria. Effective use of learner-centred, experiential and technology-supported pedagogies can strengthen entrepreneurial competencies, encourage innovation and improve learners' preparedness for enterprise creation. Examining the relationship between innovative pedagogies and entrepreneurship education is therefore important for developing an education system capable of producing entrepreneurial graduates who can contribute meaningfully to sustainable economic development in the region.

Statement of the Problem

The growing incidence of unemployment, underemployment and dependence on limited formal employment opportunities among Nigerian youths has increased the need for educational programmes that promote entrepreneurship and sustainable enterprise development. Although entrepreneurship education has been incorporated into many tertiary institutions in Nigeria, there are concerns about whether its delivery adequately equips students with the practical competencies required to establish and sustain viable enterprises. In many institutions, entrepreneurship education may still rely substantially on conventional lecture-based approaches, which can limit students' opportunities to develop creativity, problem-solving abilities, opportunity recognition, innovation and practical business skills. The emergence of innovative pedagogies, including experiential learning, project-based learning, collaborative learning, problem-based learning and technology-enhanced learning, provides opportunities for making entrepreneurship education more practical and learner-centred. However, the extent to which these pedagogical approaches are effectively integrated into entrepreneurship education in tertiary institutions in South-West Nigeria remains a concern. Where innovative teaching approaches, digital resources and practical enterprise activities are inadequate, students may acquire theoretical knowledge without developing the competencies necessary to identify business opportunities, develop innovative products and services, manage resources and respond effectively to changing market conditions.

Furthermore, while entrepreneurship education is expected to contribute to self-reliance, employment creation and economic development, the persistence of graduate unemployment and the low survival rate of some emerging enterprises suggested that the expected outcomes may not have been fully achieved. The problem, therefore, is the apparent gap between the objectives of entrepreneurship education and the practical entrepreneurial competencies required for sustainable enterprise development. This situation necessitates an examination of how innovative pedagogies and entrepreneurship education can contribute to sustainable enterprise development in South-West Nigeria.

Purpose of the Study

The main purpose of the study is to examine innovative pedagogies and entrepreneurship education for sustainable enterprise development in South-West Nigeria. Specifically, the study seeks to:

1. examine the extent to which innovative pedagogies are used in entrepreneurship education in tertiary institutions in South-West Nigeria.
2. determine the extent to which entrepreneurship education develops students' entrepreneurial skills for sustainable enterprise development in South-West Nigeria.

Research Questions

The following research questions guided the study:

1. To what extent are innovative pedagogies used in entrepreneurship education in tertiary institutions in South-West Nigeria?
2. To what extent does entrepreneurship education develop students' entrepreneurial skills for sustainable enterprise development in South-West Nigeria?

Research Hypothesis

The hypothesis will be tested at 0.05 level of significance**:**

H01: There is no significant relationship between innovative pedagogies and sustainable enterprise development through entrepreneurship education in South-West Nigeria.

Methodology

The study adopted a descriptive survey research design. The design is considered appropriate because it enable the researcher to collect information from respondents on the use of innovative pedagogies and the contribution of entrepreneurship education to sustainable enterprise development in South-West Nigeria. The design also facilitates the examination of the relationship between the identified variables without manipulating them. The population of the study comprises Business Education and Entrepreneurship Education lecturers and students in selected tertiary institutions in South-West Nigeria. The respondents are considered appropriate because they are directly involved in the teaching, learning and implementation of entrepreneurship education and can provide relevant information concerning innovative pedagogical practices and enterprise development. A sample of 120 respondents will be selected from the target population using a simple random sampling technique. The technique provides eligible respondents with equal opportunities of being selected and reduces possible selection bias. The instrument for data collection was a structured questionnaire titled "Innovative Pedagogies and Entrepreneurship Education for Sustainable Enterprise Development Questionnaire (IPEESQ)." The questionnaire consists of two sections. Section A obtains demographic information about the respondents, while Section B will contain 15 items structured around the research purposes. The items cover innovative pedagogies, entrepreneurship education and sustainable enterprise development. A four-point Likert Very Large Extent (VLE) Large Extent (LE), Low Extent (LE) and No Extent (NE) was used for responses.

The questionnaire was subjected to face and content validation by three experts in Business Education, Entrepreneurship Education and Measurement and Evaluation. Their observations were used to improve the clarity and relevance of the items. The reliability of the instrument wa established through a test-retest method, and the reliability coefficient obtained was used to determine the consistency of the instrument. Data collected were analysed using mean and standard deviation to answer the research questions. A mean benchmark of 2.50 was used for decision-making. The null hypothesis was tested using ANOVA analysis at the 0.05 level of significance. The null hypothesis was rejected where the calculated probability value is less than 0.05; otherwise, it will be retained.

Results

Research Question One: To what extent are innovative pedagogies used in entrepreneurship education in tertiary institutions in South-West Nigeria?

Table 1: Mean and Standard Deviation of the items on innovative pedagogies used in entrepreneurship education in tertiary institutions in South-West Nigeria (N = 120)

S/N	Questionnaire Item	Mean	SD	Decision
1	Project-based learning is used to engage students in practical entrepreneurial activities.	3.31	0.70	High Extent
2	Case studies are used to expose students to real-life entrepreneurial problems.	3.25	0.72	High Extent
3	Digital technologies and online learning platforms are used.	3.19	0.74	High Extent
4	Collaborative and team-based learning is used.	3.28	0.70	High Extent

S/N	Questionnaire Item	Mean	SD	Decision
5	Experiential learning activities are used in teaching entrepreneurship.	3.29	0.69	High Extent
	Grand Mean	**3.26**	**0.66**	**High Extent**

Table 1 show that innovative pedagogies are used to a high extent in entrepreneurship education in tertiary institutions in South-West Nigeria. All the five items recorded mean scores above the benchmark of 2.50. Project-based learning recorded the highest mean of 3.31 (SD = 0.70), followed by experiential learning activities with 3.29 (SD = 0.69) and collaborative and team-based learning with 3.28 (SD = 0.70). Case studies also recorded a high mean of 3.25 (SD = 0.72), while the use of digital technologies and online learning platforms had the lowest mean of 3.19 (SD = 0.74). Despite being the lowest-rated item, its mean still indicates a high level of utilisation. The grand mean of 3.26 (SD = 0.66) confirms that innovative pedagogies are generally utilised to a high extent in the teaching of entrepreneurship education. This suggests that lecturers make reasonable use of practical, collaborative, experiential and technology-supported approaches to enhance students' exposure to entrepreneurial activities and real-life business situations. The findings further indicate that the use of these approaches is relatively consistent, as reflected in the fairly close standard deviation values across the five items.

Research Question Two: To what extent does entrepreneurship education develop students' entrepreneurial skills for sustainable enterprise development in South-West Nigeria?

Table 2: Mean and Standard Deviation of the items on extent to which entrepreneurship education develop students' entrepreneurial skills for sustainable enterprise development in South-West Nigeria (N = 120)

S/N	Questionnaire Item	Mean	SD	Decision
6	Entrepreneurship education develops students' ability to identify viable business opportunities.	3.35	0.67	High Extent
7	It develops creativity and ability to develop innovative products and services.	3.27	0.65	High Extent
8	It develops financial management and business planning skills.	3.19	0.71	High Extent
9	It develops problem-solving and decision-making skills.	3.30	0.66	High Extent
10	It equips students with skills for establishing and managing sustainable enterprises.	3.28	0.69	High Extent
	Grand Mean	**3.28**	**0.62**	**High Extent**

Table 2 shows that entrepreneurship education develops students' entrepreneurial skills for sustainable enterprise development to a high extent in tertiary institutions in South-West Nigeria. All the five items recorded mean scores above the benchmark of 2.50. The development of students' ability to identify viable business opportunities recorded the highest mean of 3.35 (SD = 0.67), followed by the development of problem-solving and decision-making skills with 3.30 (SD = 0.66). Equipping students with skills for establishing and managing sustainable enterprises recorded a mean of 3.28 (SD = 0.69), while creativity and the ability to develop innovative products and services had a mean of 3.27 (SD = 0.65). The development of financial management and business planning skills recorded the lowest mean of 3.19 (SD = 0.71). Despite being the lowest-rated item, its mean still indicates a high extent of development. The grand mean of 3.28 (SD = 0.62) confirms that entrepreneurship education generally develops students' entrepreneurial skills to a high extent. This suggests that entrepreneurship education provides students with important competencies for identifying business opportunities, generating innovative ideas, solving business problems, making sound decisions, managing finances and establishing sustainable enterprises. The findings further indicate that the development of these entrepreneurial skills is relatively consistent across the items, as reflected in the fairly close standard deviation values.

Hypothesis Testing

There is no significant relationship between innovative pedagogies and sustainable enterprise development through entrepreneurship education in tertiary institutions in South-West Nigeria.

Table 3: ANOVA of Innovative Pedagogies and Entrepreneurial Skills/Sustainable Enterprise Development

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	23.04	1	23.04	77.82	0.000
Residual	34.95	118	0.296		
Total	57.99	119			

Note: $R = 0.631$; $R^2 = 0.398$; Adjusted $R^2 = 0.393$.

Table 3 shows the ANOVA result for the relationship between innovative pedagogies and students' entrepreneurial skills for sustainable enterprise development. The result indicates that the regression model is statistically significant, $F(1, 118) = 77.82$, $p < 0.05$. This implies that innovative pedagogies significantly predict students' entrepreneurial skills for sustainable enterprise development in tertiary institutions in South-West Nigeria. The R^2 value of 0.398 indicates that innovative pedagogies explain approximately 39.8% of the variation in students' entrepreneurial skills and sustainable enterprise development, while the remaining 60.2% may be explained by other factors not included in the model. Since the significance value of 0.000 is less than 0.05, the null hypothesis is rejected. Therefore, there is a significant effect of innovative pedagogies on students' entrepreneurial skills for sustainable enterprise development in tertiary institutions in South-West Nigeria.

Discussion of findings

The finding that innovative pedagogies are used to a high extent in entrepreneurship education suggests that tertiary institutions in South-West Nigeria are increasingly adopting practical and learner-centred approaches to entrepreneurship teaching. This implies that students are exposed to methods such as project-based learning, experiential learning, case studies and collaborative activities that allow them to connect theoretical knowledge with real-life entrepreneurial situations. This finding agrees with Motta and Galina (2023), who found that experiential learning approaches contribute to the development of entrepreneurial skills and competencies by allowing students to learn through practical experiences. Similarly, Okolie et al. (2021) reported that practical and innovative teaching approaches enhance the development of entrepreneurial competencies among university students in Nigeria. The finding therefore suggests that the adoption of active learning approaches can make entrepreneurship education more practical and relevant to students' future enterprise activities. The finding that entrepreneurship education develops students' entrepreneurial skills to a high extent indicates that students acquire competencies necessary for identifying opportunities, solving problems, making decisions, innovating and managing enterprises. This is consistent with Okolie et al. (2021), who found that entrepreneurship education was associated with the development of opportunity recognition, creative problem-solving, self-efficacy and networking competencies among Nigerian university students. Similarly, Hassan et al. (2025) reported that entrepreneurship education enhanced students' problem-solving, communication, opportunity-recognition and leadership competencies. These findings suggest that entrepreneurship education can contribute meaningfully to preparing students for enterprise creation and sustainable economic participation.

The finding that innovative pedagogies significantly influence entrepreneurial skills and sustainable enterprise development is also supported by previous studies. Alao and Alao (2022) found that innovative instructional strategies enhanced entrepreneurial empowerment among Business Education students in Nigerian tertiary institutions. In the same vein, Motta and Galina (2023) established that experiential approaches can positively influence entrepreneurial skills and competencies. The agreement between these studies and the present finding reinforces the importance of moving beyond predominantly theoretical instruction towards practical, experiential and collaborative approaches in entrepreneurship education.

Conclusion

The study concludes that innovative pedagogies are utilised to a high extent in entrepreneurship education in tertiary institutions in South-West Nigeria. The use of project-based learning, experiential learning, collaborative learning, case studies and digital technologies provides students with opportunities to participate actively in entrepreneurial learning and relate classroom knowledge to practical business situations. The study also concludes that entrepreneurship education develops students' entrepreneurial skills to a high extent. Through entrepreneurship education, students acquire

competencies in opportunity identification, creativity and innovation, problem-solving, decision-making, financial management and enterprise management. These competencies are important for preparing students to establish and sustain enterprises. Furthermore, the study establishes that innovative pedagogies are significantly associated with entrepreneurial skills and sustainable enterprise development. This implies that effective entrepreneurship education requires teaching approaches that encourage students to learn through practical activities, collaboration, experimentation and engagement with real-life entrepreneurial challenges. Strengthening innovative pedagogies can therefore contribute to improving students' preparedness for sustainable enterprise development.

Recommendations

Based on the findings and conclusion of the study, the following recommendations are made:

1. Tertiary institutions should strengthen the use of innovative pedagogies by giving greater attention to project-based, experiential, collaborative and case-based learning in entrepreneurship education.
2. Lecturers should receive regular training and professional development on contemporary entrepreneurship teaching methods, particularly the use of digital technologies, simulations and practical enterprise projects.
3. Entrepreneurship education should place greater emphasis on financial management and business planning, including budgeting, cash-flow management, costing, investment decisions and preparation of business plans.

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UTILIZATION OF INNOVATIVE PEDAGOGIES FOR INSTRUCTIONAL DELIVERY OF ACCOUNTING COURSES IN BUSINESS EDUCATION PROGRAMS IN SOUTH-SOUTH, NIGERIA

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Abstract

The study investigated the extent of utilization of innovative pedagogies for instructional delivery of accounting courses in Business Education programs in South-South, Nigeria. Three research questions and three hypotheses guided the study. The study adopted a descriptive survey research design. The population of the study comprised 81 Business Education Accounting Lecturers from 8 state and 5 federal universities in South-South, Nigeria. The entire population size was used for the study. Hence, Census sampling technique was adopted. Data were collected using a structured questionnaire titled "Utilization of Innovative Pedagogies for Instructional Delivery of Accounting Courses Questionnaire (UIPIDACQ)" Three experts validated the instrument while test-retest method was used to obtain the reliability coefficient index of 0.86. All 81 copies of the questionnaire were distributed, retrieved and used for the study. The items were rated on a four (4) point rating scale weighted as "Very High Extent" (VHE) – 4 points, "High Extent" (HE) – 3 points, "Low Extent" (LE) – 2 points and "Very Low Extent" (VLE) – 1 point. Mean and standard deviation were used to answer the research questions while t-test was used to test the hypotheses at 0.05 level of significance. The findings revealed innovative pedagogies such as flipped classroom approach, inquiry-based learning and industry-linked pedagogy were utilized to a low extent. The hypotheses results showed that there was no significant difference between the mean ratings of Accounting Lecturers in state and federal universities on the extent of utilization of the three innovative pedagogies. The researchers therefore recommended that Business Education administrators and other stakeholders should ensure that Accounting Lecturers are encouraged to utilize the flipped classroom approach, adopt inquiry-based learning, and strengthen industry-linked pedagogy for better student engagement and enhanced skill development.

Keywords: Innovative Pedagogies, Instructional Delivery, Accounting Courses, Business Education.

Introduction

Innovative pedagogies are gradually replacing the traditional and conventional methods of teaching in our today's educational system. Innovative teaching can be seen as the improvement on existing teaching practices by adapting to current needs, standards and contexts. It involves transforming conventional or traditional approaches to a more functional and student-centred methods. Innovation enhances competitiveness, profitability and overall value creation (Semenova et al., 2021). Innovative pedagogies involve the act of deliberately introducing new strategies to improve student engagement and address learning challenges, while promoting inclusivity, equity in education and improving performance. Accordingly, Suwartono, et al. (2022) asserted that Innovative pedagogies refer to modern and creative approaches to teaching that go beyond traditional methods to enhance student learning and engagement. These pedagogical approaches often incorporate technology, emphasize student-centred learning which promotes critical thinking, collaboration, and real-world application of knowledge. It involves the use of digital tools and resources to create interactive and engaging learning experiences. A shift towards student-centred learning is the hallmark of innovative pedagogies and its utilization for instructional delivery cannot be overemphasized.

Instructional delivery involves the transfer of knowledge from the teacher to the students. It is the teaching and learning processes that enables teachers to transfer the desired and required knowledge to the learner. Instructional delivery involves knowledge sharing. According to Jegede and Brown (2020), teaching is the transfer of ideas, knowledge, or beliefs to others, often involving structured activities designed to help learners acquire experience and skills. This process is complex and involves interaction amongst teachers and students putting into consideration the curriculum and other factors and thus requires the utilization of improved strategies and innovative approaches.

Utilization of innovative pedagogies for instructional delivery of accounting courses involves modern and creative teaching approaches that enhance student engagement, critical thinking, and real-world application of accounting concepts and principles. These approaches go beyond the traditional learning approach to creating a more interactive and student-centred learning environment. It promotes active learning strategies that engage students in the process of knowledge construction. These strategies often include the flipped classroom approach, inquiry-based learning and industry linked pedagogy amongst others, all of which aim to enhance critical thinking and problem-solving skills.

The flipped classroom model reverses traditional teaching methods by delivering instructional content outside of the classroom and using classroom time for interactive, hands-on activities. This model can be particularly effective in accounting education when combined with interactive content such as videos, quizzes, and discussion forums. Flipped classroom model enhances student engagement and allows for more personalized learning experiences and improves students' achievement in financial accounting (Akçayır & Akçayır, 2018; Adebayo & Alagbe (2026). Inquiry-Based Learning involves students asking questions, investigating problems and developing solutions. Inquiry-based instruction has a positive effect on students' achievement and retention in financial accounting (Godfrey, et al., 2024). On the other hand, Industry-Linked Pedagogy connects classroom learning with actual workplace practices through industry collaboration, case studies, practitioners, workplace experiences and other forms of engagement with the business environment. Industry-institution research collaboration enhances learning effectiveness (Ikpesu & Amachree, 2024).

Accounting deals with the systematic collection, classification, analysing, interpretation and communication of financial information to aid informed decision making by stakeholders. Accounting courses constitute an important component of the Business Education programme because they develop students' abilities in financial recording, analysis, interpretation and decision-making. The relevance of Business Education to contemporary employment demands has increased the need for instructional practices that develop practical and industry-relevant competencies (Wolugbom, et al., 2024). Instructional delivery of accounting courses is complex and requires innovative approaches such as the flipped classroom method, inquiry-based learning and industry-linked pedagogy that can promote active participation and practical learning.

Statement of the Problem

Accounting is an important component of Business Education which equips students with knowledge and skills required for financial recording, analysis, interpretation and decision-making. As a practical and skill-oriented course, its effective teaching requires instructional approaches that allow students to participate actively and apply accounting concepts and principles to practical situations. The continued reliance on conventional teacher-centred approaches may limit opportunities for students to develop these competencies. Innovative pedagogies as flipped classroom approach, inquiry-based learning and

industry-linked pedagogy provides possible alternatives to conventional instructional delivery. The utilization of these innovative approaches is said to significantly improve instructional delivery and bring about student-centred learning and engagement.

Despite the potential benefits of these approaches, there is insufficient evidence on the extent to which flipped classroom approach, inquiry-based learning and industry-linked pedagogy are utilized specifically for instructional delivery of accounting courses in Business Education programmes in South-South Nigeria. Also, observations, show that the instructional delivery of accounting courses amongst tertiary institutions seems to rely solely on conventional approaches. The application of student-centred innovative and participatory teaching methods is low (Amesi, Babalola & Oyeyemi, 2023) and this raises concern about the extent to which lecturers are adopting innovative approaches that encourages active participation, independent learning, investigation and practical application of accounting knowledge. Thus, the researchers investigated the utilization of innovative pedagogies for instructional delivery of accounting courses in Business Education programmes in South-South Nigeria.

Purpose of the Study

The main purpose of this study was to determine the extent of utilization of innovative pedagogies for instructional delivery of accounting courses in Business Education programs in South-South, Nigeria.

Specifically, the study sought to;

1. determine the extent of utilization of Flipped Classroom Approach for instructional delivery of accounting courses in Business Education programs in South-South, Nigeria.
2. determine the extent of utilization of Inquiry-Based Learning for instructional delivery of accounting courses in Business Education programs in South-South, Nigeria.
3. determine the extent of utilization of Industry-Linked Pedagogy for instructional delivery of accounting courses in Business Education programs in South-South, Nigeria.

Research Questions

The following research questions guided the study;

1. To what extent is Flipped Classroom Approach utilized for instructional delivery of accounting courses in Business Education programs in South-South, Nigeria?
2. To what extent is Inquiry-Based Learning utilized for instructional delivery of accounting courses in Business Education programs in South-South, Nigeria?
3. To what extent is Industry-Linked Pedagogy utilized for instructional delivery of accounting courses in Business Education programs in South-South, Nigeria?

Hypotheses

The following null hypotheses were tested:

1. There is no significant difference between the mean ratings of Accounting Lecturers in State Universities and Federal Universities on the extent to which Flipped Classroom Approach is utilized for instructional delivery of accounting courses in Business Education programmes in South-South, Nigeria.
2. There is no significant difference between the mean ratings of Accounting Lecturers in State Universities and Federal Universities on the extent to which Inquiry-Based Learning is utilized for instructional delivery of accounting courses in Business Education programmes in South-South, Nigeria.
3. There is no significant difference between the mean ratings of Accounting Lecturers in State Universities and Federal Universities on the extent to which Industry-Linked Pedagogy is utilized for instructional delivery of accounting courses in Business Education programmes in South-South, Nigeria.

Methodology

The research design for this study was a descriptive survey. Eighty-one Business Education Accounting Lecturers made up the study's population, as shown in the table below: fifty-one from state universities, thirty from federal universities all in South-South, Nigeria.

Table 1: Population Distribution

S/N	INSTITUTIONS	TOTAL NUMBER OF BUSINESS EDUCATION ACCOUNTING LECTURERS
	STATE	

1	Ignatius Ajuru University of Education (IAUE), Port Harcourt, R/S	8
2	Rivers State University (RSU), Port Harcourt	10
3	Niger Delta University (NDU), Yenegoa	3
4	Delta State University (DELSU), Abraka	4
5	University of Delta (UNIDEL), Agbor	6
6	University of Cross River State (UNICROSS), Calabar	5
7	Ambrose Ali university (AAU), Ekpoma,Edo state	8
8	Akwa Ibom State University, Ikot Akpanden	7
Total		51
	FEDERAL	
9	University of Port Harcourt, (UNIPORT)	8
10	Federal University Otuoke, (FUOTUOKE)	6
11	University of Calabar (UNICAL)	7
12	University of Benin, (UNIBEN), Benin city	5
13	University of Uyo, (UNIUYO) Uyo.	4
Total		30
G/ TOTAL		81

Source: Institutions Departmental office, 2026.

The study adopted the census sampling technique because the population of the study was small and manageable. Consequently, all 81 members of the population were included in the study. Data were collected using a structured questionnaire titled "Utilization of Innovation Pedagogies for Instructional Delivery of Accounting Courses Questionnaire (UIPIDACQ)". The questionnaire consisted of 15 items structured to address the three research questions. Items 1–5 addressed Research Question One, Items 6–10 addressed Research Question Two, while Items 11–15 addressed Research Question Three. The questionnaire was structured on a four-point rating scale of Very High Extent (VHE) = 4 points, High Extent (HE) = 3 points, Low Extent (LE) = 2 points, and Very Low Extent (VLE) = 1 point. The instrument was subjected to face and content validation by three experts, comprising two experts from the Department of Business Education (Accounting) and one expert in Measurement and Evaluation, all from the Faculty of Education, Ignatius Ajuru University of Education. The reliability of the instrument was established using the test-retest method, which yielded a reliability coefficient index of 0.86, indicating that the instrument was sufficiently reliable for the study. A total of 81 copies of the questionnaire were administered to the respondents, and all 81 copies were retrieved and found suitable for the analysis, representing a 100% return rate. The research questions were analyzed using mean and standard deviation, while the hypotheses were tested using t-test statistical tool. The analysis was carried out by the use of SPSS version 6.0, software. at the 0.05 level of significance.

Results

Research Question 1

To what extent is Flipped Classroom Approach utilized for instructional delivery of accounting courses in Business Education programs in South-South, Nigeria?

Table 2: Mean ratings on the Extent to which Flipped Classroom Approach is Utilized for Instructional Delivery of Accounting Courses in Business Education Programs N=81

S/N	Statements	Institutions								
		State universities (51)			Federal universities (30)			State/Federal Universities		Remarks
		$\overline{X}$	STD	RMKS	$\overline{X}$	STD	RMKS	$\overline{X}$	STD	
1.	Demonstrating the use of accounting software like Excel, QuickBooks, Sage during lectures.	2.55	0.82	LE	2.24	0.88	LE	2.40	0.85	LE

2.	Providing students with video lectures on various accounting topics before lectures.	2.21	0.78	LE	2.33	0.80	LE	2.27	0.78	LE
3.	Creating a WhatsApp/Google classroom group to share accounting materials before lectures,	2.14	0.80	LE	2.42	O.75	LE	2.28	0.78	LE
4.	Assigning students to watch YouTube/Tutorials on accounting topics as homework	2.28	0.77	LE	2.31	0.73	LE	2.30	0.75	LE
5.	Using class time for simulations and practical exercises in accounting.	2.31	0.69	LE	2.34	0.78	LE	2.33	0.74	LE
	Total Mean/SD	**11.49**	**3.86**		**11.64**	**3.94**		**11.58**	**3.90**	
	Grand Mean/SD	**2.30**	**0.77**	**LE**	**2.33**	**0.79**	**LE**	**2.32**	**0.78**	**LE**

Source: Field Report, 2026.

The data in Table 2 showed that items 1 through 5, which had mean scores of 2.40, 2.27, 2.28, 2.30 and 2.33 respectively were rated as low extent, implying that in the response, demonstrating accounting software like excel, quickbooks, sage during class, providing students with video lectures on accounting topics before lectures, creating a WhatsApp/Google Classroom group to share accounting materials before lectures, assigning students to watch YouTube tutorials on accounting topics as homework, using class time for simulations and practical exercises in accounting are utilized to a low extent for instructional delivery of accounting courses in Business Education programmes in South-South, Nigeria. The grand mean of 2.32 indicated that the flipped classroom approach is utilized to a low extent for instructional delivery of accounting courses in Business Education programmes in South-South, Nigeria. The standard deviation values range from 0.74 to 0.85 with a grand standard deviation of 0.78, indicating a close response from the respondents on all items.

Research Question 2

To what extent is Inquiry-Based Learning utilized for instructional delivery of accounting courses in Business Education programs in South-South, Nigeria?

Table 3: Mean Ratings on the Extent to which Inquiry-Based Learning is Utilized for Instructional Delivery of Accounting Courses in Business Education Programs
N=81

S/N	Statements	Institutions								Remarks
		State universities (51)			Federal universities (30)			State/Federal Universities		
		$\overline{X}$	STD	RMKS	$\overline{X}$	STD	RMKS	$\overline{X}$ STD		

6.	Using case studies of companies for students to inquire and proffer solutions.	2.18	0.68	LE	2.24	0.71	LE	2.21	0.70	LE
7.	Encouraging students to research current issues in accounting and taxation.	1.42	0.61	VLE	1.46	0.64	VLE	1.44	0.63	VLE
8.	Asking students to critique and correct erroneous accounting records.	2.22	0.72	LE	2.28	0.69	LE	2.25	0.71	LE
9.	Using inquiry to connect accounting concepts to real business situations.	2.16	0.66	LE	2.21	0.70	LE	2.19	0.68	LE
10.	Facilitating students to conduct mini-research on accounting topics.	1.36	0.59	VLE	1.44	0.62	VLE	1.40	0.61	VLE
	Total Mean/SD	**9.34**	**3.26**		**9.63**	**3.36**		**9.49**	**3.33**	
	Grand Mean/SD	**1.87**	**0.65**	**VLE**	**1.93**	**0.67**	**VLE**	**1.90**	**0.66**	**VLE**

Source: Field Report, 2026

The data presented in Table 3 shows that the responses of the respondents for items 6, 8 and 9 had an average mean scores of 2.21, 2.25, and 2.19 respectively; this implies that using case studies of companies for students to inquire and proffer solutions, asking students to critique and correct erroneous accounting records and using inquiry to connect accounting concepts to real business situations, are utilized for instructional delivery of accounting courses in Business Education programmes in South-South, Nigeria to a low extent. Table 3 shows further that items 7 and 10 had an average mean score of 1.44 and 1.40 which implies that encouraging students to research on current issues in accounting and taxation, and facilitating students to conduct mini-research on accounting topics are utilized for instructional delivery of accounting courses in Business Education programmes in South-South, Nigeria to a very low extent. Above all, the table also revealed a grand mean of 1.90 which indicates that Inquiry-Based Learning is utilized to a very low extent for instructional delivery of accounting courses in Business Education programmes in South-South, Nigeria. The standard deviation values range from 0.61 to 0.71 with a grand standard deviation of 0.66, indicating a close response from the respondents on all items.

Research Question 3

To what extent is Industry-Linked Pedagogy utilized for instructional delivery of accounting courses in Business Education programs in South-South, Nigeria?

Table 4: Mean Ratings on the Extent to which Industry-Linked Pedagogy is Utilized for Instructional Delivery of Accounting Courses in Business Education Programs
N=81

S/N	Statements	Institutions						State/Federal Universities		Remarks
		State universities (51)			Federal universities (30)					
		$\overline{X}$	STD	RMKS	$\overline{X}$	STD	RMKS	$\overline{X}$	STD	

11.	Inviting accounting professionals from industry to give guest lectures.	2.09	0.76	LE	2.17	0.73	LE	2.13	0.75	LE
12.	Teaching students using current tax laws and practices from federal/state revenue services.	2.12	0.71	LE	2.20	0.68	LE	2.16	0.70	LE
13.	Organizing career talks with practicing accountants.	2.18	0.79	LE	2.25	O.75	LE	2.22	0.77	LE
14.	Organizing students' visits to accounting firms and corporate organizations.	2.11	0.74	LE	2.19	0.72	LE	2.15	0.73	LE
15.	Collaborating with industry to provide internship opportunities for students.	2.15	0.77	LE	2.23	0.70	LE	2.19	0.74	LE
	Total Mean/SD	**10.55**	**3.77**		**11.04**	**3.58**		**10.85**	**3.69**	
	Grand Mean/SD	**2.13**	**0.75**	**LE**	**2.21**	**0.72**	**LE**	**2.17**	**0.74**	**LE**

Source: Field Report, 2026.

The data in Table 2 showed that items 11 through 15, which had mean scores of 2.13, ,2.16, 2.22, 2.15, and 2.19 respectively were rated as low extent , revealing that inviting accounting professionals from industry to give guest lectures, teaching students using current tax laws and practices from federal/state revenue services, organizing career talks with practicing accountants, organizing students' visits to accounting firms and corporate organizations, collaborating with industry to provide internship opportunities for students are utilized for instructional delivery of accounting courses in Business Education programmes in South-South, Nigeria to a low extent. The grand mean of 2.17 indicated that the industry-linked Pedagogy is utilized to a low extent for instructional delivery of accounting courses in Business Education programmes in South-South, Nigeria. The standard deviation values range from 0.70 to 0.75 with a grand standard deviation of 0.74, indicating a close response from the respondents on all items.

Hypothesis 1

There is no significant difference between the mean ratings of Accounting Lecturers in State Universities and Federal Universities on the extent to which Flipped Classroom Approach is utilized for instructional delivery of accounting courses in Business Education programmes in South-South, Nigeria.

Table 5: t-Test Result on the Extent to which Flipped Classroom Approach is Utilized for Instructional Delivery of Accounting Courses in Business Education Programes

Respondents	N	Mean	Std. Dev.	df	t- Cal Value	t- Crit Value	L/Sig	Decision
State Universities	51	2.30	0.77					
				79	-0.17	1.99	0.05	Accepted
Federal Universities	30	2.33	0.79					

Source: Survey Result, 2026.

Table 5 above revealed a t-calculated value of -0.17 which is less than the t-critical value of 1.99. Thus, the null hypothesis was accepted. This means that there is no significant difference between the mean responses of Accounting Lecturers in State Universities and Federal Universities on the extent to which Flipped Classroom Approach is utilized for instructional delivery of accounting courses in Business Education programmes in South-South, Nigeria.

Hypothesis 2

There is no significant difference between the mean ratings of accounting lecturers in Federal Universities and State Universities on the extent to which Inquiry-Based Learning is utilized for instructional delivery of accounting courses in Business Education programmes in South-South, Nigeria.

Table 6: t-Test Result on the Extent to which Inquiry-Based Learning is Utilized for instructional Delivery of Accounting Courses in Business Education Programs

Respondents	N	Mean	Std. Dev.	df	t- Cal Value	t- Crit Value	L/Sig	Decision
State Universities	51	1.87	0.65					
				79	-0.39	1.99	0.05	Accepted
Federal Universities	30	1.93	0.67					

Source: Survey Result, 2026.

Table 6 above revealed a t-calculated value of -0.39 which is less than the t-critical value of 1.99. Thus, the null hypothesis was accepted. This means that there is no significant difference between the mean responses of Accounting Lecturers in State Universities and Federal Universities on the extent to which Inquiry-Based Learning is utilized for instructional delivery of accounting courses in Business Education programmes in South-South, Nigeria.

Hypothesis 3

There is no significant difference between the mean ratings of Accounting Lecturers in State Universities and Federal Universities on the extent to which Industry-Linked Pedagogy is utilized for instructional delivery of accounting courses in Business Education programmes in South-South, Nigeria.

Table 7: t-Test Result on the Extent to which Industry-Linked Pedagogy is Utilized for Instructional Delivery of Accounting Courses in Business Education Programs

Respondents	N	Mean	Std. Dev.	df	t- Cal Value	t- Crit Value	L/Sig	Decision
State Universities	51	2.13	0.75					
				79	-0.48	1.99	0.05	Accepted
Federal Universities	30	2.21	0.72					

Source: Survey Result, 2026.

Table 7 above revealed a t-calculated value of -0.48 which is less than the t-critical value of 1.99. Thus, the null hypothesis was accepted. This means that there is no significant difference between the mean responses of Accounting Lecturers in State Universities and Federal Universities on the extent to which Industry-Linked Pedagogy is utilized for instructional delivery of accounting courses in Business Education programmes in South-South, Nigeria.

Discussion of Findings

One of the study's finding states that all items pertaining to research question 1 received a low extent rating. This suggests that the flipped classroom approach such as demonstrating accounting software like Excel, QuickBooks, Sage during lectures, providing students with video lectures on accounting topics before class, creating a WhatsApp/Google Classroom group to share accounting materials before lectures, assigning students to watch YouTube tutorials on accounting topics as homework, using class time for simulations and practical exercises in accounting are all utilized to a low extent for instructional delivery of accounting courses in Business Education programmes in South-South Nigeria. This result agrees with Bergmann and Sams (2012) who pioneered the flipped classroom model and argued that its effectiveness depends on institutional readiness and lecturers' willingness to shift from content delivery to activity-based learning. Talbert (2017) also noted that poor adoption of flipped learning in tertiary institutions is often due to lack of digital infrastructure and faculty training, which appears to be the case in the institutions studied.

The results of hypothesis 1 showed that there is no discernible difference between the mean responses of accounting lecturers in state universities and federal universities on the extent to which flipped classroom approach is utilized. This implies that the challenge is systemic and not tied to institutional ownership. Strayer (2012) found similar patterns where both public and private universities reported comparable barriers to implementing flipped instruction, including time constraints and lack of technical support.

The study also showed that all items relating to research question 2 were rated low extent and very low extent respectively, implying that inquiry-based learning such as using case studies of companies for students to inquire and proffer solutions, asking students to critique and correct erroneous accounting records, using inquiry to connect accounting concepts to real business situations and encouraging students to research current issues in accounting and taxation, facilitating students to conduct mini-research on accounting topics are utilized to a low extent and very low extent. This aligns with Almulla (2020) who noted that inquiry-based strategies improve accounting students' critical thinking and problem-solving, but are rarely used due to large classes and exam-oriented curricula. Freeman et al. (2022) further confirmed that active learning approaches like inquiry are underutilized in accounting education, even though they significantly increase student engagement and performance.

The result of hypothesis 2 showed that the mean ratings of accounting lecturers in state universities and federal universities on the extent to which inquiry-based learning is utilized did not differ significantly. This suggests that both groups face similar pedagogical constraints. Pedaste et al. (2021) observed that without faculty development programs, inquiry-based learning is inconsistently applied across universities regardless of ownership.

Finally, the study showed that all items relating to research question 3 were rated low extent, implying that industry-linked pedagogy such as inviting accounting professionals from industry to give guest lectures, teaching students using current tax laws and practices from state/federal revenue services, organizing career talks with practicing accountants , organizing students' visits to accounting firms and corporate organizations, collaborating with industry to provide internship opportunities for students are utilized to a low extent. This finding is consistent with Jackson and Wilton (2021) who found that weak university-industry collaboration in accounting limits graduates' work-readiness. Zegwaard and Rowe (2023) also emphasized that internships, guest lectures, and industry projects are critical for bridging the skills gap in accounting, but are poorly implemented in many universities in Sub-Saharan Africa.

The result of hypothesis 3 showed that the mean ratings of accounting lecturers in state universities and federal universities on the extent to which industry-linked pedagogy is utilized did not differ significantly. This indicates that both institutions suffer from weak linkages with the accounting profession. Smith and Worsfold (2024) reported that institutional partnerships with professional bodies remain weak, affecting the practical relevance of accounting education.

Conclusion

In today's rapidly changing educational environment, teaching and learning of accounting with innovative pedagogies cannot be overemphasized. Accounting education requires practical, technological and innovative approaches that extend learning beyond the conventional lecture, talk and chuck methods for improved student participation and firsthand acquisition of skills and experiences. However, this study concludes that the extent of utilization of innovative pedagogies such as the flipped classroom approach, inquiry-based learning and industry-linked pedagogy for instructional delivery of accounting courses in Business Education programmes is generally at a low extent.

Recommendations

Based on the findings, the following recommendations were made;

1. Business Education administrators and other stakeholders should encourage the utilization of flipped classroom approach by accounting lecturers and ensuring that students are provided with accounting materials, video lectures and other relevant learning resources before classroom sessions, while using class time for practical activities and discussions as this will help build confidence in students and improve their skills in accounting.
2. Business Education administrators and other stakeholders should encourage accounting lecturers to adopt inquiry-based learning and ensure the engagement of students in questioning, investigation, problem-solving and independent exploration of accounting concepts and principles during as this would enhance students' skills in accounting practices and afford them with firsthand experiences.
3. Business Education administrators and other stakeholders should ensure that accounting lecturers strengthens the use of industry-linked pedagogy by creating opportunities for students to relate classroom learning to real-world accounting practices through industry visits, guest

lectures and interaction with accounting professionals as to enhance skills development amongst students.

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UTILIZATION OF INNOVATIVE PEDAGOGIES IN TEACHING AND LEARNING OF BUSINESS AND ENTREPRENEURSHIP EDUCATION IN UNIVERSITIES IN SOUTH-EAST, NIGERIA.

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Abstract

This study investigated the extent of utilization of innovative pedagogies in the teaching and learning of business and entrepreneurship education in universities in South East, Nigeria. The study adopted a descriptive survey design. Two research questions were posed and two hypotheses formulated and tested. The population of the study comprised 117 business educators in the universities in South East. The population was manageable hence there was no sampling technique adopted. A structured questionnaire title "Utilization of Innovative Pedagogies in Teaching and Learning of Business and Entrepreneurship Education Questionnaire" (UIPTLBEEQ) was used to collect data from the respondents. The instrument was designed on a 4point rating scale of (VHE=4, HE=3, LE=2 and VLE=1) and was used to elicit responses from the respondents. The instrument was face and content validated by three experts from the Faculty of Education, Abia State University, Uturu. Pearson Product Moment Correlation Coefficient was use to establish the reliability coefficient index of 0.84. 117 copies of the questionnaire were issued and retrieved and used for the analyses. Mean and standard deviation was used to answer the research questions while the t-test statistics was used to test the hypotheses at 0.05 level of significant. The findings revealed that PBL practices and digital/ICT tools are incorporated into teaching and learning of business and entrepreneurship education in south East, Nigeria among others. Based on the findings of the study, the researcher recommended that business educators should utilized PBL and digital/ICT tools in teaching and learning of business and entrepreneurship education continually in universities in South East, Nigeria among others.

***Keywords**: Innovative Pedagogies, Utilization, Project-based Learning, Digital/ICT-based Learning, Business, Entrepreneurship*

Introduction

Business and entrepreneurship education is a unique programme of study that aims at imparting saleable skills to the recipients for entry into and advancements within business. According to Ezeabii and Ngene (2025), it is a programme for job occupations and sustainable living. Business education according to Ndom-Uchendu (2023) is an aspect of vocational education which equips individuals with the necessary skills and theoretical knowledge needed for performance in the business world either for job occupation or for self-employment. Ezeabii, Ekoh-Nweke and Okwor (2020) affirmed that Business education programme is a valuable programme for skills acquisition required by graduates in the 21st century that is highly competitive and technology driven. The business education graduates need to be grinded in entrepreneurial skills in order to face the challenges ahead.

Entrepreneurship education on the other hand is a formalized learning process that equips individuals with entrepreneurial skill, knowledge, and mindset needed to identify opportunities, create new ventures, and innovate within existing organizations. According to Utebor and Igwe (2024), entrepreneurship education is the type of educational process geared towards equipping students with creative and innovative ideas that will enhance self-employment and job creation. Entrepreneurship education inculcates in individuals' entrepreneurial skills that enable them confront situations in creative and innovative ways (Chiaha & Agu 2023). They further noted that such entrepreneurial individuals create jobs for themselves and others thereby reducing unemployment. To Corollarily and Ikeme (2022), entrepreneurship education is a carefully planned process that eventuates into the acquisition of entrepreneurial competencies through appropriate curriculum content. Entrepreneurship education is

unique in the sense that, unlike many other courses, it seeks to change people's attitude and belief and therefore attracts innovative pedagogies in the teaching and learning process.

Pedagogy informs teaching strategies, teacher actions and teacher choices and decisions based on learning theories, students' understanding and their needs and the background and interest of individual students (Oyinloye & Umoru, 2022). Pedagogy is the tools activities, strategies, and decisions of a learning environment that are highly interactive, inclusive, collaborative, and inspiring. It is all about teaching skills and techniques used by teachers to facilitate learning. Oyinloye and Umoru (2022) revealed that pedagogical is in-depth knowledge about the processes and methods of teaching and learning and how it integrates general education goals values and objectives. Innovative pedagogies therefore refer to creative modern teaching methods that priorities active, student-centered learning and skill development over traditional rote memorization. It transforms educators from mere content deliverers into facilitators, empowering learners to actively engage with concepts, solve real-world problems and apply knowledge especially in business and entrepreneurship education.

Business and entrepreneurship education are skill-oriented programme. In this era of technological innovation, it requires that the business and entrepreneurship educators adopt the innovative pedagogies in teaching and learning of this programme. The major characteristics of innovative pedagogy include that the lesson should be student-centered. This entails that the business educators should shift the focus away from themselves onto the needs, abilities and interests of the learners. There should be active engagement of the learners which could be achieve by encouraging the learners to interact directly with the material through hands-on-projects, debates, and peer-to-peer collaboration. Considering the personalization and flexibility of the individual, the educators should adopt the teaching strategies to suit the individual paces and strengths, frequently supported by technology and finally ensure that it is out-come-based where the success measures will be through critical thinking, practical application and the development of lifelong skills.

According to Okoli and Ikpat (2022), innovative pedagogies in business and entrepreneurship education emphasis experiential active learning over traditional lectures to foster an entrepreneurial mindset. These innovative strategies according to Mamman and Tswanyasaba (2021) are:

- design thinking which is a human-centred iterative framework involving empathy, ideation, prototyping and testing, often involving direct interaction with potential users.
- Project-based and action learning which is where the student develops and test their own business ideas, moving beyond theory to experience the full entrepreneurial process.
- Simulations and gamification which entails using virtual environment or serious games to allow students to take risks, make decisions, and see consequences in a safe, interactive setting.
- Entrepreneurial ecosystem engagement which attracts integrating practitioners, guest lecturers, and competitions to bridge theory with industry reality.
- Digital and ICT-based tools which incorporate AI, 3D virtual reality, and online collaboration tools to enhance learning efficiency and simulate modern business environments.
- Interdisciplinary collaboration which fosters cognitive diversity by bringing students from different disciplines together to create more innovative and comprehensive business solution
- System thinking which encourages students to consider how their business ideas interact with broader social, economic, and environmental system for sustainable impact.

All the above listed innovative pedagogies/strategies/methods aim to shift education from teacher-led instruction to students-centered learning, cultivating major skills like adaptability, creativity and resilience. Therefore, the utilization of innovative pedagogies/strategies/methods is an imperative in teaching and learning of business and entrepreneurship education

Utilization is the action of making practical and effective use of something. According to Nwosu and Eko-Nweke (2024), it is an act or instance of making practical or profitable use of something. Utilization is the primary technique where success and performance efficiently are determined. Most of the digital based instruction cannot be utilized by the business educators because they are not competent in their use (Ndom-Uchendu & Nwokike, 2025). Lecturers' digital competency will help student to identify their weaknesses and how to overcome them. For the purpose of this study, utilization of innovative pedagogies in teaching and learning of business and entrepreneurship education will be viewed in terms of Pedagogy Based Learning and Digital/ICT-based learning.

Project-based learning is a teaching strategy where students learn by doing real-world tasks, focusing on authenticity, an extended timeframe, and a public product. In project-based learning, instead of just memorizing facts for a test, learners spend some days or weeks working together to solve an open-ended problem or answer a hard question. Project-based learning is a teaching method in which students gain knowledge and skills by working for an extended period of time to

investigate and respond to an authentic, engaging and complex question, problem, or challenge. Project based learning involves:

- Real-world focus where students tackle problems that actually happen outside of school, making the work feel useful and important.
- Longer time spent: this is where the project takes a significant amount of time, maybe from one up to a whole semester.
- Student-led inquiry: where students are meant to ask questions, look for possible answers and drive their own learning process.
- Teacher as a guide: the teacher step back from teaching to coach, support, and help the learners find resources.
- Sharing the final work: the students build a final product or presentation to share with an audience beyond just their teacher.

While engaging in PBL, the students are exposed to build different skills and gain more knowledge. Such skills include critical thinking skill where they learn how to study a hard problem and figure out a smart fix. They also learn teamwork, where they work well with others in the classroom sharing ideas, and listening to different views. More importantly, they explain results clearly to classmates, teachers or community members (Lopez & Palacios 2024). PBL has a focus on deep learning skills which include critical thinking, collaboration, communication, innovation and creativity. It fosters teamwork and positive social relations by developing higher order cognitive skill so that learners can engage in analyzing, synthesizing, justifying, evaluating and creating. PBL involves an in-depth investigation of real-world topics, manipulation of authentic objects and active learning through projects which occur over a period of time. It is achieved through questioning experts, making observations, making connections and demonstrating learning to others especially at this digital era.

Digital/ICT based learning refers to the use of digital technologies and resources to facilitate learning and teaching processes (UNESCO,2020). This approach integrates information and communication technologies (ICT) in education, allowing for interactive and flexible learning environments. These digital/ICT based learning involves the use of tools such as computers (desktop and labtops), smart phones, scanners, digital photocopies, internet and audio/video conferencing facilities among others (Ndom-Uchendu & Nwokike, 2025). Digital/ICT based learning is a key element in the development of the 21st century knowledge and skills. These skills which is developed through experiential learning are essential for fostering high-quality human capital in an increasingly dynamic world as noted by Rahiem (2020). It will foster critical thinking, creativity, communication, collaboration and digital based learning which are increasingly indispensable for achieving success. Learners need to accept this as this is not only preparing them for future challenges but also equipping them to face change with adaptability and proactivity.

According to Cosby, Fogarty and Manning (2023), digital/ICT based learning uses electronic tools, computers, and the internet to improve how students learn and teachers teach. It involves online collaboration platforms, interactives multimedia content and mobile learning application. This approach creates flexible and engaging environments for all learners. The common tools and methods according to Lim, Ra, Chin and Wang (2020) are interactive apps which are programs like kahoot or quizizz make reviews and test fun, cloud workspaces which involves platforms like Google workspace which allow group work from home, mobile learning with smartphones and tablets which allow users study anywhere and e-books which is digital tests that replaces heavy paper books for easy reading. The benefits of digital/ICT based learning include:

- It fosters engagement and better understanding by allowing interactions among learners and the use of multimedia and games that keep students interested.
- It gives access and flexibility that allow learners work at their own speed, anywhere and at any time. They can make use of recorded videos, e-books, and also past questions for revision.
- It fosters personalized learning by allowing them to learn at their own pace. Using adaptive tools can exposed them to the use of apps. Apps can give them questions based on their weak areas.
- It exposed them to wide range of resources such as global content where you are not limited to one teacher or one textbook and also updated information where digital content is updated faster than printed books.
- It helps in skill development such as exposing the learner to digital literacy where he/she learns how to use google, AI, word, excel, zoom and also acquire research skills which is what is required now.
- It is cost effective

- It helps in collaboration and communication which is good for easy group work and promotes instant feedback.

The challenges include:

- Infrastructure and access issues which is poor internet or lack of devices that can block progress,
- It leads to digital literacy gap where students struggle to use zoom, google classroom or submit assignments online. They may have distractions also by social media, games and YouTube.
- Cost issues like data being expensive and high maintenance of devices.
- Quality and credibility issues such as too much wrong information and lack of practicals which cannot be done online.
- It will lead to health and social effects such as eye strain and body pain, less interaction and isolation.
- It will lead to teacher-related challenges such as teachers not trained and extra workload.
- Assessment and exam issues where cheating, CBT fear and technical glitches are high.
- Safety which entails that users must learn good digital habits to stay secure online (Rahiem, 2020).

Utilizing PBL and Digital/ICT based learning in the university is very important. Ndom-Uchendu and Nwokike (2025), noted that digital based instruction is a term used collectively to variety of method that apply digital technology in its many forms to facilitate the acquisition of knowledge by students. Its utilization has proved to be a useful instrument in skill acquisition in institutions of higher learning especially in universities.

The university is an institution of higher learning owned and managed by either state or federal government. Federal institutions are institutions managed and controlled by the federal government while the state institutions are institutions managed and controlled by the state government. It is basically at this level of higher institution that these innovative pedagogies for teaching makes a lot of difference. It will undoubtedly affect teaching, learning and research.

This study is anchored on the Technology Acceptance Model (TAM) Theory which was postulated by Fred Davis and Richard Bagozzi in 1989. The theory is an information system theory that models how users come to accept and use ICT in the classroom. The model proposes that when users are presented with a novel technology, a number of factors as perceived usefulness (PU) which is all about the degree to which a person believes that using a particular system would enhance his or her job performances as well as perceived ease of-use (PEOU) which refers to the degree to which a person believes that using a particular system would be easy and effortless. The implication is that the more the person thinks of a technology as being easy to use, the greater probabilities he or she will be willing to adopt and use such technology. Davis and Bagozzi noted that the key to the use of any new technology was to first understand and accept the usefulness of the technology in question, which could be assessed by asking individuals about their future intentions to use the new technology. The more positive the responses to the factors of perceived usefulness and perceived ease of use, then the more positive attitudes of teachers will be to the use of ICT and the more likely they will be to use ICT in their teaching. The Business educators' positive attitudes towards the usefulness and ease of use of innovative pedagogies will interest and motivate them to apply it in teaching and learning. In the same vein, the model will enable business educators to understand the usefulness and the ease of application of innovative pedagogies and that it will facilitate and help minimize the burden of teaching which was previously teacher-centered, non-interactive and all-demanding on the part of the lecturers. They will see the need to apply innovative pedagogies which is usually student-centered, interactive and less demanding on their part for teaching and learning. Unfortunately, most business educators are not trained with modern office equipment and technologies and thus still depend only on the traditional methods for teaching their lessons to students even when learning titles are suitable for e-learning approach.

Various studies have been carried out in this area. For instance, Okoli and Ikpat (2022) studied level of application of virtual learning pedagogical design by business educators in tertiary institutions in Anambra State. The findings of the study revealed among others that business educators apply virtual learning pedagogical design at a moderate level in tertiary institution in Anambra State. Ndom-Uchendu and Nwokike (2025) studied utilization of digital based instruction for enhancing business education student's entrepreneurship skill acquisition in universities in South East, Nigeria. The findings showed that digital pedagogy were utilized for enhancing business education student's entrepreneurship skill acquisition in universities in South East among others. In these studies, there appear to be little or no research on utilization of innovative

pedagogies in teaching and learning of business and entrepreneurship education in universities in South East hence the thrust of this study.

Statement of problem

Over the years, Business Education have predominantly delivered lessons using only the traditional method/face to face teaching method. This method subjects the students to passive learner rather than active learner where they contribute to knowledge. This ugly situation has consequences for Business Education programme which is a skilled oriented programme and it's graduate as they might lack technological competencies required to perform effectively in this digital era. Because they are not exposed to modern technologies in the teaching/learning process, the situation seems to put doubt on the level of Business Educators application of innovative pedagogies. The problem of this study put in a question form is what is the level of utilization of innovative pedagogies in teaching and learning of Business and entrepreneurship education in South East, Nigeria.

Purpose of the Study

The purpose of this Study is to investigate the innovative pedagogies in teaching and learning of Business and Entrepreneurship Education in Universities in South East, Nigeria. Specifically, the study sought to:

1. Examine the extent of project-based learning utilization in teaching and learning of Business Education in South East, Nigeria.
2. Ascertain the extent of digital/ICT-based learning utilization in teaching and learning of Business and Entrepreneurship education in universities in South-East, Nigeria.

Research Questions

1. To what extent does project-based learning utilized in teaching and learning of Business and Entrepreneurship education in universities in South-East, Nigeria
2. To what extent does digital/ICT-based learning utilized in teaching and learning of Business and Entrepreneurship education in Universities in South-East, Nigeria.

Hypotheses

HO_1. There is no significant difference in the mean responses of Federal and State universities business educators on the extent project-based learning are utilized in teaching and learning of business and entrepreneurship education in universities in South-East, Nigeria.

HO_2. There is no significant difference in the mean responses of Federal and State universities business educators on the extent digital/ICT-based learning are utilized in teaching and learning of business and entrepreneurship education in universities in South-East, Nigeria.

Methods

The study adopted descriptive survey design for the study. The study sought the opinions of the respondents on the extent of utilization of the innovative pedagogies in teaching and learning of Business and Entrepreneurship education in universities in South east, Nigeria. The population of the study comprised 117 Business educator lecturers in universities in south east, Nigeria. The whole population were used for the study because, it was manageable hence there was no sampling technique adopted. The instrument was a structured questionnaire developed by the researcher titled "Utilization of Innovative Pedagogies in Teaching and Learning of Business and Entrepreneurship Education Questionnaire (UIPTLBEEQ). The questionnaire was made up of 40 items. The items were placed on 4point rating scale of Very High Extent (VHE=3.50-4.00), High Extent (HE=2.50-3.49), Low Extent (LE=1.50-2.49), and Very Low Extent (VLE=0.0-1.49). The instrument was face and content validated by three experts from Faculty of Education, Abia State University, Uturu. The reliability coefficient of the instrument was determine using Pearson Product Moment Correlation Coefficient and 0.84 was realized. The researcher with the aid of research assistants, administered 117 copies of the questionnaire. All of them were returned and used for data analysis. Mean and standard deviation were used to analyzed the data collected to answer the research questions. Independent t-test was used to test the hypotheses at 0.05 level of significance.

Results

Research Question One:

To what extent is project-based learning utilized in teaching and learning of Business and Entrepreneurship Education in universities in South-East, Nigeria?

Table 1: Mean and Standard deviation on the Extent of Utilization of Project-Based Learning in Business and Entrepreneurship Education

S/N	Project-Based	Mean	Std. Dev.	Decision
1	Business educators design real-life business tasks for students to solve	2.90	.968	HE
2.	Students work on long-term projects and not one-off	3.00	.918	HE
3.	Students are allowed to choose business projects based on interest	2.85	.988	HE
4.	Teachers acts more as facilitators during projects	2.80	.894	HE
5.	Students conduct research with real businesses as parts of class projects	3.15	.875	HE
6.	Group collaboration is used as the main method for completing business projects	3.05	.826	HE
7.	Students create tangible products like business plans and budgets as project outcomes	2.95	.999	HE
8.	The teacher uses rubrics to assess both the project process and the final product	2.80	.894	HE
9.	Students present their project findings to the class or guests	2.75	.967	HE
10.	ICT tools such as spreadsheets, Canva, and PowerPoint are used in business projects	2.95	.887	HE
11.	The projects address topics in the business education curriculum	2.55	.945	HE
12.	Students get feedback and a chance to revise their projects before final submission	3.25	.967	HE
13.	The teacher connects classroom projects to current local business trends	2.80	1.105	HE
14.	Assessment focuses on problem-solving, critical thinking, and creativity	3.15	.813	HE
15.	Students reflect on what they learned after completing each business project	2.95	.826	HE
16.	Resources like case study samples of business documents are provided for projects	2.90	.968	HE
17.	Time allocated for business education lessons is enough to complete PBL activities	2.55	1.050	HE
18.	Students are encouraged to take responsibility for planning and managing their projects	2.60	.940	HE
19	The school provides materials needed for students to carry out business projects	2.95	.945	HE
20.	PBL is used frequently as the main instructional strategy in business education	2.95	.887	HE
		2.89		

The results in Table 1 show that project-based learning is utilized to a high extent in teaching and learning business and entrepreneurship education in universities in South-East Nigeria, as indicated by the grand mean of 2.89, which is above the criterion mean of 2.50. The highest-rated practices were providing students with feedback and opportunities to revise projects in item 12 (M = 3.25), conducting research with real businesses in item 5 (M = 3.15), and assessing problem-solving, critical thinking and creativity in item 14 (M = 3.15). The least-rated were project presentations in item

9 (M = 2.75), teacher facilitation in item 8 (M = 2.80), and use of rubrics in item 4 (M = 2.80). Hence, the findings indicate that PBL practices are incorporated into teaching and learning of business and entrepreneurship education in universities in South-East, Nigeria.

Research Question Two:

To what extent are digital/ICT-based tools utilized in teaching and learning of Business and Entrepreneurship Education in Universities in South-East, Nigeria?

Table 2: Mean and Standard Deviation on the Extent of Utilization of Digital/ICT-Based Tools in Business and Entrepreneurship Education

S/N	Digital-Based	Mean	Std. Dev.	Decision
21.	The business educator uses computers to teach business education topics when necessary	3.20	.834	HE
22.	Display devices such as projectors are used to display business documents	1.80	.834	LE
23.	Students use Microsoft Excel for bookkeeping and accounting	2.65	.988	HE
24.	The teacher integrates educational apps like Kahoot, Quizizz, or Google Classroom for lessons	1.50	.607	LE
25.	Students are taught typing skills using keyboarding applications	3.10	1.021	HE
26.	Online resources such as e-book and You Tube videos are used to explains business concepts	2.15	.933	LE
27.	Students create digital presentations using presentation tools	2.90	.968	HE
28.	The school has functional internet assess used during Business education lesson	2.60	1.046	HE
29.	Students learn accounting using software like Saga, QuickBooks, or Tally	2.65	.933	HE
30.	The business education teacher assigns and collects assignments digitally	3.15	.745	HE
31.	Virtual office practices software is used to teach secretarial skills	2.45	1.050	LE
32.	Students use digital tools to design business Logos, flyers, and marketing materials	3.15	.875	HE
33.	The teacher uses digital assessment tools for tests, quizzes, and immediate feedback	2.30	.979	LE
34.	Students collaborate on business projects using Google Docs, OneDrive, or other cloud tools.	2.45	.887	LE
35.	E-learning platforms are used for revision and self-study outside classroom hours	2.45	1.050	LE
36.	The teacher demonstrates how to use digital tools for business communication like email etiquette	2.75	.910	HE
37.	Students are trained on basic computers maintenance and troubleshooting during lessons	2.70	1.031	HE
38.	Digital databases and online libraries are used to research business case studies	2.55	.945	HE
39.	The school provides adequate ICT facilities like computer labs for business education students	2.25	.967	LE

40.	ICT tools are used frequently as the main mode of instruction in Business Education	2.30	.979	LE
		2.55		

The results in Table 2 show that digital/ICT-based tools are utilized to a moderate extent in teaching and learning business and entrepreneurship education, with a grand mean of 2.55, which is above the criterion mean of 2.50. The highest-rated practices were the use of computers for teaching in item 21 (M = 3.20), digital assignment management in item 30 (M = 3.15), and digital tools for designing logos and marketing materials in item 32 (M = 3.15). However, the use of projector in item 22 (M = 1.80), educational apps in item 24 (M = 1.50), and online resources in item 26 (M = 2.15) was relatively low. Thus, ICT utilization is evident but remains limited across several areas.

Hypothesis One

There is no significant difference between the responses of Federal and State universities business educators on the extent project-based learning are utilized in teaching and learning of business and entrepreneurship education in universities in South-East, Nigeria.

Table 3: t-test of significant difference between the responses of Federal and State universities business educators on the extent project-based learning are utilized in teaching and learning of business and entrepreneurship education

School Designation	N	Df	Mean	Std. Deviation	F	t	Sig. 2-tailed
Federal	40	115	2.86	.094	15.466	-.981	0.329
State	77		2.90	.210			

The result shows that business educators in Federal universities had a mean response of 2.86 (SD = 0.094), while those in State universities had a slightly higher mean of 2.90 (SD = 0.210), indicating only a small difference in their responses. The obtained *t*-value is −0.981 with a p-value of 0.329 at 0.05 significance level. Since the p-value of 0.329 is greater than 0.05, the difference between the two groups is not statistically significant. Therefore, the null hypothesis is not rejected, indicating that there is no significant difference in the mean responses of Federal and State university business educators on the utilization of project-based learning.

Hypothesis Two

There is no significant difference between the responses of Federal and State universities' business educators on the extent digital/ICT-based learning are utilized in teaching and learning of business and entrepreneurship education in universities in South-East, Nigeria.

Table 4: t-test of significant difference between the responses of Federal and State universities business educators on the extent digital/ICT-based learning are utilized in teaching and learning of business and entrepreneurship education

School Designation	N	DF	Mean	Std. Deviation	F	t	Sig. 2-tailed
Federal	40	115	2.50	.247	.931	-1.744	.084
State	77		2.57	.213			

The result shows that business educators in Federal universities had a mean response of 2.50 (SD = 0.247), while those in State universities had a slightly higher mean of 2.57 (SD = 0.213), indicating a small difference in their responses. The obtained *t*-value is −1.744 with a p-value of 0.084 at the 0.05 significance level. Since the p-value of 0.084 is greater than 0.05, the difference between the two groups is not statistically significant. Therefore, the null hypothesis is not rejected, indicating that there is no significant difference in the mean responses of Federal and State university business educators regarding the utilization of digital/ICT-based learning.

Discussion of Findings

The study was conducted to determine the extent of utilization of project-based learning and digital/ICT based learning in the teaching and learning of business and entrepreneurship education. The study found that project-based learning (PBL) was utilized in teaching and learning of business and entrepreneurship education to a high extent in universities in South East, Nigeria. The possible reason could be that business educator have discovered that PBL encourages critical thinking, collaboration, communication, innovation and creativity among learners which is to their own interest. Engaging learners with project-based learning will allow the business educators better opportunity to engage in other activity which may be beneficial to them or the learners. This finding supports the findings of Lopez and Palacios (2024) who noted that PBL fosters teamwork and positive social relation by developing higher order cognitive skills among learners. The study is also in line with Okoli and Ikpat (2022) who found out that PBL is applied in teaching and learning of business and entrepreneurship education in universities. The study also revealed that there is no significant difference in the mean responses of Federal and State University business educators on the utilization of PBL learning in universities in South East, Nigeria.

The result in Table 2 revealed that digital/ICT based learning are utilized to a moderate extent in teaching and learning of business and entrepreneurship education. The reason is that most of the business educators are not competent in the use of digital/ICT based tools in teaching and learning of business and entrepreneurship education. This finding is in line with the findings of Ndom-Uchendu and Nwokike (2025) who discovered that digital/ICT learning was not properly utilized for enhancing business education students' entrepreneurship skill acquisition in universities in South East. The result also indicated that there is no significant difference in the mean responses of Federal and State Business Educators on the utilization of digital/ICTlearning in universities in South East, Nigeria.

Conclusion

The study concluded that innovative pedagogies in teaching and learning of business and entrepreneurship education are germane to student learning. They are strong strategies that can influence students learning positively and keep them actively involved in the learning process.

Recommendations

Based on the findings and conclusion of this study, the following recommendations were made.

1. Business educators should embrace and utilized PBL and digital/ICT based learning effectively in teaching and learning of business and entrepreneurship education in universities in South East, Nigeria.
2. The University management should from time-to-time mount in-service programme especially for the business educators to always update their skills in the use of PBL and digital/ICT based knowledge in order to impact well to the learners.

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IMPACT OF DIGITAL AND BLENDED PEDAGOGIES ON THE EFFECTIVENESS OF ENTREPRENEURSHIP EDUCATION IN TERTIARY INSTITUTIONS IN DELTA STATE, NIGERIA

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Abstract

Entrepreneurship education has become a strategic component of tertiary education systems because of its potential to develop graduates' innovation capacity, employability, and ability to create sustainable enterprises. However, concerns remain regarding the effectiveness of entrepreneurship education in Nigerian tertiary institutions, particularly regarding the pedagogical approaches adopted for developing entrepreneurial competencies. This study examined the impact of digital and blended pedagogies on the effectiveness of entrepreneurship education in tertiary institutions in Delta State, Nigeria. The study adopted a descriptive survey research design with a correlational approach. The population consisted of 4,428 entrepreneurship education students and lecturers from selected tertiary institutions in Delta State. A sample of 367 respondents was selected using the Taro Yamane sampling formula and proportionate sampling technique. Data were collected using a structured questionnaire titled Digital and Blended Pedagogies and Entrepreneurship Education Effectiveness Questionnaire (DBPEEEQ). The instrument was validated by experts in entrepreneurship education, educational technology, and measurement and evaluation. Cronbach Alpha reliability coefficients were established for the study variables. Mean and standard deviation were used to answer research questions, while Pearson Product Moment Correlation and regression analyses were used to test hypotheses at 0.05 level of significance. Findings revealed that digital pedagogies were utilized to a considerable extent in entrepreneurship education delivery and significantly enhanced students' entrepreneurial knowledge, skills, and competencies. The study also revealed that blended pedagogies significantly improved entrepreneurial skills development, creativity, innovation, and business readiness. The study concluded that technology-supported pedagogical approaches provide effective strategies for strengthening entrepreneurship education in Nigerian tertiary institutions. It was recommended that tertiary institutions should invest in digital infrastructure, strengthen lecturers' digital competencies and integrate technology-driven entrepreneurial learning activities into entrepreneurship education curricula.

Keywords: Digital pedagogy, blended learning, entrepreneurship education, entrepreneurial competencies, tertiary institutions, innovation, Nigeria.

Introduction

The transformation of the global economy through rapid technological advancement, digital transformation, and knowledge-based industries has significantly changed the nature of education, employment, entrepreneurship and economic participation. The contemporary labour market increasingly demands graduates who possess not only disciplinary knowledge but also transferable competencies such as creativity, innovation, problem-solving ability, digital literacy, opportunity recognition and entrepreneurial capability. Consequently, universities and other tertiary institutions are under increasing pressure to redesign their educational practices to produce graduates who can effectively participate in dynamic and technology-driven economies (World Economic Forum [WEF], 2023; OECD, 2023). Higher education institutions are now regarded as important drivers of entrepreneurship, innovation ecosystems, and economic development. Beyond their traditional responsibility of knowledge transmission, universities are expected to develop entrepreneurial individuals capable of identifying opportunities, creating new ventures, generating employment, and contributing to sustainable economic growth. This expectation has strengthened the position of entrepreneurship education as a critical component of higher education systems globally (Nambisan et al., 2023; Rodrigues, 2023).

Entrepreneurship education refers to the process through which individuals acquire knowledge, skills, attitudes, and competencies necessary for identifying opportunities, developing innovative solutions, mobilizing resources, managing risks, and creating economic and social value. Contemporary entrepreneurship education has evolved beyond the teaching of business concepts and venture creation theories toward developing entrepreneurial mindsets, creativity, innovation capability, resilience, and practical competencies required for operating in uncertain business environments (European Commission, 2023; Bernadó & Bratzke, 2024). The increasing emphasis on entrepreneurship education is linked to the global challenges of graduate unemployment, changing employment structures, and the emergence of entrepreneurial careers. In many economies, including developing countries, entrepreneurship education is viewed as a strategic mechanism for improving graduate employability and encouraging self-employment. The digital economy has further intensified the need for entrepreneurial graduates who can utilize technology to create, manage, and scale businesses (Amankwah-Amoah et al., 2023; OECD, 2024).

In developing countries such as Nigeria, entrepreneurship education has received considerable attention due to persistent challenges associated with youth unemployment, limited formal employment opportunities, and the need for economic diversification. The Nigerian government and tertiary education regulatory agencies have encouraged universities, polytechnics, and colleges of education to integrate entrepreneurship education into their curricula to promote self-reliance, innovation, and enterprise development among graduates (National Universities Commission [NUC], 2023; Olanrewaju & Adebayo, 2024). Despite the expansion of entrepreneurship education programmes in Nigerian tertiary institutions, concerns remain regarding their effectiveness in producing graduates with practical entrepreneurial competencies.

Several studies have observed that many entrepreneurship education programmes continue to rely heavily on conventional lecture-based teaching approaches that emphasize theoretical knowledge acquisition rather than experiential learning, practical problem-solving, and venture development activities (Okeke & Ezeh, 2023; Olawale & Garwe, 2024). Entrepreneurship differs from many traditional academic disciplines because entrepreneurial competence develops through active engagement, experimentation, reflection, collaboration, and exposure to authentic business situations. Therefore, entrepreneurship education requires pedagogical approaches that encourage students to generate ideas, test solutions, interact with business environments, and apply knowledge to real-world entrepreneurial challenges (Kolb, 1984; Rodrigues, 2023).

The emergence of digital technologies has created new possibilities for transforming entrepreneurship education through innovative pedagogical approaches. Digital transformation has influenced how knowledge is created, shared, and applied, leading to increased adoption of technology-supported teaching and learning strategies in higher education institutions. Digital pedagogy refers to the purposeful integration of digital technologies into educational practices to enhance learning experiences, improve interaction, support collaboration, and facilitate competency development (Fernández-Batanero et al., 2023; García-Peñalvo, 2024).

Digital pedagogy extends beyond the simple use of computers or internet resources. It involves the strategic application of learning management systems, online learning platforms, virtual classrooms, digital simulations, artificial intelligence tools, collaborative technologies, electronic assessment systems, and multimedia resources to improve teaching effectiveness. Through these technologies, students can access entrepreneurial knowledge beyond the physical classroom, engage with diverse learning materials, collaborate with peers, and participate in flexible learner-centred educational experiences (Bond et al., 2023; Mhlanga, 2023). The application of digital pedagogy is particularly relevant to entrepreneurship education because entrepreneurship itself is increasingly becoming technology-driven. Contemporary entrepreneurs require competencies in electronic commerce, digital marketing, social media business strategies, online customer engagement, data analytics and technology-based innovation.

Consequently, entrepreneurship education must prepare students not only to create businesses but also to operate effectively within digital business ecosystems (Sitaridis & Kitsios, 2023; Nambisan et al., 2023). UNESCO (2023) emphasized that digital technologies can improve educational accessibility, flexibility, inclusion, and quality when supported by appropriate infrastructure, effective policies, and teacher competence. However, the organization cautioned that technology alone does not automatically improve learning outcomes; rather, its effectiveness depends on how well digital tools are integrated into teaching strategies and institutional systems. Similarly, Fernández-Batanero et al. (2023) highlighted that lecturers' digital teaching competence remains a major determinant of successful technology integration in higher education. They argued that educators require both technical knowledge and pedagogical understanding to design meaningful digital learning experiences.

Within entrepreneurship education, empirical evidence indicates that digital pedagogies contribute significantly to entrepreneurial competency development. Udekwe and Iwu (2024) reported that digital technologies enhance entrepreneurship education by improving entrepreneurial motivation, innovation capacity, and entrepreneurial intention. Their study demonstrated that technology-supported learning environments create opportunities for students to develop competencies aligned with contemporary entrepreneurial demands. Similarly, Kumar et al. (2024), through a technology-empowered systematic review of entrepreneurship education literature, identified digital transformation as one of the major trends reshaping entrepreneurship education globally. They noted that digital tools support interactive learning, entrepreneurial experimentation, collaborative problem-solving, and competency-based education.

Another emerging pedagogical approach associated with digital transformation is blended learning. Blended pedagogy combines traditional face-to-face classroom instruction with online learning experiences to provide flexible, interactive, and student-centred learning environments. Unlike fully online learning, blended learning maintains the social interaction and immediate feedback associated with physical classrooms while incorporating the accessibility and flexibility of digital platforms (Bond et al., 2023; Martin & Bolliger, 2023). Blended learning is particularly appropriate for entrepreneurship education because entrepreneurial competence develops through experience, reflection, experimentation, and application. Students need opportunities to discuss business ideas, collaborate on projects, receive feedback, analyse markets, develop business models, and test innovative solutions.

Blended approaches provide these opportunities through online projects, virtual collaboration, business simulations, digital case studies, and technology-supported assessments (Kolb, 1984; Santoso et al., 2023). Santoso et al. (2023) found that blended project-based entrepreneurial learning significantly improves entrepreneurial orientation, innovation capability, and practical business competencies among university students. The researchers argued that blended learning environments encourage students to move beyond theoretical understanding toward active entrepreneurial practice. Likewise, Alshahrani et al. (2024) reported that digital learning orientation positively influences entrepreneurial competency development among graduates. Their findings suggest that technology-supported learning environments enhance students' ability to develop entrepreneurial skills required in modern economies.

Despite the potential benefits of digital and blended pedagogies, their adoption in Nigerian tertiary institutions remains associated with several challenges. These include inadequate digital infrastructure, unstable electricity supply, poor internet connectivity, limited access to digital devices, insufficient lecturer digital competence, and unequal student access to technology resources (UNESCO, 2023; Dube & Nhamo, 2023). The digital divide remains a significant concern in developing countries because students' ability to benefit from technology-supported learning depends on socioeconomic factors, institutional resources, and technological accessibility. Therefore, successful implementation of digital and blended pedagogies requires not only technological investment but also institutional commitment, staff development, and supportive educational policies (OECD, 2023; Alam & Islam, 2024).

Delta State, Nigeria, has witnessed increasing emphasis on entrepreneurship education across universities, polytechnics, and colleges of education as part of broader efforts to improve graduate employability and self-reliance. However, despite growing adoption of digital technologies in tertiary institutions, limited empirical evidence exists regarding the extent to which digital and blended pedagogies influence entrepreneurship education effectiveness in the state. Furthermore, while previous studies have examined technology adoption, digital learning, and entrepreneurship education separately, limited research has investigated the combined influence of digital and blended pedagogies on specific entrepreneurship education outcomes such as entrepreneurial knowledge acquisition, skills development, creativity, innovation, and business readiness within Nigerian tertiary institutions.

Statement of the Problem

Entrepreneurship education was introduced into Nigerian tertiary institutions with the primary objective of equipping graduates with entrepreneurial knowledge, skills, attitudes, and competencies required for self-employment, innovation, and economic development. The expectation was that entrepreneurship education would contribute significantly to reducing graduate unemployment by preparing students to create businesses and become productive participants in the economy. However, despite substantial investment in entrepreneurship education programmes, evidence indicates that many Nigerian graduates still demonstrate limited entrepreneurial readiness after graduation. Many students acquire theoretical knowledge of entrepreneurship but struggle to apply such knowledge to practical business situations, identify opportunities, develop innovative solutions, or establish sustainable enterprises (Okeke & Ezeh, 2023; Olawale & Garwe, 2024).

One possible explanation for this challenge is the continued dominance of traditional instructional approaches within many entrepreneurship education programmes. Conventional lecture methods often emphasize memorization and theoretical understanding rather than practical engagement, experimentation, collaboration, and problem-solving. Such approaches may limit students' opportunities to develop the entrepreneurial competencies required in contemporary business environments (Rodrigues, 2023; Morselli & Orzes, 2023). Entrepreneurship education requires innovative pedagogical strategies that expose students to authentic entrepreneurial experiences. Digital and blended pedagogies provide opportunities to address these limitations by creating interactive, flexible, and experiential learning environments where students can engage with digital resources, collaborate on entrepreneurial projects, simulate business situations, and develop technology-related entrepreneurial skills (Kumar et al., 2024; Ossai & Uwadinisu, 2025).

However, despite the growing global recognition of digital and blended learning approaches, their adoption and effectiveness within Nigerian tertiary institutions remain insufficiently understood. While international studies have examined technology-supported entrepreneurship education, limited empirical evidence exists regarding how digital and blended pedagogies influence entrepreneurship education outcomes in Nigerian contexts, particularly in Delta State. Furthermore, there is inadequate understanding of whether these pedagogical approaches significantly contribute to students' entrepreneurial knowledge, practical skills, creativity, innovation capability, and business readiness. Without such evidence, educational policymakers and institutional administrators may lack adequate information for designing effective strategies for technology-supported entrepreneurship education. Therefore, the problem of this study is the limited empirical understanding of the extent to which digital and blended pedagogies influence the effectiveness of entrepreneurship education in tertiary institutions in Delta State, Nigeria.

Purpose of the Study

The main purpose of this study is to examine the impact of digital and blended pedagogies on the effectiveness of entrepreneurship education in tertiary institutions in Delta State, Nigeria. Specifically, the study seeks to:

1. Determine the extent to which digital pedagogies are utilized in teaching entrepreneurship education in tertiary institutions in Delta State, Nigeria.
2. Examine the influence of digital pedagogies on students' acquisition of entrepreneurial knowledge, skills, and competencies.
3. Determine the extent to which blended pedagogies are adopted in the delivery of entrepreneurship education in tertiary institutions in Delta State.
4. Investigate the influence of blended pedagogies on the effectiveness of entrepreneurship education in terms of students' entrepreneurial skills development, creativity, innovation, and business readiness.

Research Questions

The following research questions guided the study:

i. To what extent are digital pedagogies utilized in teaching entrepreneurship education in tertiary institutions in Delta State, Nigeria?
ii. What influence do digital pedagogies have on students' acquisition of entrepreneurial knowledge, skills, and competencies?
iii. To what extent are blended pedagogies adopted in the delivery of entrepreneurship education in tertiary institutions in Delta State?
iv. What influence do blended pedagogies have on students' entrepreneurial skills development, creativity, innovation, and business readiness?

Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

1. Digital pedagogies do not significantly influence students' acquisition of entrepreneurial knowledge, skills, and competencies in tertiary institutions in Delta State.
2. There is no significant relationship between blended pedagogies and the effectiveness of entrepreneurship education in tertiary institutions in Delta State.
3. Digital and blended pedagogies do not significantly predict students' entrepreneurial skills development, creativity, innovation, and business readiness.
4. There is no significant difference between students' and lecturers' perceptions regarding the effectiveness of digital and blended pedagogies in entrepreneurship education.

Methods

This study adopted a descriptive survey research design of the correlational type. The design was considered appropriate because it enabled the researcher to collect data from respondents regarding

the utilization of digital and blended pedagogies and examine their relationship with the effectiveness of entrepreneurship education in tertiary institutions in Delta State, Nigeria. The design also facilitated the investigation of the predictive influence of digital and blended pedagogies on entrepreneurial knowledge acquisition, skills development, creativity, innovation, and business readiness. According to Creswell and Creswell (2023), survey research design is suitable for obtaining information from a representative sample of a population and describing existing conditions, attitudes, practices, and relationships among variables. The study was conducted in Delta State, located in the South-South geopolitical zone of Nigeria and hosts several tertiary institutions, including universities, polytechnics and colleges of education that offer entrepreneurship education programmes.

The population of the study consisted of 4,528 respondents, comprising entrepreneurship education students and lecturers from selected tertiary institutions in Delta State offering entrepreneurship education courses. A sample size of 367 respondents was selected using the Taro Yamane (1967) formula. The sample comprised 356 students and 11 lecturers selected through proportionate stratified random sampling to ensure adequate representation of universities, polytechnics, and colleges of education. The instrument used for data collection was a researcher-developed questionnaire titled: Digital and Blended Pedagogies and Entrepreneurship Education Effectiveness Questionnaire (DBPEEQ). The instrument was subjected to face and content validation by three experts. A pilot study was conducted using 30 entrepreneurship students from a tertiary institution outside the study area. Data collected were analyzed using Cronbach Alpha reliability coefficient. The reliability coefficient of 0.86 indicated that the instrument possessed adequate internal consistency.

The researchers, with the assistance of trained research assistants, administered the questionnaires directly to respondents. A total of 367 questionnaires were distributed, and 354 were properly completed and returned, representing a response rate of 96.5%. Research questions were answered using Mean and Standard Deviation. A criterion Mean of 2.50 was used for decision making. The hypotheses were tested using Pearson Product Moment Correlation (PPMC), Multiple Regression Analysis and Independent Sample t-test. All hypotheses were tested at the 0.05 level of significance using the Statistical Package for Social Sciences (SPSS Version 29).

Results

Research Question 1

To what extent are digital pedagogies utilized in teaching entrepreneurship education in tertiary institutions in Delta State, Nigeria?

Table 1: Mean Responses on the Extent of Utilization of Digital Pedagogies

S/No	Item	Mean	SD	Decision
4.	**Use of Learning Management Systems (LMS) for entrepreneurship courses**	3.28	0.72	Accepted
5.	**Use of online instructional resources**	3.35	0.67	Accepted
6.	**Use of virtual discussions and online collaboration**	3.14	0.75	Accepted
7.	**Use of digital assessment tools**	3.08	0.79	Accepted
8.	**Use of business simulation software and digital applications**	2.89	0.84	Accepted
Grand Mean		**3.15**		**Accepted**

Table 1 shows respondents' opinions regarding the extent of utilization of digital pedagogies in teaching entrepreneurship education. The grand mean of 3.15 indicates that digital pedagogies are utilized to a high extent in entrepreneurship education in tertiary institutions in Delta State. The mean scores for all the items ranged from 2.89 to 3.35, which are above the criterion mean of 2.50. This indicates that respondents agreed that digital pedagogies are utilized in entrepreneurship education within tertiary institutions in Delta State. The highest-rated item was the use of online instructional resources, with a mean score of 3.35 and a standard deviation of 0.67. This implies that respondents perceived online learning materials such as electronic textbooks, videos, online articles, and digital business resources as commonly used instructional supports in entrepreneurship courses. The variation in standard deviation values (0.67–0.84) suggests that respondents generally agreed, although the level of adoption differs across digital tools.

Research Question 2

What influence do digital pedagogies have on students' acquisition of entrepreneurial knowledge, skills, and competencies?

Table 2: Mean Responses on Influence of Digital Pedagogies on Entrepreneurial Competencies

S/No	Item	Mean	SD	Decision
9.	**Improves understanding of entrepreneurial concepts**	3.43	0.58	Accepted
10.	**Enhances opportunity recognition skills**	3.36	0.63	Accepted
11.	**Improves business planning skills**	3.29	0.69	Accepted
12.	**Enhances problem-solving ability**	3.41	0.57	Accepted
13.	**Improves communication and collaboration skills**	3.38	0.61	Accepted
Grand Mean		**3.37**		**Accepted**

Table 2 shows respondents' opinions on the influence of digital pedagogies on students' entrepreneurial knowledge, skills, and competencies. The grand mean of 3.37 demonstrates that respondents generally agreed that digital pedagogies positively influence entrepreneurial knowledge, skills, and competencies. The mean scores ranged from 3.29 to 3.43, indicating strong agreement that digital pedagogies contribute positively to entrepreneurial competency development. The highest-rated item was improvement in understanding entrepreneurial concepts (Mean = 3.43, SD = 0.58). The low standard deviation indicates that respondents had similar opinions, suggesting strong agreement that digital resources improve students' understanding of entrepreneurship concepts.

Research Question 3

To what extent are blended pedagogies adopted in the delivery of entrepreneurship education in tertiary institutions in Delta State?

Table 3: Mean Responses on the Extent of Adoption of Blended Pedagogies

S/No	Item	Mean	SD	Decision
14.	**Combination of classroom and online instruction**	3.32	0.64	Accepted
15.	**Availability of online learning resources**	3.39	0.61	Accepted
16.	**Technology-supported entrepreneurial projects**	3.21	0.73	Accepted
17.	**Online discussions complement classroom activities**	3.17	0.75	Accepted
18.	**Online feedback and assessment**	3.28	0.70	Accepted
Grand Mean		**3.27**		**Accepted**

Table 3 presents respondents' opinions on the adoption of blended pedagogies in entrepreneurship education. The grand mean of 3.27 confirms that blended pedagogies are adopted to a considerable extent. The mean scores ranging from 3.17 to 3.39 indicate that respondents agreed that blended learning approaches are adopted in tertiary institutions. The highest mean score was recorded for availability of online learning resources (Mean = 3.39, SD = 0.61), indicating that respondents agreed that digital materials complement classroom teaching. The SD values (0.61–0.75) indicate general agreement among respondents with some differences based on institutional practices.

Research Question 4

What influence do blended pedagogies have on students' entrepreneurial skills development, creativity, innovation, and business readiness?

Table 4: Mean Responses on Influence of Blended Pedagogies on Entrepreneurship Education

S/ No	Item	Mean	SD	Decision
19.	**Enhances entrepreneurial skills**	3.46	0.56	Accepted
20.	**Promotes creativity**	3.51	0.53	Accepted
21.	**Improves innovation capability**	3.42	0.61	Accepted
22.	**Improves entrepreneurial confidence**	3.31	0.67	Accepted
23.	**Enhances business readiness**	3.39	0.65	Accepted
Grand Mean		**3.42**		**Accepted**

Table 4 presents respondents' views on the influence of blended pedagogies on entrepreneurship education effectiveness. The grand mean of 3.42 indicates that blended pedagogies positively influence entrepreneurship education effectiveness. The mean scores ranged from 3.31 to 3.51, indicating that respondents agreed that blended pedagogies improve entrepreneurship education outcomes. The highest-rated item was promotion of creativity (Mean = 3.51, SD = 0.53). The low

standard deviation (0.53–0.67) indicates strong agreement among respondents that blended learning encourages students to generate ideas and develop creative solutions.

Test of Hypotheses

Hypothesis 1

Digital pedagogies do not significantly influence students' acquisition of entrepreneurial knowledge, skills, and competencies in tertiary institutions in Delta State.

Table 5: Regression Analysis of Digital Pedagogy and Entrepreneurial Competencies

Variable	R	R^2	Adjusted R^2	F-value	Sig.
Digital Pedagogy	0.691	0.477	0.475	321.56	0.000

Table 5 presents the regression analysis examining the influence of digital pedagogies on students' acquisition of entrepreneurial knowledge, skills and competencies. The correlation coefficient (R = 0.691) indicates a strong positive relationship between digital pedagogies and entrepreneurial competencies. This implies that increased utilization of digital pedagogical approaches is associated with improved entrepreneurial knowledge, skills, and competencies among students. The coefficient of determination (R^2 = 0.477) indicates that digital pedagogies explain 47.7% of the variation in students' entrepreneurial competencies. This means that almost half of the changes observed in students' entrepreneurial knowledge and skills can be attributed to the use of digital pedagogical approaches, while the remaining variation may be explained by other factors such as students' motivation, institutional support, entrepreneurial environment, and learning resources. The F-value of 321.56 with a significance value of 0.000 indicates that the regression model is statistically significant. Since the significance value is less than the 0.05 level of significance, the null hypothesis is rejected.

Hypothesis 2

There is no significant relationship between blended pedagogies and the effectiveness of entrepreneurship education in tertiary institutions in Delta State.

Table 6: Correlation Analysis between Blended Pedagogy and Entrepreneurship Education Effectiveness

Variables	Correlation (r)	Sig. (2-tailed)	Decision
Blended Pedagogy and Entrepreneurship Education Effectiveness	0.734	0.000	Significant

Table 6 presents the relationship between blended pedagogies and entrepreneurship education effectiveness. The correlation coefficient (r = 0.734) indicates a strong positive relationship between blended pedagogies and entrepreneurship education effectiveness. This implies that higher adoption of blended learning approaches is associated with improved entrepreneurship education outcomes, including entrepreneurial skills development, creativity, innovation, and business readiness. The significance value (p = 0.000) is less than the 0.05 level of significance. Therefore, the relationship between blended pedagogies and entrepreneurship education effectiveness is statistically significant. Consequently, the null hypothesis is rejected. This means that blended pedagogies have a significant positive relationship with entrepreneurship education effectiveness among students in tertiary institutions in Delta State.

Hypothesis 3

Digital and blended pedagogies do not significantly predict students' entrepreneurial skills development, creativity, innovation, and business readiness.

Table 7: Multiple Regression Analysis of Digital and Blended Pedagogies on Entrepreneurship Education Effectiveness

Predictor Variables	Beta (β)	t-value	Sig.
Digital Pedagogy	0.364	6.48	0.000
Blended Pedagogy	0.451	7.92	0.000

Table 7 presents the multiple regression analysis showing the predictive influence of digital and blended pedagogies on entrepreneurship education effectiveness. The standardized beta coefficient for digital pedagogy (β = 0.364) indicates that digital pedagogies make a positive contribution to entrepreneurship education effectiveness. This means that increased utilization of digital learning approaches contributes to improvements in students' entrepreneurial knowledge, skills, and competencies. The t-value of 6.48 and significance value of 0.000 indicate that digital pedagogy is a statistically significant predictor of entrepreneurship education effectiveness.

Similarly, blended pedagogy recorded a beta coefficient of β = 0.451, indicating a stronger predictive contribution compared with digital pedagogy. This suggests that blended learning approaches have a

greater influence on entrepreneurship education effectiveness because they combine technology-supported learning with direct interaction, practical activities, and experiential learning opportunities. The t-value of 7.92 and significance value of 0.000 confirm that blended pedagogy significantly predicts entrepreneurship education effectiveness. Since both predictors were statistically significant at the 0.05 level, the null hypothesis is rejected. Therefore, digital and blended pedagogies significantly predict entrepreneurial skills development, creativity, innovation, and business readiness among students in tertiary institutions in Delta State.

Hypothesis 4

There is no significant difference between students' and lecturers' perceptions regarding the effectiveness of digital and blended pedagogies in entrepreneurship education.

Table 8: Independent Sample t-test of Students' and Lecturers' Perceptions

Group	N	Mean	SD	t-value	Sig.
Students	343	3.34	0.49	1.41	0.160
Lecturers	11	3.42	0.46		

Table 8 presents the independent sample t-test examining whether there is a significant difference between students' and lecturers' perceptions regarding the effectiveness of digital and blended pedagogies. The mean score for students was 3.34, while lecturers recorded a slightly higher mean score of 3.42. This indicates that both groups generally had positive perceptions regarding the effectiveness of digital and blended pedagogies. The standard deviation for students (SD = 0.49) indicates that students' responses were closely clustered around the mean, suggesting a high level of agreement among students regarding the benefits of digital and blended pedagogies.

Similarly, the lecturers' standard deviation (SD = 0.46) indicates low variation in their responses, showing that lecturers also had relatively consistent opinions regarding the effectiveness of these approaches. The t-value of 1.41 and significance value of 0.160 indicate that the difference between students' and lecturers' perceptions is not statistically significant because the p-value is greater than the 0.05 significance level. Therefore, the null hypothesis is retained. This implies that students and lecturers have similar perceptions regarding the effectiveness of digital and blended pedagogies in entrepreneurship education.

Discussion

Utilization of Digital Pedagogies in Teaching Entrepreneurship Education

The first finding of the study revealed that digital pedagogies are utilized to a high extent in teaching entrepreneurship education in tertiary institutions in Delta State. Respondents indicated that entrepreneurship lecturers employ digital learning platforms, online instructional materials, virtual learning resources, digital assessment systems and collaborative online activities to support entrepreneurship teaching and learning. This finding suggests that tertiary institutions in Delta State are gradually moving from exclusively traditional teaching approaches toward technology-supported instructional practices. The increasing adoption of digital pedagogies reflects the broader transformation occurring in higher education globally. The rapid advancement of digital technologies has changed the way knowledge is created, accessed and shared, requiring educational institutions to adopt innovative approaches that promote flexibility, accessibility and learner-centred instruction. According to UNESCO (2023), digital technologies have the potential to improve educational quality and expand learning opportunities when they are supported by appropriate infrastructure, institutional policies, and teachers' digital competencies.

The finding agrees with Fernández-Batanero et al. (2023), who established that lecturers' digital competence is a significant factor influencing successful technology integration in higher education. Their systematic review demonstrated that effective digital teaching requires not only access to technological tools but also the ability of educators to design meaningful learning experiences using these technologies. In the context of entrepreneurship education, this implies that lecturers must possess both technological knowledge and entrepreneurial pedagogical skills to maximize the benefits of digital learning environments. Similarly, García-Peñalvo (2024) argued that digital transformation in higher education requires a shift from simply adopting digital tools toward redesigning teaching and learning processes. The author emphasized that technology becomes educationally valuable when it supports active learning, collaboration, creativity, and knowledge application. This position supports the current finding that digital pedagogies are relevant to entrepreneurship education because they provide opportunities for students to engage actively with entrepreneurial concepts and practices.

The finding is also consistent with the Technology Acceptance Model (TAM) developed by Davis (1989), which explains that individuals are more likely to adopt technology when they perceive it as useful and easy to use. The utilization of digital pedagogies observed in this study may therefore indicate that

lecturers and students perceive digital tools as valuable resources for improving entrepreneurship learning outcomes. However, although the finding indicates considerable adoption of digital pedagogies, the extent of utilization may still be influenced by institutional readiness, availability of digital infrastructure, and users' technological competence. This observation is supported by OECD (2023), which noted that digital transformation in education requires comprehensive institutional strategies rather than isolated technological investments.

Influence of Digital Pedagogies on Students; Acquisition of Entrepreneurial Knowledge, Skills and Competencies

The second finding revealed that digital pedagogies significantly influence students' acquisition of entrepreneurial knowledge, skills and competencies. Respondents indicated that digital learning approaches improve students' understanding of entrepreneurial concepts, opportunity recognition ability, business planning skills, problem-solving competence and collaborative skills. This finding demonstrates that digital pedagogies contribute significantly to the development of entrepreneurial competencies required in contemporary business environments. Unlike traditional instructional approaches that may emphasize theoretical knowledge, digital learning environments allow students to explore entrepreneurial resources, interact with real-world business information, participate in virtual projects, and develop practical competencies.

The finding supports the study of Kumar et al. (2024), who identified technology-supported learning as one of the major developments transforming entrepreneurship education globally. Their systematic review revealed that digital technologies enhance entrepreneurship education by promoting interactive learning, entrepreneurial experimentation, collaboration and competency-based education. Similarly, Udekwe and Iwu (2024) reported that digital technologies improve entrepreneurship education outcomes by strengthening entrepreneurial motivation, innovation capability and entrepreneurial intention. Their study emphasized that digital platforms provide students with opportunities to engage in entrepreneurial activities beyond classroom boundaries. The finding also agrees with Satar et al. (2024), who found that digital learning orientation positively influences entrepreneurial competency development. They explained that students exposed to technology-supported learning environments are more likely to develop entrepreneurial behaviours because digital platforms encourage exploration, independent learning and interaction with entrepreneurial resources.

From a theoretical perspective, the finding supports Constructivist Learning Theory (Vygotsky, 1978), which argues that learners construct knowledge through active engagement, social interaction and meaningful experiences. Digital learning environments provide opportunities for students to collaborate, discuss ideas, solve problems, and create knowledge rather than simply receive information. Furthermore, the finding reflects the changing nature of entrepreneurship itself. Modern entrepreneurs operate within digital ecosystems where business success increasingly depends on digital literacy, online communication, data analysis and technology adoption. Therefore, integrating digital pedagogies into entrepreneurship education prepares students for contemporary entrepreneurial realities (Nambisan et al., 2023).

Adoption of Blended Pedagogies in Entrepreneurship Education Delivery

The third finding showed that blended pedagogies are adopted to a considerable extent in tertiary institutions in Delta State. Respondents indicated that entrepreneurship courses combine face-to-face classroom instruction with online learning activities, digital resources, virtual discussions and technology-supported assignments. This finding indicates that institutions recognize the value of combining traditional and digital learning approaches. Blended learning provides the advantage of physical classroom interaction while extending learning opportunities through online environments. This makes it particularly suitable for entrepreneurship education, where students require both conceptual understanding and practical experiences. The finding agrees with Bond et al. (2023), who noted that blended learning enhances student engagement by combining different learning modes and providing greater flexibility. They argued that effective blended learning environments encourage interaction, collaboration and learner autonomy.

Similarly, Martin and Bolliger (2023) emphasized that blended learning improves student engagement when online activities are carefully designed to complement face-to-face instruction. Their study highlighted that technology should be integrated strategically rather than used merely as an additional instructional resource. The finding is also consistent with Santoso et al. (2023), who found that blended project-based entrepreneurial learning significantly improves entrepreneurial orientation and innovation capability among university students. Their study demonstrated that combining classroom instruction with online project activities creates opportunities for students to apply entrepreneurial concepts in practical situations. The result can also be explained using Kolb's Experiential Learning Theory (1984).

Entrepreneurship learning requires experience, reflection, experimentation and application. Blended pedagogies provide opportunities for students to experience entrepreneurial activities through projects, simulations, online collaboration and practical assignments.

Influence of Blended Pedagogies on Entrepreneurial Skills Development, Creativity, Innovation and Business Readiness

The fourth finding revealed that blended pedagogies significantly enhance entrepreneurship education effectiveness by improving entrepreneurial skills development, creativity, innovation and business readiness. This finding suggests that blended learning environments provide richer educational experiences than traditional approaches alone. Through blended learning, students can combine classroom discussions with online research, collaborative projects, digital simulations and entrepreneurial problem-solving activities. The finding supports Rodrigues (2023), who argued that effective entrepreneurship education requires pedagogical approaches that encourage creativity, innovation, experiential learning and active participation. The author emphasized that entrepreneurship education should move beyond theoretical teaching toward competency development.

Similarly, Morselli and Orzes (2023) found that entrepreneurship programmes based on challenge-based and experiential learning approaches significantly improve entrepreneurial competence. Their findings indicate that students develop stronger entrepreneurial abilities when learning activities involve authentic problems and practical challenges. The finding also aligns with Alshahrani et al. (2024), who reported that digital learning orientation contributes positively to entrepreneurial competency development. They emphasized that technology-supported learning environments improve students' ability to acquire entrepreneurial knowledge and apply it to practical situations. The improvement in creativity and innovation identified in this study can also be explained through constructivist principles. When students participate in collaborative online activities, entrepreneurial simulations and project-based tasks, they are encouraged to generate ideas, evaluate alternatives and develop innovative solutions.

Conclusion

The study examined the impact of digital and blended pedagogies on the effectiveness of entrepreneurship education in tertiary institutions in Delta State, Nigeria. The findings revealed that digital pedagogies are utilized to a high extent and significantly enhance students' entrepreneurial knowledge, skills and competencies. Similarly, blended pedagogies were found to improve entrepreneurial skills development, creativity, innovation and business readiness. The study concludes that the integration of digital and blended pedagogies strengthens entrepreneurship education by promoting flexible, interactive and competency-based learning experiences. Therefore, effective adoption of technology-supported teaching approaches is essential for preparing students with the entrepreneurial capabilities required in the contemporary digital economy.

Implication of the Study

The findings demonstrate that digital and blended pedagogies represent effective strategies for strengthening entrepreneurship education in tertiary institutions. The study confirms that technology-supported learning approaches can improve entrepreneurial knowledge, practical skills, creativity, innovation and business readiness. The findings suggest that entrepreneurship education in Nigerian tertiary institutions should move toward more learner-centred, technology-supported and experiential approaches. Digital and blended pedagogies should therefore be considered strategic components of entrepreneurship education reform aimed at producing graduates capable of participating effectively in the digital economy.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. Tertiary institutions should strengthen digital infrastructure by providing reliable internet access, digital learning platforms and technology-supported classrooms to enhance the effective implementation of digital and blended pedagogies.
2. Entrepreneurship lecturers should receive regular digital training to improve their competence in using online platforms, digital resources and innovative teaching strategies.
3. Curriculum planners should integrate digital entrepreneurship skills such as e-commerce, digital marketing and technology-driven innovation into entrepreneurship education programmes.
4. Institutions should develop clear blended learning policies to guide the effective combination of face-to-face and online instructional approaches.
5. Government and regulatory agencies should provide financial and policy support for digital transformation initiatives in tertiary institutions.

6. Students should be encouraged to develop digital literacy skills to maximize the benefits of technology-supported entrepreneurship learning.

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EFFECT OF COMPETENCY BASED INSTRUCTION ON TEACHING SKILL ACQUISITION AMONG BUSINESS EDUCATION STUDENTS IN COLLEGES OF EDUCATION IN NIGERIA

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Abstract

This study examined the effect of competency based instruction on teaching skill acquisition among business education students in Colleges of Education in Kwara State. Specifically, this study sought to determine students' perceptions of the difference in teaching skill acquisition between CBI and lecture methods, evaluate the effect of CBI on mastery of teaching skills, and assess its impact on practical teaching performance.This study adopted a quasi-experimental design and descriptive survey approach while a purposive sampling technique was used to select 20 students divided into two groups from a population of 300level students in three public colleges in Kwara State making a total of 60 participants. Data were collected using a questionnaire and pre-test &post-test scores analyzed with descriptive statistics and t-test.Findings revealed that students perceived CBI as more effective in enhancing teaching skills, with an overall mean of 4.14 for teaching skill acquisition and 4.15 for mastery of teaching skills which indicatea strong agreement on its benefits. Likewise, practical teaching performance was similarly enhanced under CBI, with students reporting increased confidence and competence. Furthermore, t-test revealed a significant difference in teaching skill acquisition between CBI and lecture groups (t(58) = 5.892, p = 0.000), leading to the rejection of H_{01}.Based on these results, it was concluded that CBI significantly improves students' teaching skills compared to lecture methods. It is recommended that colleges should adopt competency based teaching strategies and incorporate regular practical exercises to enhance teaching skill acquisition and practical preparedness of student teachers.

Keywords: Competency Based Instruction, Teaching Skill Acquisition, Practical Teaching Performance, Business Education, Colleges of Education, Nigeria

Introduction

Quality of education depends on a teacher who qualified on his/her field of profession and the demand for quality education throughout the world has brought the need for graduates who possess practical competencies alongside theoretical knowledge. This shift is particularly relevant in business education, which is designed to equip learners with teaching, managerial, and entrepreneurial skills necessary for national development. However, evidence from the recent study indicates a persistent gap between the competencies acquired by graduates and the expectations of the labour market. For instance, a study conducted by Odigili and Omorojie (2025)observed that many business education graduates across African countries such as Nigeria lack the practical skills required for effective job

performance in so doing createa disconnect between education and industry needs. This situation underscores the necessity for instructional approaches that prioritize skill acquisition and practical competence.

Competency based instruction is a viable pedagogical approach aimed at addressing these challenges by focusing on the mastery of clearly defined skills and learning outcomes. Unlike lecture methods which are largely teacher centred approach, competency based instruction emphasizes learner participation, practical engagement, and continuous assessment. In Nigerian educational system, competency based education is system that integrates both theoretical and practical knowledge and skills application, thereby enhancing learners' ability to perform real world tasks effectively. This approach is particularly important in business education, where teaching effectiveness depends largely on the acquisition of demonstrable instructional skills.

Many recent empirical studies both in Nigeria and other countries has laidemphasis on the importance of adopting innovative and competency motivated teaching strategies so as to equipped graduate with relevant skills and knowledge necessary or required in labour market. For example,Okoye and Isaac (2024) found that competency based training serves as an effective mode of delivering technical and vocational education by producing graduates with practical skills required by industries while also preparing individuals for self employment. Similarly, recent study by Olawoyin and Adeniji (2025) revealed that innovative instructional approaches, particularly those equipped with experiential learning strategies enhance business education by promoting practical engagement and improving students' skill development. In the same vein, Nwalado and Eshemogie (2023) reported that the effectiveness of business education programmes depends largely on educators' ability to utilize technology based instructional planning, implementation, and evaluation skills, which are essential for effective curriculum delivery. Furthermore, Indian study conducted in India by Joshi (2024) revealedthat competency based education fosters learner centred approaches that prioritize skill acquisition through methods such as simulation, case based learning, and digital instruction, thereby enhancing employability outcomes. Subsequently, the adoption of skill oriented and competency focusedinstructional strategies remains critical in bridging gap between theoretical knowledge and practical skills requirements as such approaches simulate real world experiences and promote learning by doing.

Furthermore, one of the recent studies conducted in Nigeria revealed both opportunities and challenges relating to the implementation of competency based curriculum. For example, a study investigated by Musa et al. (2025) found that even though teachers show positive attitudes towards competency based approaches but the study shows that their implementation is often constrained by inadequate training, insufficient instructional resources, and limited understanding of competency based methodologies. This results show that,despite the factthat competency based instruction has strong potential to improve teaching skill acquisition yet, its effectiveness depends on proper implementation and adequate institutional or government support.

In Nigeria colleges of education where business education students are trained to become future teachers, the acquisition of teaching skills such as lesson planning, classroom management, instructional delivery, and assessment techniques is essential. However, the continued reliance on conventional teaching methods has limited students' exposure to practical learning experienceswhich in so doing affecting their teaching competence. Given this mounting emphasis on skill based education and the need to produce competent educators, it has becomes imperative to examine the role of competency based instruction in enhancing teaching skill acquisition. Therefore, this study investigates the effect of competency based instruction on teaching skill acquisition among business education students in Colleges of Education in Nigeria.

Statement of the Problem

The effectiveness of business education programmes all the time has been questioned due to the inadequate teaching skills exhibited by many graduates. Despite the objective of these programmes being the production of competent teachers equipped with both theoretical knowledge and practical pedagogical skills yet, several studies have revealed that students often graduate without mastering essential pedagogical skills such as instructional delivery, classroom management, and evaluation techniques. For instance, Nwalado and Eshemogie (2023) found that many business educators lack adequate technology based instructional planning, implementation, and evaluation skills required for effective curriculum delivery in Nigeria. Similarly, Chukwu et al. (2023) reported that business education graduates demonstrate deficiencies in employability and practical office competencies due to inadequate exposure to competency based training.In addition, study by Olawoyin and Adeniji (2025) observed that although experiential and innovative teaching strategies improve skill acquisition, their inconsistent adoption in Nigerian institutions limits students' opportunities to develop practical teaching

competencies.This deficiency has been largely attributed to the nonstop reliance on conventional lecture methods usually theoretical knowledge rather than practical skill acquisition.

Furthermore, the gap between expected competencies and actual skills acquired has negatively affected graduates' employability and teaching effectiveness. While competency based instruction has been identified as a viable solution due to its emphasis on mastery learning and practical engagement, its implementation in Nigerian Colleges of Education is still limited with some challenges such as inadequate training and resources (Musa et al., 2025).Consequently, there is a need to empirically examine whether competency based instruction can significantly improve teaching skill acquisition among business education students. This study therefore seeks to address this gap by investigating the effect of competency based instruction on teaching skill acquisition in Colleges of Education in Nigeria.

Consequently, there is a need to empirically investigate whether competency based instruction can significantly improve teaching skill acquisition among business education students. This study therefore seeks to address this gap.

Objectives of the Study

The main purpose of this study is to examine the effect of competency based instruction on teaching skill acquisition among business education students in Colleges of Education in Kwara State. Specifically, the study seeks to:

i. Examine students' perceptions of the effectiveness of competency based teaching in enhancing their teaching skills compared to traditional lecture methods.
ii. Assess students' perceptions of the role of competency based teaching in improving their understanding and mastery of teaching skills through practical activities.
iii. Determine whether competency based instruction improves students' practical teaching performance.

Research Questions

i. What are the perceptions of students regarding the effectiveness of competency based teaching in enhancing their teaching skills compared to traditional lecture methods?
ii. How do students perceive competency based teaching in improving their understanding and mastery of teaching skills through practical involvement?

Research Hypotheses

H_{01}: There is no significant difference in the teaching skill acquisition of students taught using competency based instruction and those taught using lecture method.

Literature Review

Concept of Competency Based Instruction

Competency Based Instruction is a learner centred pedagogical approach that emphasizes the acquisition and demonstration of specific skills, knowledge, and attitudes required for effective performance in real life situations especially for students under training to become a professional teacher in the future. Unlike traditional instructional methods that focus on content coverage and time spent in class, competency based instruction prioritizes mastery of clearly defined learning outcomes. According to Williams (2025), competency based education is structured around measurable competencies, where learners progress only after demonstrating mastery of required skills rather than advancing based on time or course completion. This approach ensures that learning is outcome driven and aligned with industry and societal expectations.

In Nigeria education system, especially teacher preparation programmes, CBI emphasizes what learners can actually do with what they have learned rather than how much content has been covered. For examples, study by Musa et al. (2025) shown that competency based approaches are increasingly being adopted to address the persistent gap between theoretical knowledge and practical skill acquisition in education systems.

In Nigeria, competency based instruction is closely linked to skill acquisition and employability, particularly in vocational and teacher education programmes. It is designed to ensure that learners acquire demonstrable competencies such as instructional delivery, classroom management, and assessment skills through active participation and practical engagement. Also, according to Aniedi& Caleb (2024) competency based training in Nigeria's education system is aimed at producing individuals who are not only knowledgeable but also capable of performing occupational tasks effectively in real world settings. This highlights the shift from teacher centered methods to learner centered approaches that prioritize mastery of skills.

Furthermore, Olawoyin& Adeniji (2025) research on business education has shown that competency based instructional strategies such as experiential learning, simulation, and practical demonstration significantly improve students' skill acquisition when properly implemented. However,

some recent studies also reveal that many institutions still struggle with inadequate resources and limited lecturer preparedness, which affects effective implementation of competency based instruction. For example, Musa et al. (2025) observed that although teachers demonstrate willingness to adopt competency based approaches but their understanding and application remain limited due to insufficient training and systemic constraints.

Teaching Skill Acquisition in Business Education

Teaching skill acquisition in business education refers to the systematic development of pedagogical and practical competencies required for effective teaching and professional performance in business education disciplines. It involves equipping learners with instructional, managerial, and technical skills such as lesson planning, classroom management, communication, evaluation, and the use of modern instructional technologies. According to Ezenwaji et al. (2023), business education in Nigeria is fundamentally skill oriented and designed to prepare students for both teaching careers and entrepreneurial opportunities, making skill acquisition a central component of the programme.

In support of this statement, many studies have emphasize that teaching skill acquisition is not limited to theoretical knowledge but also involves continuous practice and application of learned concepts in real classroom and workplace situations. For examples, Ufondu et al. (2024) found that the integration of digital literacy and instructional technologies significantly enhances the acquisition of 21st century teaching skills among business education students by promoting interactive and practical learning experiences. Similarly, Igwe and Uduma (2023) found that the utilization of digital instructional tools improves office and teaching skills acquisition among business education students in Nigerian tertiary institutions. Thisfinding highlights the importance of technology driven instruction in skill development.Furthermore, a study conducted by Azubuike et al. (2024) revealed that business education programmes expose students to diverse skill areas such as accounting, marketing, office technology, and communication skills, which collectively enhance their teaching effectiveness and professional competence. In addition, Iwuohaet al. (2021) emphasized that practical demonstration, hands on training, and continuous retraining are essential strategies for ensuring that students acquire relevant teaching and business skills needed for modern workplace demands.

Despite the importance of skill acquisition, yet the teaching skill acquisition in business education faces several challenges as mentioned and highlighted by manystudiesin Nigeria. For example, Adedeji and Ibironke (2022) identified inadequate funding, lack of modern instructional facilities, and limited access to technological resources as major constraints hindering effective skill acquisition in business education programmes. These challenges often result in graduates who are theoretically sound but lack the practical competencies required for effective teaching and professional practice.

Empirical Review

So many empirical studies have highlighted the relevance of competency based instruction in enhancing skill acquisition and improving educational performance both in Nigeria and other countries particularly in business and vocational education. For instance, Okoye and Michael (2024) examined competency based training as a mode of delivery in Technical and Vocational Education and Training (TVET) in Nigeria using a conceptual and descriptive approach. The study analyzed the characteristics, principles, strengths, and weaknesses of competency based training. The findings revealed that competency based training equips learners with practical and industry relevant skills, thereby producing graduates who meet labour market demands and are capable of self employment. The study concluded that competency based approaches are effective in improving skill acquisition and recommended their adoption in Nigerian educational systems.

Similarly, Olawoyin and Adeniji (2025) investigated innovative strategies for teaching and learning business education in universities in South East Nigeria. The study adopted a descriptive survey design involving 79 business educators, and data were collected using a structured questionnaire with reliability coefficients ranging from 0.77 to 0.86. The data were analyzed using mean, standard deviation, and t test statistics. The findings indicated that experiential instructional strategies significantly enhance students' skill acquisition and engagement in business education courses. However, the study also found a lack of consensus on the use of team based and flipped learning strategies, suggesting inconsistency in the adoption of innovative teaching methods. The study concluded that practical and learner centred approaches are essential for improving teaching effectiveness and recommended the adoption of experiential strategies in business education programmes.

In another study, Nwalado and Eshemogie (2023) examined technology based instructional management skills required by business educators for effective curriculum implementation in South Nigeria. The study employed a survey design with a sample of 118 respondents selected through

multistage sampling. A validated questionnaire with a reliability coefficient of 0.923 was used for data collection, while mean and t test statistics were used for analysis. The findings identified 11 instructional planning skills, 13 instructional implementation skills, and 10 evaluation skills required for effective teaching. The study further revealed significant differences in instructional implementation skills among lecturers, indicating gaps in practical teaching competencies. The study concluded that the integration of technology based instructional skills is essential for effective teaching and recommended the development of training programmes for educators.

Furthermore, Ayalew et al. (2024) explored faculty and academic leaders' conceptions of competence and competency based education using qualitative methods. The findings revealed inconsistencies in understanding competency based education, which may affect its implementation in educational institutions. The study concluded that clear conceptualization and proper training are necessary for effective adoption of competency based approaches.

Methodology

This study adopted both descriptive survey and quasiexperimental research design using pretest and posttest control groupsto examine the effect of competency based instruction on teaching skill acquisition among business education students in Colleges of Education in Kwara State, Nigeria. The choice of using the two research designs in this study was to enable comparison between two groups exposed to different instructional methods while also capturing students' perceptions regarding the two teaching approaches.The population of this study comprised all 300 level students in three public colleges of education in Kwara State, namely College of Education Oro, Kwara State College of Education Ilorin, and College of Education Lafiagi.A purposive sampling technique was used to select a total of 60 students from the population. From each college, 20 students were selected and divided into two groups: the experimental group exposed to competency based instruction and the control group taught using the lecture method. This ensured equal representation and comparability across groups.Data were collected using a structured questionnaire designed on 5 Likert scale to assess students' perceptions, as well as a pre-test and post-test in measuringtheir teaching skill acquisition before and after expose to the methods. The instrument was validated by experts, and its reliability was ensured through appropriate consistency checks. The experimental group was taught using practical, student centred approaches involving active participation, repeated practice, and feedback, while the control group received conventional lecture based instruction.Data collected were analyzed using descriptive statistics such as mean and standard deviation to answer the research questions, whereasthe post test score was tested using t-test at 0.05 level of significance.

Results

Analysis of Research Questions

Research Question one: What are the perceptions of students regarding the effectiveness of competency based teaching in enhancing their teaching skills compared to traditional lecture methods?

Table 1: Respondents' Perceptions of the Difference in Teaching Skill Acquisition between Competency Based Instruction and Conventional Methods

S/N	Statements	Frq.	Mean	STD
1.	Competency based teaching helps me learn teaching skills better than the normal lecture method used in most classes.	30	4.13	0.346
2.	The lecture method mostly focuses on theory and does not give enough opportunity for practical teaching skill development.	30	4.13	0.346
3.	I prefer competency based teaching because it allows me to participate actively and practice what I am being taught in class.	30	4.17	0.379
4.	I gain more practical experience and confidence when I am taught using competency based teaching methods.	30	4.13	0.346
5.	Competency based teaching makes me feel more confident and prepared to teach compared to the traditional lecture method.	30	4.13	0.346
Total / Average		**30**	**4.14**	**0.353**

The data in Table 1 provides insight into students' perceptions of competency based teaching instructions versus lecture methods in enhancing teaching skills. Statement 1 shows that students agree (Mean = 4.13, SD = 0.346) that CBI helps them learn teaching skills better than conventional lectures. Similarly, Statement 2 (Mean = 4.13, SD = 0.346) indicates that the lecture method focuses mostly on theory, limiting practical skill development. Statement 3 demonstrates a higher agreement (Mean = 4.17, SD = 0.379), reflecting students' preference for CBI due to its active participation and hands-on practice. Likewsise, statement 4 (Mean = 4.13, SD = 0.346) highlights that CBI enhances practical experience and confidence during teaching exercises, while Statement 5 (Mean = 4.13, SD = 0.346) shows that CBI makes students feel more prepared to teach compared to lectures.On the whole, the

average mean of 4.14 with standard deviation (0.353) indicate strong and consistent agreement that competency based instructions is more effective than lectures in developing teaching skills especially for students in training to become a future teacher.

Research Question Two: How do students perceive competency based teaching in improving their understanding and mastery of teaching skills through practical involvement?

Table 2: Respondents' Perceptions of the Extent to which Competency Based Instruction Improves Mastery of Teaching Skills

S/N	Statements	Frq.	Mean	STD
1.	Competency based teaching helps me understand teaching skills better because I practice them repeatedly until I get them right.	30	4.13	0.346
2.	I learn and remember teaching skills more easily when I am involved in practical activities instead of just listening to lectures.	30	4.17	0.379
3.	I can only fully understand teaching skills when I practice them and receive feedback from my lecturer during lessons.	30	4.13	0.346
4.	Regular tests, assignments, and feedback during competency based teaching help me improve my teaching skills gradually over time.	30	4.13	0.346
5.	Competency based teaching allows me to learn at my own speed until I fully understand each teaching skill clearly.	30	4.20	0.407
Total / Average		**30**	**4.15**	**0.365**

Table 2 above presents students' perceptions of how competency based instructions enhances their understanding and mastery of teaching skills through practical involvement. Statement 1 (Mean = 4.13, SD = 0.346) indicates student's agreement that repeated practice in CBI helps them understand teaching skills more effectively while statement 2 (Mean = 4.17, SD = 0.379) further shows that that handson involvement allows students to learn and retain teaching skills more easily than passive lecture methods. Statement 3 (Mean = 4.13, SD = 0.346) shows that receiving feedback during practical activities is essential for full comprehension of teaching skills. Statement 4 and 5 (Mean = 4.13, 4.20 and SD = 0.346, 0.407) emphasizes that regular assessments and lecturer feedback gradually improve students' teaching competencies while also highpointsthat individual learning pacehelp students in enhancing mastery of skills at a personalized rate.

Test of hypothesis

H_{01}: There is no significant difference in the teaching skill acquisition of students taught using competency based instruction and those taught using lecture method.

Table 3: Summary of t-test comparing teaching skill acquisition scores between Competency Based Instruction and Lecture Method

	Group	N	Mean	STD	Levene's Test		t-test for Equality of Means			
					F	Sig.	t	df	Sig.(2-tailed)	Result
PostTest Scores	Competency Based Instruction Method	30	27.13	3.329	0.002	0.966	5.892	58	0.000	Significant
	Lecture Method	30	22.07	3.331						

Table 3 presents the t-test comparison of teaching skill acquisition between students taught using competency based instruction and those taught using the lecture method. The CBI group (N = 30) scored higher (M = 27.13, SD = 3.33) than the lecture group (M = 22.07, SD = 3.33). Levene's test confirmed equal variances (F = 0.002, Sig. = 0.966), validating the t-test assumptions. The independent samples t-test revealed a significant difference ($t(58) = 5.892$, $p = 0.000 < 0.05$), indicating that students taught with CBI acquired teaching skills more effectively. Therefore, H_{01} is rejected,confirming that competency based instruction significantly improves teaching skill acquisition compared to the conventional lecture method.

Discussion of Findings

The findings of this study clearly demonstrate that competency based instruction significantly enhances teaching skill acquisition among business education students compared to lecture method. The results from research question one revealed that students strongly agreed that competency-based teaching improves their teaching skills, as reflected in the high mean score of 4.14. This finding aligns with the study of Okoye and Michael (2024), who reported that competency based training equips

learners with practical and industry relevant skills, thereby improving their overall competence. Similarly, the preference for competency based instruction due to active participation and practical exposure supports the findings of Olawoyin and Adeniji (2025), who emphasized that experiential learning strategies enhance student engagement and skill acquisition.

Furthermore, the results of Research Question Two indicated that competency based instruction improves students' understanding and mastery of teaching skills through repeated practice, feedback, and individualized learning pace, with an overall mean of 4.15. This supports the findings of Nwalado and Eshemogie (2023), who highlighted the importance of instructional implementation skills and practical engagement in achieving effective teaching outcomes. The emphasis on feedback and continuous assessment in this study also aligns with Ayalew et al. (2024), who highpoints the need for proper understanding and application of competency based education for effective results.

In addition, the significant result of the t-test ($t = 5.892$, $p < 0.05$) supports the findings of Nwalado and Eshemogie (2023), who identified gaps in practical teaching competencies and emphasized the need for improved instructional strategies likewise the higher performance of students exposed to competency based instruction demonstrates its superiority over lecture methods. However, the concerns raised by Ayalew et al. (2024) regarding inconsistencies in the understanding and implementation of competency based education highlight potential challenges that may affect its effectiveness if not properly addressed.

Conclusion

Based on the results and findings of this study, it is concluded that competency based teaching has a significant positive impact on students' acquisition and mastery of teaching skills compared to the traditional lecture method. The descriptive analysis showed that students perceive competency based instruction more effective in enhancing both practical engagement and understanding of teaching skills, and skill acquisition and mastery. The findings also shows that students valued active participation, repetitive practice, feedback, and selfpaced learning as key features that improved their confidence and preparedness while the t-test results demonstrated a statistically significant difference in posttest teaching skill scores between students taught using competency based instruction and those taught through lectures confirming that practical handson approaches yield better outcomes compare to lecture method.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

1. Colleges of education should integrate competency based teaching methods into their curriculum to provide students with more practical, hands-on experiences that enhance teaching skill acquisition and classroom preparedness.
2. Lecturers should incorporate frequent teaching practice sessions, assessments, and constructive feedback to reinforce learning and mastery of teaching skills, allowing students to build confidence and competence gradually.
3. Instructional strategies should be promotedin other to enhance student engagement and allow learners to progress at their own pace, ensuring that each student fully understands and can apply teaching skills effectively before entering the classroom.

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INFLUENCE OF INNOVATIVE PEDAGOGIES IN BUSINESS AND ENTREPRENEURSHIP EDUCATION IN TERTIARY INSTITUTIONS IN SOUTH EAST NIGERIA

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Abstract

This study investigated the influence of innovative pedagogies on business and entrepreneurship education in tertiary institutions in South East Nigeria. The study was guided by three research questions and three null hypotheses tested at 0.05 level of significance. The study adopted a descriptive survey research design. The population of the study comprised 8,426 students and lecturers in business and entrepreneurship education programmes in tertiary institutions in South East Nigeria, while a sample of 420 respondents was selected using a multistage sampling technique. The instrument for data collection was a structured questionnaire titled *Innovative Pedagogies and Entrepreneurship Education Questionnaire" (IPEEQ)*, which w*as validated by experts and had a reliability coefficient of 0.84 using Cronbach Alpha. Data were analyzed using mean, standard deviation, Pearson Product Moment Correlation, and simple regression analysis. The findings revealed that innovative pedagogies are utilized to a high extent in business and entrepreneurship education in tertiary institutions in South East Nigeria. The study further showed that innovative pedagogies significantly influence students' entrepreneurial skill acquisition and enhance their engagement and participation in learning activities. It was also found that there is a significant positive relationship between innovative pedagogies and effective business and entrepreneurship education. Based on the findings, it was concluded that innovative pedagogies significantly improve business and entrepreneurship education outcomes by promoting practical skill acquisition, active participation, and improved learning effectiveness. It was recommended that lecturers should adopt innovative teaching strategies, while institutions and policymakers should provide adequate instructional resources and training to support effective implementation.*

Keywords: Innovative Pedagogies, Entrepreneurship Education, Business Education, Tertiary Institutions, Entrepreneurial Skills.

Introduction

Business and entrepreneurship education has become increasingly important in tertiary institutions because it equips students with practical skills, innovative thinking, and entrepreneurial competencies needed for self-reliance and economic development. In recent years, there has been growing emphasis on the use of innovative pedagogies such as project-based learning, collaborative learning, experiential learning, digital instruction, and problem-solving approaches in teaching business and entrepreneurship courses. These learner-centered instructional strategies are designed to enhance creativity, critical thinking, innovation, and practical application of knowledge among students. However, despite the adoption of entrepreneurship education programmes in many tertiary institutions in South East Nigeria, concerns still exist regarding graduates' limited entrepreneurial skills, low creativity, and inadequate preparedness for self-employment. This situation has raised questions about the effectiveness of traditional teaching methods commonly used in business and entrepreneurship education. Consequently, there is a growing need to investigate the influence of innovative pedagogies on business and entrepreneurship education in tertiary institutions in South East Nigeria.

Business and entrepreneurship education has become increasingly important in tertiary institutions because it equips students with practical skills, innovative thinking, and entrepreneurial competencies needed for self-reliance and economic development. According to UNESCO (2022),

higher education institutions are expected to produce graduates who can contribute meaningfully to economic growth and sustainable development. In recent years, there has been growing emphasis on the use of innovative pedagogies such as project-based learning, collaborative learning, experiential learning, digital instruction, and problem-solving approaches in teaching business and entrepreneurship courses (Darling-Hammond et al., 2020). These learner-centered instructional strategies are designed to enhance creativity, critical thinking, innovation, and the practical application of knowledge among students (Hattie, 2023). However, despite the introduction of entrepreneurship education programmes in many tertiary institutions in South East Nigeria, concerns still exist regarding graduates' limited entrepreneurial skills, low creativity, and inadequate preparedness for self-employment (Federal Republic of Nigeria, 2019). Many graduates still depend heavily on white-collar jobs and often struggle to translate classroom knowledge into practical business activities (Kuratko, 2020). This situation has raised questions about the effectiveness of the traditional teaching methods commonly used in business and entrepreneurship education, thereby creating the need to examine the influence of innovative pedagogies in tertiary institutions within the region.

Business and entrepreneurship education has become an essential component of higher education because it equips students with practical knowledge, managerial competencies, and entrepreneurial skills required for economic productivity and self-reliance (Bygrave & Zacharakis, 2019). The increasing rate of unemployment and economic uncertainty has made entrepreneurship education more relevant in preparing graduates to become job creators rather than job seekers (UNESCO, 2024). Business and entrepreneurship education focuses on developing students' abilities in opportunity identification, decision-making, creativity, leadership, innovation, and risk management, all of which are necessary for successful business operations and national development (Fayolle & Gailly, 2021). Through these programmes, students are expected to acquire both theoretical understanding and practical experiences that can help them establish and manage business ventures effectively (European Commission, 2022). Unfortunately, many graduates from tertiary institutions still lack the practical entrepreneurial competencies needed in modern business environments (Federal Republic of Nigeria, 2019). In many classrooms, teaching is still dominated by theoretical explanations and memorization rather than practical engagement and innovation (Bates, 2024). This indicates a disconnect between the goals of entrepreneurship education and the actual teaching practices used in many tertiary institutions.

Innovative pedagogies refer to modern learner-centered instructional approaches that encourage active participation, creativity, collaboration, critical thinking, and practical problem-solving during the learning process (Fullan & Langworthy, 2018). These pedagogies include project-based learning, experiential learning, flipped classroom strategy, collaborative learning, inquiry-based learning, simulations, and digital instruction (Darling-Hammond et al., 2020). Unlike conventional lecture methods where students passively receive information, innovative pedagogies allow learners to interact actively with learning tasks and real-life situations (Hattie, 2023). In business and entrepreneurship education, these approaches help students to develop practical business ideas, entrepreneurial mindsets, communication skills, and decision-making abilities through hands-on experiences and collaborative activities (Kuratko, 2020). For instance, students may engage in business simulations, group projects, case studies, and practical problem-solving activities that mirror real entrepreneurial situations (Fayolle & Gailly, 2021). Despite the recognized benefits of innovative pedagogies, many lecturers in tertiary institutions still rely heavily on traditional lecture methods due to inadequate training, limited technological facilities, and resistance to instructional change (Bates, 2024). As a result, students may graduate without acquiring the practical entrepreneurial experiences needed for effective business management and innovation.

Business education is designed to prepare learners for careers in commerce, management, accounting, marketing, finance, and entrepreneurship by equipping them with vocational and managerial competencies needed in the world of work (Bygrave & Zacharakis, 2019). Entrepreneurship education specifically focuses on developing entrepreneurial attitudes, creativity, innovation, and the ability to identify and utilize business opportunities successfully (Fayolle & Gailly, 2021). The integration of innovative pedagogies into business and entrepreneurship education has been widely recognized as an effective strategy for improving students' engagement, motivation, creativity, and practical learning outcomes (Darling-Hammond et al., 2020). Studies have shown that students understand entrepreneurial concepts more effectively when they participate in collaborative projects, simulations, experiential learning, and case-study activities rather than depending solely on theoretical classroom instruction (Hattie, 2023). However, many tertiary institutions in South East Nigeria continue to face challenges such as inadequate instructional resources, poor technological infrastructure, overcrowded classrooms, and insufficient lecturer training in innovative teaching approaches (Federal Republic of

Nigeria, 2019). These challenges often limit the effective implementation of innovative pedagogies in business and entrepreneurship education, thereby affecting students' acquisition of entrepreneurial competencies (UNESCO, 2024).

Tertiary institutions play a vital role in manpower development, innovation, and entrepreneurial capacity building because they serve as centers for advanced learning and professional preparation (Federal Republic of Nigeria, 2019). Universities, polytechnics, and colleges of education are expected to equip students with employable skills, creativity, and entrepreneurial competencies capable of promoting economic growth and reducing unemployment (UNESCO, 2022). In recent years, educational reforms have emphasized the integration of entrepreneurship education into tertiary institution curricula to encourage self-employment, innovation, and sustainable development among graduates (European Commission, 2022). Despite these policy efforts, many graduates still struggle to apply entrepreneurial knowledge practically after graduation (Kuratko, 2020). One major issue identified in literature is the continued dominance of teacher-centered instructional methods that limit students' opportunities for creativity, experimentation, innovation, and practical business engagement (Fullan & Langworthy, 2018). Furthermore, most existing studies on innovative pedagogies have focused largely on general academic achievement, science education, or technology integration, with limited empirical attention given to business and entrepreneurship education in tertiary institutions within South East Nigeria (Bates, 2024). In addition, many previous studies were conducted outside the Nigerian context, making it difficult to generalize their findings to local institutions (Darling-Hammond et al., 2020). This contextual and empirical gap therefore creates the need for the present study on the influence of innovative pedagogies in business and entrepreneurship education in tertiary institutions in South East Nigeria.

Purpose of the Study

The main purpose of this study is to investigate the influence of innovative pedagogies in business and entrepreneurship education in tertiary institutions in South East Nigeria.

Specifically, the study seeks to:

1. determine the extent to which innovative pedagogies are utilized in business and entrepreneurship education in tertiary institutions in South East Nigeria;
2. examine the influence of innovative pedagogies on students' entrepreneurial skill acquisition in tertiary institutions in South East Nigeria;
3. determine the influence of innovative pedagogies on students' engagement and participation in business and entrepreneurship education in tertiary institutions in South East Nigeria.

Research Questions

The following research questions will guide the study:

1. To what extent are innovative pedagogies utilized in business and entrepreneurship education in tertiary institutions in South East Nigeria?
2. What is the influence of innovative pedagogies on students' entrepreneurial skill acquisition in tertiary institutions in South East Nigeria?
3. What is the influence of innovative pedagogies on students' engagement and participation in business and entrepreneurship education in tertiary institutions in South East Nigeria?

Hypotheses

The following null hypotheses will be tested at 0.05 level of significance:

HO1: There is no significant influence of innovative pedagogies on students' entrepreneurial skill acquisition in tertiary institutions in South East Nigeria.

HO2: There is no significant influence of innovative pedagogies on students' engagement and participation in business and entrepreneurship education in tertiary institutions in South East Nigeria.

HO3: There is no significant relationship between the utilization of innovative pedagogies and effective business and entrepreneurship education in tertiary institutions in South East Nigeria.

Methodology

Design

The study adopted a descriptive survey research design. The design was considered appropriate because it enabled the researcher to obtain information from respondents on the influence of innovative pedagogies in business and entrepreneurship education without manipulating any variable. The descriptive survey design also provided the opportunity to study opinions, experiences, and practices of students and lecturers in their natural educational setting.

Area of the Study

The study was conducted in tertiary institutions in South East Nigeria. The South East geopolitical zone comprises Abia, Anambra, Ebonyi, Enugu, and Imo States. The area was selected because tertiary institutions within the region have increasingly integrated entrepreneurship education into their

academic programmes in response to rising unemployment and the need for entrepreneurial skill development among graduates.

Population of the Study

The population of the study consisted of all students and lecturers in the Departments of Business Education and Entrepreneurship Education in public tertiary institutions in South East Nigeria. The estimated population comprised 8,426 respondents drawn from universities, polytechnics, and colleges of education within the study area.

Sample and Sampling Technique

A sample size of 420 respondents was used for the study. The sample consisted of 360 students and 60 lecturers selected from selected tertiary institutions in South East Nigeria.

A multistage sampling technique was adopted for the study. First, purposive sampling technique was used to select tertiary institutions offering business and entrepreneurship education programmes. Secondly, stratified sampling technique was used to group respondents into lecturers and students. Finally, simple random sampling technique was used to select the respondents from each stratum to ensure fair representation.

Instrument for Data Collection

The instrument used for data collection was a structured questionnaire titled *Innovative Pedagogies and Entrepreneurship Education Questionnaire (IPEEQ)* developed by the researcher.

The questionnaire was divided into two sections:

Section A: Demographic information of respondents such as gender, institution type, and department.

Section B: Items on innovative pedagogies, entrepreneurial skill acquisition, students' engagement, participation, and effectiveness of business and entrepreneurship education.

The items were structured on a four-point Likert scale of:

Strongly Agree (SA) – 4 points, Agree (A) – 3 points, Disagree (D) – 2 points, Strongly Disagree (SD) – 1 point.

Validity of the Instrument

The instrument was subjected to face and content validation by experts in Business Education, Entrepreneurship Education, and Measurement and Evaluation from recognized tertiary institutions. The experts examined the instrument for clarity, relevance, adequacy of content coverage, and suitability to the objectives of the study. Their observations and corrections were used to improve the final version of the questionnaire.

Reliability of the Instrument

The reliability of the instrument was established through a pilot study conducted outside the study area using respondents with similar characteristics to the actual participants. The data obtained were analyzed using Cronbach Alpha reliability method. A reliability coefficient of 0.84 was obtained, indicating that the instrument was reliable and suitable for the study.

Method of Data Collection

The researcher, with the assistance of two trained research assistants, administered copies of the questionnaire directly to the respondents in their various institutions. The direct administration method helped to ensure a high rate of return and proper completion of the questionnaire items.

Method of Data Analysis

Data collected from the study were analyzed using mean and standard deviation to answer the research questions. The hypotheses were tested using Pearson Product Moment Correlation (PPMC) and simple regression analysis at 0.05 level of significance. Mean and standard deviation were used to determine the extent of respondents' agreement, while inferential statistics were used to determine the influence and relationship between the variables under investigation.

Result

The results of the study are presented according to the research questions and hypotheses that guided the study. The analysis was based on data collected from 420 respondents in tertiary institutions in South East Nigeria.

Research Question One: What is the extent of utilization of innovative pedagogies in business and entrepreneurship education in tertiary institutions in South East Nigeria?

Table 1: Mean and Standard Deviation on the Utilization of Innovative Pedagogies (N = 420)

Innovative Pedagogies	Mean	SD	Decision
Project-based learning is used during instruction	3.21	0.74	Agreed
Collaborative learning is encouraged in class activities	3.14	0.81	Agreed
Digital instructional tools are integrated into teaching	3.08	0.79	Agreed
Experiential learning activities are used frequently	2.96	0.85	Agreed

Innovative Pedagogies	Mean	SD	Decision
Simulation and practical exercises are utilized	3.02	0.77	Agreed
Grand Mean	**3.08**	**0.79**	**Agreed**

The result in Table 1 indicates that innovative pedagogies are utilized to a high extent in business and entrepreneurship education in tertiary institutions in South East Nigeria, with a grand mean score of 3.08.

Hypothesis One: There is no significant influence of innovative pedagogies on students' entrepreneurial skill acquisition in tertiary institutions in South East Nigeria.

Table 2: Simple Regression Analysis on Innovative Pedagogies and Entrepreneurial Skill Acquisition

Source	Beta	R^2	F	Sig.
Innovative Pedagogies → Entrepreneurial Skill Acquisition	0.68	0.46	156.42	0.000

The result in Table 3 shows that innovative pedagogies significantly influenced students' entrepreneurial skill acquisition ($\beta = 0.68$, $p < 0.05$). The null hypothesis was rejected.

Research Question Two: What is the influence of innovative pedagogies on students' entrepreneurial skill acquisition in tertiary institutions in South East Nigeria?

Table 3: Mean and Standard Deviation on Innovative Pedagogies and Entrepreneurial Skill Acquisition **(N = 420)**

Variable	N	Mean	SD
Innovative Pedagogies	420	3.11	0.76
Entrepreneurial Skill Acquisition	420	3.26	0.71

The result in Table 2 shows that innovative pedagogies positively influenced students' entrepreneurial skill acquisition, as respondents recorded high mean scores in both variables.

Hypothesis Two: There is no significant influence of innovative pedagogies on students' engagement and participation in business and entrepreneurship education in tertiary institutions in South East Nigeria.

Table 4: Pearson Product Moment Correlation Analysis

Variables	N	r-value	Sig. (p)
Innovative Pedagogies and Students' Engagement	420	0.71	0.000

The result in Table 4 reveals a significant positive relationship between innovative pedagogies and students' engagement and participation ($r = 0.71$, $p < 0.05$). Therefore, the null hypothesis was rejected.

Research Question Three: What is the influence of innovative pedagogies on students' engagement and participation in business and entrepreneurship education in tertiary institutions in South East Nigeria?

Table 5: Mean and Standard Deviation on Students' Engagement and Participation (N = 420)

Variable	N	Mean	SD
Students taught with innovative pedagogies	420	3.34	0.69
Students' engagement and participation	420	3.29	0.73

The result in Table 5 indicates that innovative pedagogies positively improved students' engagement and participation in business and entrepreneurship education.

Hypothesis Three: There is no significant relationship between the utilization of innovative pedagogies and effective business and entrepreneurship education in tertiary institutions in South East Nigeria.

Table 6: Regression Analysis on Innovative Pedagogies and Effective Entrepreneurship Education

Source	Beta	R^2	F	Sig.
Innovative Pedagogies → Effective Entrepreneurship Education	0.73	0.53	188.57	0.000

The result in Table 6 indicates that innovative pedagogies significantly influenced effective business and entrepreneurship education in tertiary institutions in South East Nigeria ($\beta = 0.73$, $p < 0.05$). The null hypothesis was rejected.

Discussion

The findings of the study revealed that innovative pedagogies significantly influence business and entrepreneurship education in tertiary institutions in South East Nigeria. The study showed that the use of learner-centered instructional approaches such as project-based learning, collaborative learning, experiential learning, simulation, and digital instruction improved students' entrepreneurial skill acquisition, engagement, and participation in learning activities. This finding suggests that students learn business and entrepreneurship concepts more effectively when they are actively involved in practical and interactive learning experiences rather than depending solely on conventional lecture methods. The finding agrees with Fullan and Langworthy (2018), who reported that innovative pedagogies promote deeper learning, creativity, collaboration, and problem-solving skills among learners. Similarly, Darling-Hammond et al. (2020) observed that learner-centered instructional approaches enhance students' active participation and practical understanding of course content.

The study further revealed that innovative pedagogies positively influence students' entrepreneurial skill acquisition in tertiary institutions. Students exposed to innovative teaching approaches demonstrated better entrepreneurial competencies such as creativity, decision-making, communication skills, leadership abilities, and problem-solving skills. This finding is in line with the work of Donald Kuratko, who emphasized that entrepreneurship education becomes more effective when students are exposed to experiential and practice-oriented learning activities capable of developing entrepreneurial mindsets. Fayolle and Gailly (2021) also found that innovative teaching approaches help students connect theoretical knowledge with real business experiences, thereby improving entrepreneurial competence and self-reliance. The finding also supports Bates (2024), who argued that digital and interactive instructional methods improve students' practical learning outcomes and innovation capacity in higher education.

The findings also indicated that innovative pedagogies significantly improve students' engagement and participation in business and entrepreneurship education. Students taught through collaborative projects, simulations, and inquiry-based activities showed greater interest, motivation, and classroom participation than those exposed mainly to traditional lecture methods. This result supports the findings of Hattie (2023), who noted that active learning strategies increase students' motivation, participation, and retention of knowledge. In the same vein, Darling-Hammond et al. (2020) reported that innovative pedagogies create supportive and engaging learning environments that encourage students to interact actively with instructional activities. The finding equally aligns with UNESCO (2024), which emphasized that student-centered instructional methods improve learners' participation and practical application of knowledge in entrepreneurship education.

Furthermore, the study established a significant relationship between the utilization of innovative pedagogies and effective business and entrepreneurship education in tertiary institutions. This implies that the effectiveness of entrepreneurship education largely depends on the instructional methods adopted by lecturers during teaching and learning processes. Where innovative pedagogies are effectively utilized, students tend to acquire more practical business knowledge and entrepreneurial competencies. This finding agrees with the position of European Commission (2022), which stressed that entrepreneurship education requires practical and innovative instructional approaches capable of preparing learners for real business environments. The finding also supports the views of Bygrave and Zacharakis (2019), who maintained that entrepreneurship education should move beyond theoretical instruction to include practical learning experiences that stimulate creativity and enterprise development.

However, despite the positive influence of innovative pedagogies identified in the study, the findings also suggest that challenges such as inadequate instructional facilities, poor technological infrastructure, limited funding, and insufficient lecturer training may hinder the effective implementation of innovative teaching approaches in tertiary institutions. This observation agrees with Federal Republic of Nigeria (2019), which reported that many tertiary institutions still face infrastructural and technological challenges affecting effective curriculum implementation. The finding further supports Bates (2024), who noted that successful implementation of innovative pedagogies depends largely on institutional support, availability of learning resources, and lecturers' competence in modern instructional practices.

Overall, the findings of the present study contribute to existing literature by providing empirical evidence on the influence of innovative pedagogies in business and entrepreneurship education within tertiary institutions in South East Nigeria. While many previous studies focused on general classroom instruction and academic achievement, the present study specifically examined innovative pedagogies within the context of entrepreneurship education. This therefore fills an important contextual gap in literature and highlights the importance of adopting innovative instructional approaches for improving entrepreneurial learning outcomes in tertiary institutions.

Conclusion

Based on the findings of the study, it was concluded that innovative pedagogies have significant positive influence on business and entrepreneurship education in tertiary institutions in South East Nigeria. The study established that learner-centered instructional approaches such as project-based learning, collaborative learning, experiential learning, simulation, and digital instruction enhance students' entrepreneurial skill acquisition, classroom engagement, participation, and overall learning outcomes.

The study also concluded that innovative pedagogies improve students' practical understanding of business and entrepreneurship concepts by creating interactive and experience-based learning environments. Students exposed to innovative instructional approaches demonstrated better creativity, communication skills, problem-solving abilities, and entrepreneurial competencies than those taught mainly through traditional lecture methods. This indicates that effective entrepreneurship education requires instructional strategies that actively involve learners in practical and collaborative learning activities.

Furthermore, the study concluded that the effectiveness of business and entrepreneurship education in tertiary institutions largely depends on the extent to which innovative pedagogies are utilized during instruction. Although the use of innovative pedagogies contributes positively to entrepreneurship education, challenges such as inadequate technological facilities, limited instructional resources, and insufficient lecturer training may hinder effective implementation.

Therefore, the study concludes that the adoption of innovative pedagogies is essential for improving the quality of business and entrepreneurship education and for preparing students with the entrepreneurial competencies needed for self-reliance, innovation, and sustainable economic development in South East Nigeria.

Recommendation

Based on the findings of the study, the following recommendations were made:

1. Lecturers in business and entrepreneurship education should adopt innovative pedagogies such as project-based learning, experiential learning, collaborative learning, simulation, and digital instruction to enhance students' entrepreneurial skill acquisition and active participation in learning activities.
2. Tertiary institution administrators should provide adequate instructional facilities, technological resources, and supportive learning environments that will encourage the effective implementation of innovative pedagogies in business and entrepreneurship education.
3. Government and educational stakeholders should organize regular workshops, seminars, and professional development programmes to train lecturers on the effective use of innovative teaching approaches and modern instructional technologies.

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SUB-THEME 7
INNOVATIVE PEDAGOGIES IN BUSINESS AND ENTREPRENEURSHIP EDUCATION

UTILIZATION OF E-LEARNING IN BUSINESS EDUCATION PROGRAMS IN FEDERAL INSTITUTIONS, KOGI STATE

By

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Abstract

This study examined the Utilization of E-learning Resources in Business Education Programs at the Federal Institutions Kogi State. The objectives were to determine the extent utilization of e-learning resources, and evaluate their impact on teaching and learning outcomes. A descriptive survey design was adopted, and data were collected from 120 respondents using structured questionnaire. The data were analyzed using descriptive statistics and one-sample t-tests at 0.05 level of significance. Findings revealed that e-learning resources were inadequately available, with most respondents reporting insufficient facilities and limited institutional support. Major challenges identified included epileptic power supply, poor facility maintenance, low digital literacy, and restricted access to ICT tools. Despite these constraints, the study established that the utilization of available e-learning resources significantly improved students' personalized learning, time management, and academic achievement. It was also found that e-learning resources in Federal Institutions Kogi State positively and significantly influenced teaching effectiveness and learning outcomes in Business Education. The study concluded that e-learning resources hold great potential for transforming Business Education if adequately provided and effectively integrated. It recommended increased investment in ICT facilities, regular training for lecturers and students, adoption of alternative power sources, and implementation of institutional policies to promote the use of e-learning in Business Education.
Keywords: *Utilization, E-Learning, Federal Institutions and Kogi State*

Introduction

Since educational institutions started experimenting with technology to improve learning in the 1960s, e-learning has its origins in the early development of computer-based instruction (Nichols, 2023). A major turning point was the internet's rapid development in the 1990s, which resulted in the widespread use of virtual classrooms, digital course materials, and online learning platforms (Sangríguez, Vlachopoulos, & Cabrera, 2022). Technology is a key factor in the transformation of conventional teaching and learning methods in the ever-changing field of education. E-learning, or the use of electronic technologies to offer educational information and enhance learning, is one of the most significant technological advancements of recent years. E-learning in business education is a vital instrument for meeting the increasing need for qualified workers in the business sector since it provides flexibility, accessibility, and the possibility of customized learning experiences.

In order to boost student participation and information transmission, federal universities, polytechnics, and colleges in Nigeria started incorporating digital tools into their curricula in the early 2000s (Okonkwo & Osuji, 2019). There is a growing interest in incorporating e-learning methodologies into the curriculum in Nigeria, especially in Kogi State, as a result of the need to modernize education in accordance with worldwide trends. To improve the educational experience, federal institutions, like as universities and polytechnics, have started investigating several e-learning systems. However, a number of issues, including poor infrastructure, low digital literacy, and student and teacher resistance to change, continue to raise concerns about the efficient use of e-learning in business education programs. As the state works to give students the skills they need to prosper in an increasingly globalized economy, the use of e-learning in business education programs at Kogi State's federal institutions is especially important. Considering that Kogi State is home to a number of federal establishments, including the Federal College of Education, Kogi State Polytechnic, and Federal University Lokoja (FULokoja). By providing students with access to a wider variety of instructional resources and interactive learning settings, the adoption and integration of e-learning can significantly improve business education (Oladipupo, A. D., E-learning has the potential to completely transform business education in the state, but there are certain challenges.These establishments have continuously sought to offer educators in a variety of fields, including business education, high-quality instruction (Adebayo, 2018). The college has realized the value of e-learning tools in updating its business education programs in light of the growing global trend toward digital learning.

Inadequate infrastructure, a lack of financing, and educators' and students' reluctance to embrace technology have all been obstacles to the incorporation of these tools (Oladunjoye & Omemu, 2020). Technology's quick development has drastically changed the educational scene, and e-learning is now a crucial part of contemporary teaching strategies. E-learning is the process of facilitating teaching and learning via the use of digital tools and online resources (Nichols, 2003). It offers a dynamic and adaptable learning environment that raises student interest and strengthens recall of the material. It has been acknowledged that incorporating e-learning materials into higher education is essential to enhancing the quality and accessibility of education (Nwosu, & Okafor, 2022).The goal of business education as a subject is to give students the practical information and abilities needed for company operations, management, and entrepreneurship (Oladipupo., Olayemi,., & Adebisi, 2023).

These establishments have continuously sought to offer educators in a variety of fields, including business education, high-quality training. The college has realized the value of e-learning tools in updating its business education programs in light of the growing global trend toward digital learning. However, there have been obstacles to the integration of these tools, including as poor infrastructure, a lack of finance, and teachers' and students' reluctance to embrace technology (Oladunjoye & Omemu, 2020).Technology's quick development has drastically changed the educational scene, and e-learning is now a crucial part of contemporary teaching strategies. Utilizing digital technologies and online resources to support instruction is known as e-learning. According to Oladunjoye and Omemu (2020), a number of Nigerian educational institutions, including Federal College of Education, Okene, face challenges such as uneven access to electricity, inadequate funding for technological advancements, and resistance to change among teachers who are used to conventional teaching methods. The use of electronic technology to support the teaching and learning process is known as e-learning. As stated by Nichols (2023).

Therefore, this study aims to investigate how much e-learning is used in business education programs in federal institutions in Kogi State. It does this by looking at the factors that affect its adoption, the difficulties encountered, and the perceived advantages of e-learning in the context of business education.

Statement of Problem

According to Afolabi (2021). Business education programs must change to keep up with the speed at which technology is developing and the modern business world's growing reliance on digital platforms. However, several federal institutions in Kogi State have yet to fully utilize e-learning despite its obvious benefits. With differing degrees of infrastructure, adoption, and proficiency among teachers and students, the usage of e-learning technologies in these institutions is still dispersed and uneven. As a result, there is a discrepancy in the caliber and efficacy of the business education programs that are provided to students. The results of the investigation showed that the necessary e-learning infrastructure, including computers, reliable internet connectivity, and well-stocked digital libraries, is not adequately provided. Due to inadequate institutional support and bad connectivity, many instructors and students find it difficult to use trustworthy online learning tools.

Furthermore, a lot of instructors and students view digital learning as an additional tool rather than an essential part of education. Additionally, the college is unable to upgrade its current facilities, invest in cutting-edge e-learning tools, or offer users technical support due to financial constraints (Adeoye, Oluwole, & Blessing, 2013). Students are a disadvantage when compared to their peers in technologically advanced schools since the institution cannot close the gap between traditional and digital learning without sufficient funding. In light of this, the study's objectives are to examine the college's current e-learning resources, pinpoint major obstacles to their efficient use, and suggest methods for enhancing e-learning integration in business education. The underutilization or inefficient use of e-learning in business education programs may be caused by a number of issues. Poor technology infrastructure, restricted access to dependable internet services, poor training for teachers, and opposition to change from both teachers and students used to conventional teaching techniques are some of these issues. Furthermore, the effective use of these educational technologies may be further hampered by the absence of explicit regulations and frameworks for the incorporation of e-learning into the curriculum (Oladipupo., Olayemi, & Adebisi, 2023).

Therefore, the purpose of this study is to determine the degree to which e-learning is used in business education programs in federal institutions in Kogi State, to pinpoint the obstacles that instructors and students encounter when implementing e-learning, and to look into the variables that might affect the effective incorporation of e-learning into the teaching and learning process.

Objectives of Study

The aim of this study is to assess the utilization and the teaching and learning outcomes of e-learning resources in the Business Education programs at Federal Institutions, Kogi State.

1. To determine the extent to which e-learning resources are available for the Business Education Programs at the Federal Institutions, Kogi State.
2. To examine the impact of e-learning resources on teaching and learning outcomes of Business Education Programs in Federal Institutions, Kogi State..

Research Questions

Based on the objectives of the study, the following research questions are formulated:

v. To what extent are E-learning resources available for the Business Education programs at the Federal Institutions, Kogi State?
vi. How do E-learning resources impact teaching and learning outcomes in the Business Education programs in Federal Institutions, Kogi State?

Research Hypotheses

The Utilization of E-learning Resources in Business Education varies significantly across different levels of studies in various institutions:

$\mathbf{H_{01}}$ There is no relationship between the Utilization of E-learning Resources and the Business Education Programs at the Federal Institutions, Kogi State.

$\mathbf{H_{02}}$ There is no relationship between E-learning Resources and Learning Outcomes in the Business Education Programs in Kogi State.

METHODOLOGY

This study employed a descriptive survey research design. In order for the research to assess the data collected from a representative sample of the population and to depict the situation as it is, this method guarantees meticulous documentation of data gathering. Only the Department of Business Education at Federal University, Polytechnics, and the College of Education in Kogi State will make up the study's population. The department of business education at the federal universities in Kogi State had roughly 1,200 students.

This information is based on the Business Education Department's admittance lists for students at levels 100 through 400. The respondents for this survey will only be students. A basic random procedure was used in this study to pick a small fraction of responders to reflect the entire study population. For this study, a total of 120 students were selected as the sample size. The 100 and 400 level students in each institution's business education department made up the study's sample. Respondents were given the questionnaire in person, with great care, and it was collected for analysis. In order to record a 100% response rate from the respondents, the questionnaire was recovered from them as soon as it was finished. The mean and percentage were used to assess the gathered data. The mean and frequency tables were selected due to their ease of use in presenting pertinent information. The one-sample t-test at the 0.05 level of significance was used to assess the null hypotheses developed for this investigation. The rule of thumb is to reject H0 (significant relationship/effect) if the p-value is less than 0.05. Fail to reject H0 (no significant relationship/effect) if the p-value is greater than 0.05. The obtained data was presented as yes or no. In research technique, a decision rule directs the researcher's interpretation of the data analysis to determine whether the replies show agreement, disagreement, or neutrality regarding a research topic. A mean benchmark of 2.50 on a 4-point Likert scale was chosen as the choice rule after the data was analyzed. A mean score of 2.50 or higher was considered "Agreed," whereas a mean score of less than 2.50 was considered "Disagreed."

Results

Research Question 1: Extent to which e-learning resources are been Utilized for Business Education programs at the Federal Institutions, Kogi State

Table 1: Extent to which e-learning resources are utilized for Business Education programs at the Federal Institutions, Kogi State

S/N	UTILIZATION OF E-LEARNING RESOURCES	SA		A		D		SD		$\bar{x}$	Remark
		F	FX	F	FX	F	FX	F	FX	(x)	
3.	There is utilization of E-learning facilities for Business Education programs in your school	18	**72**	21	**63**	37	**22**	44	**44**	1.68	Rejected
4.	There is adequate infrastructures of E-learning for Business Education programs in your school.	29	**116**	18	**54**	42	**84**	31	**31**	2.38	Rejected
5.	The school management ensures students' access to the E-learning facilities for the teaching and learning of Business Education	26	**104**	14	**42**	38	**76**	42	**42**	2.2	Rejected
6.	Utilization of E-learning facilities for Business Education programs are enough for students' and teachers' use	43	**172**	33	**99**	21	**42**	23	**14**	2.73	Accepted
7.	There is always provision for standby power supply for in the E-Library or Computer Lab	11	**44**	19	**57**	39	**78**	51	**51**	1.92	Rejected
GRAND MEAN										**2.18**	

Source: Survey, 2025

Table 1: The above clearly reveals that 18 of the total respondents strongly agree that 21 of the respondents concur that their school offers e-learning resources for business education programs. Conversely, 44 people strongly disagree with the assertion, and 37 respondents overall disagree. The item is rejected, as indicated by the mean score of 1.68. Additionally, 18 respondents agree with the statement that their institution has a sufficient e-learning infrastructure for business education programs, and 29 respondents strongly agree. Conversely, 31 respondents strongly disagree with the statement, and 42 people overall disagree. The item is rejected as a result of the mean score of 2.38. In the same table, 14 respondents agree with the assertion that the school administration guarantees students' access to e-learning resources for business education instruction, while 26 respondents strongly agree. Conversely, 42 people strongly disagree with the assertion, and 38 respondents overall disagree. The item is rejected, as indicated by the mean score of 2.20.

Furthermore, 33 respondents agree with the assertion that there are sufficient e-learning resources for Business Education programs for both professors and students, while 43 respondents strongly agree. Conversely, 23 people strongly disagree with the statement, and 21 respondents overall disagree. This results in a mean score of 2.73, indicating acceptance of the item. Lastly, 19 respondents agreed with the statement that a standby power source is always available in the computer lab or e-library, while 11 respondents strongly agreed. Conversely, 51 respondents strongly disagree with the assertion, and 39 respondents overall disagree. The item is rejected as a result of the mean score of 1.92.

The grand mean of 2.18 indicates that, in general, the respondents disagreed with the majority of the statements made about the accessibility, sufficiency, and availability of e-learning resources for Business Education programs in their schools.

Question 2: Impact of e-learning resources on teaching and learning outcomes among the Students of Business Education in Federal Institutions, Kogi State.

Table 2: Impact of e-learning resources on teaching and learning outcomes among the students of Business Education in Federal Institutions, Kogi State.

S/N	IMPACT OF E-LEARNING RESOURCES	SA		A		D		SD		$\bar{x}$	Remark
		F	FX	F	FX	F	FX	F	FX	(x)	

7.	The utilization of E-learning resources in Federal Institutions have improved students personalized learning	40	**160**	42	**126**	16	**22**	22	**22**	2.75 Accepted
8.	The utilization of E-learning resources has afforded the students the opportunity to access unlimited information in their field of study which has in turn improve their academic achievement	58	**232**	40	**120**	15	**30**	7	**7**	3.24 Accepted
9.	The utilization of E-learning resources has encouraged good time management as it makes students have access to variety of information they need within a short period of time such that they utilize their time productively in other academic exercises in your school.	40	**160**	54	**162**	17	**34**	9	**9**	3.04 Accepted
10.	The utilization of E-learning resources has led to improvement in Business Education students' academic achievement.	40	**160**	36	**108**	21	**42**	23	**14**	2.70 Accepted
11.	Despite the advantage of the utilization of E-learning resources, it has made students become laziness to study as they over-rely on the supply of the resources made available by the use of computer.	36	**144**	31	**93**	39	**78**	56	**56**	3.09 Accepted
GRAND MEAN										**2.97**

Source: Survey, 2025

Table 2: The above clearly reveals that 40 of the total respondents strongly agree that the utilization of e-learning resources in federal institutions, kogi state have improved students' personalized learning, while 42 of the respondents agree with the statement. Conversely, 16 out of all respondents disagree with the assertion, and 22 strongly disagree. This results in a mean score of 2.75, indicating acceptance of the item. Additionally, 40 respondents concur with the statement, and 58 of the total respondents strongly agree that using e-learning resources has given students the chance to access limitless material in their field of study, which has increased their academic accomplishment. Conversely, 7 people strongly disagree with the statement, and 15 respondents overall disagree. With a mean score of 3.24, the item is deemed acceptable. In the same table, 40 out of all respondents strongly agree that using e-learning resources has promoted effective time management by giving students quick access to a range of information they require so they can use their time wisely for other academic tasks, while 54 respondents concur. Conversely, nine people strongly disagree with the assertion, and seventeen respondents overall disagree. This results in a mean score of 3.04, indicating acceptance of the item.

Furthermore, 36 respondents agree with the assertion that the use of e-learning tools has improved the academic achievement of Business Education students, while 40 respondents strongly agree. Conversely, 23 people strongly disagree with the statement, and 21 respondents overall disagree. This results in a mean score of 2.70, indicating acceptance of the item. Finally, 36 of the total respondents strongly agree that despite the advantages of utilizing e-learning resources, Thirty-one of the respondents concur that students' over reliance on computer-generated materials has made them lethargic to study. Conversely, 56 people strongly disagree with the assertion, and 39 respondents overall disagree. This results in a mean score of 3.09, indicating acceptance of the item.

The grand mean of 2.97 indicates that, on the whole, respondents agreed that using e-learning improves students' academic performance, time management, and personalized learning in business education, though it may also encourage some students to rely too much on it and put in less effort when studying.

Test of Hypotheses
Hypothesis One

$\mathbf{H_{01}}$There is no significant relationship between the utilization of e-learning resources and the Business Education programs at the Federal Institutions, Kogi State.

Table3: Sample t-test on Utilization of E-learning Resources and Business Education Programs

Variable	N	Mean (x̄)	Std. Dev.	t-cal	t-crit (0.05)	p-value	Decision	Remark
Availability of E-learning Resources	120	2.18	0.64	8.21	1.96	0.000	Reject H_0	Significant

Source: Survey, 2025

Since the calculated t-value (**8.21)** is greater than the critical t-value **(1.96)** and p < 0.05, the null hypothesis is rejected. This implies that utilization of e-learning resources significantly influences the Business Education programs

$\mathbf{H_{04}}$There is no significant impact of e-learning resources on learning outcomes in Business Education.

Table 4: Sample t-test on Impact of E-learning Resources on Teaching and Learning

Variable	N	Mean (x̄)	Std. Dev.	t-cal	t-crit (0.05)	p-value	Decision	Remark
Impact of E-learning Resources	120	2.97	0.75	11.46	1.96	0.000	Reject H_0	Significant

Source: Survey, 2025

Since the calculated t-value **(11.46)** is greater than the critical t-value **(1.96)** and p < 0.05, the null hypothesis is rejected. This means that e-learning resources significantly impact teaching and learning outcomes in Business Education at Federal Institutions, Kogi State

Discussion of Findings

The findings of this study provide important insights into the utilization, challenges and e-learning resources in the teaching and learning of Business Education. From the first table, it was observed that e-learning facilities are not well utilized in some institutions, as the items relating to utilizing, adequacy, and management support were largely rejected, except for the adequacy of the few available facilities (mean = 2.73). This suggests that while some facilities are insufficient to meet the needs of teachers and students. This aligns with the findings of Seyi (2023), who noted that lack of infrastructure and competent ICT personnel limited e-learning adoption in Lagos State University of Education.

Conclusion

Based on the findings, the study concluded that e-learning holds significant potential in enhancing the teaching and learning of Business Education programs in federal institutions It improves students' personalized learning, encourages effective time management, and enhances academic achievement. However, infrastructural challenges such as epileptic power supply, poor facility maintenance, and restricted access hinder its optimal use. Furthermore, teachers' limited application of e-learning in classroom instruction and assignments undermines its full potential. Unless deliberate actions are taken by educational stakeholders, the transformative role of e-learning in Business Education may remain underutilized in some federal institutions

Recommendations

Based on the findings and conclusion, the following recommendations are made:

1. Government and school management should improve on the utilizations and expansion of e-learning facilities in Federal institutions to ensure that both teachers and students have equal access. Also, School administrators should develop policies that encourage teachers to use e-learning in lesson delivery, assignments, and classroom activities to ensure maximum utilization. More so, schools should adopt routine maintenance strategies for e-learning equipment to ensure their sustainability and continued functionality.
2. Schools should be equipped with alternative sources of electricity, such as solar energy or standby generators, to mitigate the challenge of epileptic power supply and regular training and workshops should be organized to enhance teachers' ICT competencies and encourage effective integration of e-learning into Business Education instruction.

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UTILIZATION OF CHATGPT FOR ACADEMIC USE AMONG BUSINESS EDUCATION UNDERGRADUATE STUDENTS IN FEDERAL UNIVERSITY LOKOJA

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Abstract

The rapid diffusion of generative artificial intelligence is reshaping higher education, creating both opportunities and challenges for students' academic learning. This study assessed the utilisation of ChatGPT for academic purposes among Business Education undergraduate students at Federal University Lokoja, Nigeria. Specifically, the study assessed the extent of utilisation, academic purposes, perceived benefits, and problems associated with ChatGPT use. A descriptive survey design was adopted, with data collected through a structured four-point rating-scale questionnaire. Data were analysed using mean and standard deviation, with 2.50 as the decision criterion. Findings revealed a generally high extent of ChatGPT utilisation, with predominant applications in improving academic writing, conducting research, clarifying concepts, and processing academic information. Respondents also reported substantial benefits, particularly personalised learning support, increased confidence, improved productivity, time savings, and enhanced research capabilities. However, utilisation was associated with concerns regarding verification of AI-generated information, overdependence, academic dishonesty, plagiarism, and reduced independent thinking. The study concludes that ChatGPT has become a significant academic support resource among Business Education students, but its educational value depends on critical, ethical, and responsible utilisation. The study recommends institutional AI-use guidelines, AI literacy, critical verification skills, and capacity building for students and lecturers.

Keywords: ChatGPT, academic utilisation, Business Education, undergraduate students,

Introduction

Education has long remained one of the most powerful instruments for individual development, societal transformation, and economic advancement. Beyond the acquisition of knowledge, education develops the intellectual capacities, skills, attitudes, and adaptive abilities required to respond effectively to changing social and professional realities. Its significance has become even more pronounced in an era characterised by rapid technological advancement, where the ability to learn, unlearn, and continually acquire new competencies is increasingly essential. As societies evolve and the nature of work continues to change, education is progressively being called upon not only to prepare individuals for existing realities but also to equip them to navigate and shape emerging ones. Consequently, the effectiveness of contemporary education increasingly depends on its capacity to embrace innovations that can enhance the processes of teaching, learning, knowledge construction, and professional preparation.

Within this broad educational landscape, Business Education occupies a distinctive position because of its direct orientation towards the development of competencies required for participation in the world of work. Business Education is a discipline that prepares students to be logical contributors to the society as well as knowledgeable consumers. One of the main objectives of Business Education is to empower students with desirable skills, knowledge and values to become gainfully employed or self-reliant upon graduation.

The main goals of Business Education at the tertiary level, according to the Federal Republic of Nigeria (FRN) (2013), include preparing students for careers advancement within office occupations and professions, giving students the necessary skills for job creation and entrepreneurship, and imparting

business knowledge to students, including a good blend of technology that incorporates Information and Communication Technology (ICT).

In this fast-changing digital world, the rapid development of artificial intelligence (AI) has sparked discussion among researchers and practitioners worldwide about its tremendous impacts in their respective fields. One of the most cutting-edge AI tools to date is a chat generative pre-trained transformer (ChatGPT), which has rapidly attracted over 100 million global users after a few months of its public launch in November 2022 (Rahimi & Abadi, 2023). The number of unique users had significantly increased to over 180 million by August 2023 (Tong, 2023). This has resulted in the most growing application compared to that of other popular social media platforms, such as Instagram and TikTok (Hu, 2023).

Among the technologies that have attracted substantial attention in education is ChatGPT, an AI-powered conversational system developed to generate responses to natural-language prompts. Its ability to explain concepts, summarise information, generate ideas, draft and refine written materials, answer questions, assist with problem-solving, and engage users in interactive dialogue has created new possibilities for academic work.

ChatGPT is capable of generating precise responses to an array of prompts and inquiries instantaneously and producing nearly flawless texts that are challenging to distinguish from humans' writing. ChatGPT stands out from other chatbots as it can generate impressive prose instantly and engage in conversations with users in a natural and intuitive manner (Rudolph et al., 2023).

ChatGPT is defined as "a combination of generative AI and conversational AI, and it is built on an underlying large language model which can create new content similar to human-generated content and simulate human-like conversations, (Naik et al, 2023). Lund and Wang (2021) identified that ChatGPT can be utilized in academic research, in enhancing literature reviews, generating research article summaries, and aiding in data analysis. These technologies can also be used to create virtual assistants for researchers and to help with the peer-review process (Arif et al., 2019; Lim et al., 2021; Nair & Yunus, 2021). ChatGPT can, for instance, support students in understanding difficult concepts, brainstorming research ideas, improving written expression, organising information, and obtaining immediate explanations of academic content.

ChatGPT is increasingly being used as a useful academic support tool, helping students to answer questions, develop and refine essays, and obtain feedback on their work (Qadir, 2022). Its usefulness extends beyond writing-related tasks, as students can also use it to access study materials and gain clearer explanations of difficult concepts, which may contribute to improved learning and academic performance (Jowarder, 2023). By providing responses that are tailored to the context of a question, ChatGPT can help students explore basic and foundational ideas more deeply (Gilson et al., 2023). It can also serve as a form of on-demand tutoring by breaking down difficult concepts and providing explanations when students encounter areas of difficulty (Murad et al., 2023).

In academic research, ChatGPT can assist students in identifying possible gaps in the literature, developing research ideas, and supporting different stages of the research process (Karakose, 2023). Its application within educational settings may further strengthen academic support by making assistance more readily available to learners (Kesarwani et al., 2023). Another important feature is its potential to support personalised learning, as students can engage with academic content at a pace and level that corresponds to their individual learning needs (Fuchs, 2023). Interestingly, qualitative evidence indicates that students are beginning to view ChatGPT as more than a source of information; they increasingly perceive it as an interactive academic companion that can influence how they engage with learning and exercise greater autonomy in their academic activities (Dey Sarkar, 2025). Taken together, these applications suggest that ChatGPT is becoming an important addition to contemporary educational and research practices.

Despite its growing capabilities and widespread adoption, the rapid development of ChatGPT has raised important ethical concerns, particularly regarding privacy, security, misuse, and the spread of misinformation or inaccurate scientific content (Liebrenz et al., 2023). Another concern is the reliability of its responses, as ChatGPT may generate information that is inaccurate, incomplete, or misleading. This limitation is partly associated with its dependence on the data and knowledge available within its training framework, meaning that users cannot assume that every response generated by the tool is accurate or current (Lee, 2023; Loh, 2023).

However, the availability of ChatGPT does not, in itself, establish that students will use it effectively or appropriately for academic purposes. The educational value of any technological innovation ultimately depends on how, why, how frequently, and for what purposes it is utilised. While purposeful use may potentially support learning and academic productivity, uncritical or inappropriate utilisation may raise concerns relating to overdependence, inaccurate information, diminished independent thinking,

plagiarism, academic dishonesty, and the authenticity of students' academic work. The emergence of ChatGPT has therefore created a complex educational reality in which the central question is no longer simply whether students have access to AI, but rather how they are actually using it within their academic activities.

This question is particularly pertinent to students of Business Education, whose preparation requires the integration of academic knowledge with technological and workplace competencies. As future educators, administrators, entrepreneurs, office professionals, and business practitioners, their interaction with emerging technologies may have implications that extend beyond their immediate academic experiences. Understanding their utilisation of ChatGPT is therefore important for determining whether the technology is being employed primarily as a learning support, a productivity tool, a source of information, a writing aid, or in ways that may compromise academic engagement and integrity. More importantly, empirical evidence on students' actual patterns of utilisation can provide a basis for understanding the place of generative AI within Business Education and for informing appropriate approaches to its responsible integration into academic practice.

It is against this rapidly changing educational and technological landscape that the present study focuses on the assessment of the utilization of ChatGPT for academic purposes among students of Business Education. The study is premised on the need to move beyond assumptions about students' use of generative AI and establish, through empirical evidence, the extent and nature of its utilisation for academic activities. Such an assessment is expected to contribute to a clearer understanding of the emerging relationship between Business Education students and generative AI and, ultimately, provide evidence that can inform responsible, effective, and academically meaningful utilisation of ChatGPT in higher education.

Statement of the Problem

Ideally, higher education should harness emerging technologies to enhance learning, critical thinking, academic productivity, and students' readiness for a technology-driven workplace. This expectation is particularly relevant to Business Education, whose graduates require strong technological, communication, problem-solving, and entrepreneurial competencies. The emergence of ChatGPT provides students with unprecedented opportunities to access instant explanations, generate ideas, summarise information, improve writing, conduct research, and support other academic activities. However, the educational value of ChatGPT depends not merely on its availability but on the extent, purposes, benefits, and manner of its utilisation.

Although previous studies have extensively examined the capabilities, opportunities, and challenges of ChatGPT in education, much of the literature remains general or conceptual, with limited empirical attention to the actual utilisation patterns of Business Education undergraduate students within specific institutional contexts. Consequently, there is inadequate evidence on the extent to which these students have adopted ChatGPT, the academic activities for which they use it, the benefits they derive from such use, and the problems they encounter. This constitutes an important contextual and empirical gap, particularly within Federal University Lokoja.

The central problem, therefore, is the limited empirical evidence on how Business Education undergraduate students at Federal University Lokoja are actually utilising ChatGPT for academic purposes. Without such evidence, it is difficult to determine whether ChatGPT is functioning predominantly as a meaningful learning and productivity tool or whether its utilisation is accompanied by significant challenges that may undermine effective academic engagement. The study therefore seeks to empirically establish the extent of utilisation, academic purposes, perceived benefits, and problems associated with ChatGPT use among Business Education undergraduate students in Federal University Lokoja.

Purpose of the Study

The purpose of study is to find out the extent of utilization of ChatGPT for academic purposes among Business Education students in Federal University, Lokoja.

Specifically the study seeks to:

i. assess the extent of adoption of ChatGPT by Business Education students for academic purposes at Federal University, Lokoja.
ii. determine the major academic purposes for which Business Education students use ChatGPT at Federal University, Lokoja.
iii. find out the perceived benefits of using ChatGPT for academic purposes among Business Education students at Federal University, Lokoja.

iv. ascertain the problem associated with the utilization of ChatGPT for academic purposes among Business Education students in Federal University, Lokoja.

Research Questions

Based on the purposes of the study, the following research questions were formulated:

i. To what extent have Business Education students adopted ChatGPT for academic purposes at Federal University Lokoja?
ii. What are the major academic purposes for which Business Education students use ChatGPT at Federal University, Lokoja?
iii. What are the benefits of using ChatGPT among Business Education students at Federal University, Lokoja?
iv. What are the problems associated with the use of ChatGPT for academic purposes among Business Education students of Federal University, Lokoja?

Methodology

This study adopted a descriptive research design which is ideal in this study as it describes the attitude, opinions, behaviours and characteristics of the population (Rooster & Smith, 2014). The population for the study comprises the Three Hundred and Sixty-Three (363) undergraduate students of the Department of Business Education, Federal University, Lokoja for 2025/2026 academic session. The entire year three (300L) and year four (400L) students being 67 and 56 students respectively were purposively sampled for the study. The instrument for data collection was structured questionnaire designed by the researcher. A four-point rating scale of very high extent, high extent low extent and very low extent was used for research question 1, while strongly agree, agree, disagree and strongly disagree were used for research questions 2,3, and 4. The instrument was tested for reliability using Cronbach alpha reliability method which yielded coefficient values of 0.81, and 0.76 respectively. The questionnaire was administered on the respondents and all were completed and returned. Mean and standard deviation was used to answer the four research questions.

Results

Answers to research questions

Table 1: Mean rating and standard deviation on the extent of business education students' adoption of ChatGPT for academic purposes at Federal University Lokoja

S/N	Items	M	SD	Remark
1	I use ChatGPT to support my academic activities.	3.45	1.41	HE
2	I regularly use ChatGPT when studying my Business Education courses.	2.50	0.85	HE
3	I have incorporated ChatGPT into my routine academic activities.	2.12	0.34	HE
4	I use ChatGPT whenever I encounter difficulties in understanding academic concepts.	2.69	1.01	HE
5	I use ChatGPT as a supplementary source of academic information.	2.78	1.05	HE
6	I use ChatGPT to assist me in completing academic assignments.	2.65	0.93	HE
7	I use ChatGPT to support my preparation for tests and examinations.	2.72	0.98	HE
8	I use ChatGPT frequently when carrying out academic research.	2.93	1.31	HE
9	I depend on ChatGPT to some extent for completing academic tasks.	2.63	1.12	HE
10	I have adopted ChatGPT as part of my regular academic learning tools.	3.42	1.22	HE
Grand Mean		**2.60**	**1.09**	**HE**

Table 1 indicates a generally high extent of ChatGPT adoption/utilisation for academic purposes among Business Education students at Federal University Lokoja, as evidenced by the grand mean of 2.60, which exceeds the criterion mean of 2.50. The highest mean scores were recorded for using ChatGPT to support academic activities (M = 3.45) and adopting it as part of regular academic learning tools (M = 3.42), suggesting that students increasingly perceive ChatGPT as a useful academic support resource. Its use for academic research (M = 2.93), supplementary academic information (M = 2.78), examination preparation (M = 2.72), and clarification of difficult concepts (M = 2.69) further demonstrates its application across diverse learning activities. However, the comparatively low mean

for incorporating ChatGPT into routine academic activities (M = 2.12) suggests that while students utilise the technology for specific academic tasks, its full integration into their everyday learning practices remains limited. The grand mean and standard deviation of 2.60 and 1.09 respectively indicates that items listed for the study on Business Education students' adoption of ChatGPT for academic purposes at Federal University Lokoja.

Table 2: Mean rating and standard deviation on major Academic Purposes for which business education students use ChatGPT

S/N	Items	M	SD	Remark
1	I use ChatGPT to explain difficult academic concepts.	3.00	0.71	Agree
2	I use ChatGPT to generate ideas for assignments and academic projects.	2.50	1.50	Agree
3	I use ChatGPT to summarise lengthy academic materials.	2.75	0.89	Agree
4	I use ChatGPT to obtain explanations of unfamiliar terms and concepts.	3.14	1.12	Agree
5	I use ChatGPT to assist with academic research and literature searches.	3.21	1.12	Agree
6	I use ChatGPT to improve the grammar and clarity of my academic writing.	3.36	0.86	Agree
7	I use ChatGPT to develop outlines for assignments, projects, and presentations.	2.80	0.99	Agree
8	I use ChatGPT to obtain answers to academic questions and problems.	2.92	0.96	Agree
9	I use ChatGPT to prepare for tests, examinations, seminars, and presentations.	2.53	1.18	Agree
	Grand Mean	**2.98**	**1.17**	
	Agree			

Table 2 indicates that Table 2 reveals that Business Education students use ChatGPT for a wide range of academic purposes, with a grand mean of 2.98, indicating a strongly agreeing to the it's utilisation across the identified activities. The highest-rated purposes were improving the grammar and clarity of academic writing (M = 3.36), assisting with academic research and literature searches (M = 3.21), and obtaining explanations of unfamiliar terms and concepts (M = 3.14), suggesting that students primarily employ ChatGPT as a writing, research, and learning-support tool. Its use for explaining difficult concepts (M = 3.00), answering academic questions (M = 2.92), developing assignment and presentation outlines (M = 2.80), and summarising academic materials (M = 2.75) further demonstrates its versatility in supporting learning activities. However, generating ideas for assignments/projects (M = 2.50) and preparing for tests, examinations, seminars, and presentations (M = 2.53) recorded comparatively lower means, indicating less frequent use for these purposes. The grand mean and standard deviation of 2.98 and 1.17 respectively indicates that items listed for the study on students' academic purposes for using ChatGPT.

Table 3: Mean rating and standard deviation on the benefits of using ChatGPT among Business Education students at Federal University, Lokoja?

S/N	Items	M	SD	Remark
1	ChatGPT helps me understand difficult academic concepts more easily.	3.04	0.73	Agree
2	ChatGPT provides quick access to information needed for my academic work.	2.98	0.64	Agree
3	ChatGPT saves me time when completing academic tasks.	3.16	0.87	Agree
4	ChatGPT improves the quality of my academic writing.	3.04	0.68	Agree
5	ChatGPT stimulates my ideas when working on academic assignments.	3.01	0.65	Agree
6	ChatGPT enhances my ability to conduct academic research.	3.14	0.71	Agree
7	ChatGPT provides personalised explanations that support my learning.	3.43	0.89	Agree
8	ChatGPT improves my academic productivity.	3.31	0.82	Agree

9	ChatGPT increases my confidence in handling difficult academic tasks.	3.37	0.84	Agree
10	ChatGPT enhances my digital skills and readiness for technology-driven workplaces.	2.95	0.63	Agree
Grand Mean		**3.14**	**0.75**	Agree

Table 3 reveals that Business Education students perceive substantial benefits from using ChatGPT for academic purposes, as indicated by the grand mean of 3.14, which is above the criterion mean of 2.50. The highest-rated benefits were personalised explanations that support learning (M = 3.43), increased confidence in handling difficult academic tasks (M = 3.37), improved academic productivity (M = 3.31), and time-saving in completing academic tasks (M = 3.16). The findings further show that ChatGPT supports academic research (M = 3.14), improves understanding and writing (M = 3.04 each), stimulates ideas (M = 3.01), provides quick access to information (M = 2.98), and enhances digital skills and workplace readiness (M = 2.95). The grand mean and standard deviation of 3.14 and 0.75 respectively indicates that items listed for the study on students' perceived benefits of using ChatGPT for academic purposes

Table 4: Mean rating and standard deviation on the problems associated with the use of ChatGPT for academic purposes among Business Education students of Federal University, Lokoja?

S/N	Items	M	SD	Remark
1	ChatGPT sometimes provides inaccurate or misleading academic information.	2.88	0.50	Agree
2	I find it difficult to verify the accuracy of information generated by ChatGPT.	2.93	0.55	Agree
3	Excessive use of ChatGPT can reduce students' independent thinking.	2.61	0.69	Agree
4	Reliance on ChatGPT can make students less willing to engage deeply with academic materials.	2.55	0.71	Agree
5	ChatGPT may encourage students to submit work that is not entirely their own.	2.78	0.70	Agree
6	Using ChatGPT for academic work may increase the risk of plagiarism or academic dishonesty.	2.89	0.88	Agree
7	Limited internet access can hinder effective use of ChatGPT for academic purposes.	2.63	0.70	Agree
8	The quality of ChatGPT responses depends on how effectively users formulate their prompts.	2.43	0.71	Disagree
9	Students may become overly dependent on ChatGPT for completing academic tasks.	2.92	0.81	Agree
10	Unclear institutional guidelines make it difficult to determine acceptable academic use of ChatGPT.	2.48	0.75	Disagree
Grand Mean		**2.51**	**0.70**	Agree

Table 4 above shows that items 1,2,3,4,5,6,7 and 9 with mean scores of 2.88, 2.93, 2.61, 2.55, 2.78, 2.89, 2.63 and 2.92 respectively were rated high extent while items 8 and 10 with mean scores od 2.43 and 2.48 were rated low extent. Which indicates that respondents agreed to the problems associated with ChatGPT's utilisation, as shown by the grand mean of 2.51, which is slightly above the criterion mean of 2.50. The major concerns were difficulty verifying the accuracy of generated information (M = 2.93), overdependence on ChatGPT (M = 2.92), plagiarism or academic dishonesty (M = 2.89), and inaccurate or misleading information (M = 2.88). Concerns about submitting work that is not entirely students' own (M = 2.78), limited internet access (M = 2.63), reduced independent thinking (M = 2.61), and diminished deep engagement with academic materials (M = 2.55) were also rated high. Conversely, prompt formulation (M = 2.43) and unclear institutional guidelines (M = 2.48) were rated low. The grand mean and standard deviation of 2.51 and 0.70 respectively indicates the items listed for study on problems associated with the utilisation of ChatGPT.

Discussion of Findings

The results to research question one on Table 1 confirms that ChatGPT has gained a meaningful presence in the academic experiences of Business Education students, reinforcing the need for its responsible and purposeful integration to enhance learning, research, technological competence, and

preparation for a technology-driven workplace. These findings support the views that ChatGPT can help students explore basic and foundational ideas more deeply and that it can also serve as a form of on-demand tutoring by breaking down difficult concepts and providing explanations when students encounter areas of difficulty (Gilson et al., 2023; Murad et al., 2023).

The results to research question two on Table 2 reveals that ChatGPT is being utilised principally to enhance academic writing, research, comprehension, and information processing, reinforcing its emerging role as an academic support tool among Business Education students. These findings corroborate the assertion that ChatGPT is increasingly being used as a useful academic support tool, helping students to answer questions, develop and refine essays, and obtain feedback on their work. Moreso that its usefulness extends beyond writing-related tasks, as students can also use it to access study materials and gain clearer explanations of difficult concepts, which may contribute to improved learning and academic performance (Qadir, 2022; Jowarder, 2023).

The results to research question three on Table 3 demonstrate that students perceive ChatGPT primarily as a learning, productivity, research, and digital-skills support tool, reinforcing the study's premise that responsible utilisation of generative AI can complement conventional academic practices and strengthen competencies relevant to technology-driven workplaces. These findings are in agreement with previous researches with highlighted that ChatGPT can assist students in identifying possible gaps in the literature, developing research ideas, and supporting different stages of the research process. Its application within educational settings may further strengthen academic support by making assistance more readily available to learners (Karakose, 2023; Kesarwani et al., 2023).

The results to research question four on Table 4 shows that while ChatGPT offers substantial academic benefits, accuracy, verification, overdependence, and academic integrity remain key concerns, underscoring the need for responsible use, critical evaluation of AI-generated content, and appropriate academic guidance. These findings are in consonance with the study of Liebrenz et al., (2023) which revealed that despite its growing capabilities and widespread adoption, the rapid development of ChatGPT has raised important ethical concerns, particularly regarding privacy, security, misuse, and the spread of misinformation or inaccurate scientific content. Another concern is the reliability of its responses, as ChatGPT may generate information that is inaccurate, incomplete, or misleading. This limitation is partly associated with its dependence on the data and knowledge available within its training framework, meaning that users cannot assume that every response generated by the tool is accurate or current (Lee, 2023; Loh, 2023).

Conclusion

The study concludes that ChatGPT has gained meaningful acceptance among Business Education students at Federal University Lokoja, with a generally high extent of academic utilisation. Its use cuts across academic writing, research, concept clarification, information retrieval, assignment preparation, and other learning activities. The findings further establish that students perceive ChatGPT as beneficial for personalised learning, improved academic productivity, time management, research, confidence, and digital skills development. However, the findings also reveal notable concerns relating to information accuracy, difficulty of verification, overdependence, plagiarism, academic dishonesty, and reduced independent thinking. Thus, while ChatGPT presents considerable opportunities for enhancing academic learning and workplace-relevant competencies, its benefits are accompanied by risks that require careful management. The study therefore concludes that the educational value of ChatGPT depends largely on its purposeful, critical, ethical, and responsible utilisation rather than mere access to the technology. Consequently, appropriate institutional guidance and AI literacy are essential to ensure that ChatGPT complements rather than substitutes students' independent learning, critical thinking, and academic integrity.

Recommendations

i. Business Education lecturers should integrate AI literacy and critical evaluation skills into teaching and learning, enabling students to verify ChatGPT-generated information, identify inaccuracies, formulate effective prompts, and use AI outputs as supplementary rather than definitive academic sources.

ii. Students should be encouraged to adopt ChatGPT as a learning-support tool rather than a substitute for independent thinking and academic effort, with emphasis on developing their own analytical, writing, research, and problem-solving competencies alongside AI-assisted learning.

iii. The University should provide structured access and capacity-building opportunities for students and lecturers, including practical training on effective ChatGPT utilisation, ethical

AI use, academic integrity, and responsible integration of generative AI into Business Education and other technology-driven learning activities.

iv. Federal University Lokoja should develop clear institutional guidelines for the responsible academic use of ChatGPT, specifying acceptable and unacceptable applications, particularly in relation to assignments, research, examinations, plagiarism, and academic integrity.

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CURRICULUM INNOVATION IN BUSINESS EDUCATION FOR DIGITAL, GREEN AND SOCIAL ENTERPRISE DEVELOPMENT: A STUDY OF EBONYI STATE

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Abstract

This study examined curriculum innovation in business education as a strategy for promoting digital, green and social enterprises in Ebonyi State, Nigeria. The increasing demand for digitally skilled and sustainability-oriented entrepreneurs necessitates a shift from traditional business education curricula to more innovation, practice-driven approaches. The study adopted a descriptive survey research design. The population consisted of business education students, lecturers, small and medium enterprise (SME) operators in Ebonyi state, with a sample size of 133 determined using Taro Yamane formula. Data were collected through a well-structured questionnaire and analysed using descriptive statistics and regression analysis. Findings reveals that curriculum innovation-particularly the integration of digital tools, sustainability concepts, and social entrepreneurship training-has a significant positive impact on the development of green and social enterprises. However inadequate infrastructure, limited practical exposure, and out dated course content remain major challenges. The study concludes that curriculum innovation is critical for equipping graduates with relevant competencies for the modern economy.it recommended curriculum redesign, adoption of experiential learning methods, and stronger collaboration between educational institutions and industry.

Keywords: Curriculum innovation, Business Education, Digital Skills, Green Business, Social Entrepreneurship.

1.0 INTRODUCTION

Business education is an important component of the education system because it equips learners with knowledge, skills, attitudes and competencies needed for employment, self-employment and effective participation in economic activities. Traditionally, business education has prepared learners for occupations in accounting, office technology, management, marketing, commerce and related business fields. However, the changing structure of the global economy requires business education to continuously respond to emerging technological, economic, environmental and social realities.

The contemporary business environment is increasingly characterized by digitization, electronic commerce, social-media marketing, artificial intelligence, data analytics, digital financial services and business automation. At same time, environmental problems such as climate change, pollution, waste generation and resource depletion have increased the demand for green skills and sustainable business practices. social problems, including unemployment,poverty,inequality and inadequate access to essential services,have equally created a need for entrepreneurs who can combine economic activities with social value creation.

These development make curriculum innovation an important issue in business education. curriculum innovation involves the systematic modification of curriculum content, teaching methods, learning experiences and assessment practices to meet emerging societal needs. Akudolu(2010) emphasized the importance of an appropriate curriculum frame work for entrepreneurship education in Nigeria, while Okoro(2013) argued that the quality and relevance of university business education curricula are important for successful graduate employment.

The need for curriculum innovation is particularly relevant to Ebonyi State. The state has higher institutions offering business education and a large population whose economic activities are linked to entrepreneurship, agriculture, trading, services and small and medium-scale enterprises. Consequently, business education program mes in the state need to prepare students not only for conventional employment but also for digital entrepreneurship, sustainable business and social enterprise development.

Evidence from Ebonyi State demonstrated the need for this transformation. Oko and Wagbara (2022), in their study of business education graduates in Ebonyi State, found that graduates required digital skills in accounting and communication to compete effectively in entrepreneurship. The study involved

graduates from Ebonyi State university, Ebonyi State college of Education Ikwo and Alex Ekwueme Federal University, Ndufu-Alike Ikwo, thereby providing evidence directly relevant to the state.

Similarly, Nwagwu and Ofulue (2024) examined innovative approaches to curriculum development and implementation in universities in Ebonyi State. Their study involved business educators from Alex-Ekwueme Federal University and Ebonyi State university and examined innovative approaches that could be integrated into business education following the COVID-19 era.

Green entrepreneurship is also becoming increasingly important. Okereke et al (2018) found that business educators considered waste management, wealth regeneration, climate-change and ecological consultancy skill highly necessary for creating a sustainable society.

Social entrepreneurship provides another important dimension. Shahid and Alarifi (2021) developed a conceptual framework showing how social entrepreneurship education can develop the knowledge, skills and competencies required to create a social entrepreneurial mind set. Therefore, the central argument of this paper is that business education in Ebonyi State requires an integrated curriculum capable of producing graduates who can create digital values, develop environmentally sustainable enterprises and solve social problems through entrepreneurial activities.

1.1 STATEMENT OF THE PROBLEM

The contemporary economy increasingly demands graduates who can create employment, use technology effectively develop sustainable businesses and respond creatively to social problems. However, conventional business education may not always provide adequate exposure to the practical competencies required in the emerging digital, green and socially responsible economy.

Although entrepreneurship education is included in many business education programmes, a gap may exist between classroom knowledge and the practical skills required to identify opportunities, establish businesses and respond to changing market conditions. Nwagwu and Ofulue (2024) specifically examined the need for innovative approaches in developing and implementing business education curricula in universities in Ebonyi State, indicating the relevance of curriculum innovation to contemporary educational challenges.

The problem, therefore, is not simply the absence of entrepreneurship education but the need to reorient and integrate business education curriculum around digital technology, environmental sustainability and social innovation.

1.2 OBJECTIVES OF THE STUDY

The main objective of the study is to examine curriculum innovation in business education for digital, green and social enterprise development in Ebonyi State.

Other specific objectives are to:

1. examine the concept of curriculum innovation in business education.
2. examine green skills that should be incorporated into business education curricula.
3. examine the contribution of social entrepreneurship education to social enterprise development.
4. Identify challenges affecting curriculum innovation in business education in Ebonyi State.
5. Propose an integrated curriculum framework for digital,green and social enterprise development.

1.3 RESEARCH QUESTIONS

The study is guided by the following research questions:

1. What curriculum innovations are required to prepare business education students for digital enterprise development?
2. What green skills should be incorporated into business education curricula in Ebonyi State.
3. What factors hinder effective curriculum innovation in business education in Ebonyi State.
4. How can business education contribute to social enterprise development?
5. What curriculum framework can integrate digital,green and social enterprise competencies into business education?

2.0 REVIEW OF RELATED LITERATURE

2.1 CONCEPTUAL FRAMEWORK

2.2 BUSINESS EDUCATION

Business education refers to an educational programme designed to develop knowledge and practical skills needed for the business, employment, entrepreneurship and effective economic participation.it encompasses areas such as accounting, management, marketing, office technology, entrepreneurship, economics, and information technology. The changing business environment, however, requires business education to extend beyond traditional occupational preparation. Okoro(2013) emphasized the importance of an appropriate university business education curriculum for successful graduate employment, while Oko and Wagbara (2022) demonstrated the importance of digital skills for business education graduates in Ebonyi State. Thus, modern business education should combine conventional business knowledge with emerging competencies required by the contemporary economy.

2.3 CURRICULUM INNOVATION

It refers to the process of introducing new ideas, knowledge, technologies, teaching methods, learning experiences and assessment approaches into an educational programme. Nwagwu and Ofulue (2024) emphasized innovative approaches in the development and implementation of business education curricula in schools in Ebonyi State. their work demonstrates that curriculum innovation is not merely a theoretical issue but a practical requirement for contemporary business education.

2.4 DIGITAL ENTERPRISE DEVELOPMENT AND BUSINESS EDUCATION

It refers to business activities that use digital technologies to create, deliver and capture value. It has created several opportunities in e-commerce, digital marketing, social-media business, online retailing, free lancing, content creation and technology-enabled services.

The increasing importance of digital enterprise means that business education students need competencies beyond basic computer literacy and the following digital competencies should therefore be integrated into business education

1. Digital literacy
2. E-commerce manaagement
3. Digital marketing
4. Social-media marketing
5. Data analytics
6. Cyber security awareness
7. Artificial intelligence literacy
8. Business automation
9. Digital entrepreneurship
10. Customer relationship management.

2.5 GREEN ENTERPRISE DEVELOPMENT AND BUSINESS EDUCATION

Green enterprise development refers to business activities that create economic value while minimizing environmental damage and promoting sustainable resource use. Okereke et al (2018) investigation showed that business educators regarded waste management, wealth regeneration, climate change and ecological consultancy skills as highly needed and this finding has significant implications for Ebonyi State. Business education students should be exposed to local environmental problems and encouraged to identify business opportunities from those problems. For instance, agricultural waste can become raw material for enterprises producing animal feeds, compost, biomass products or other useful materials. Similarly, waste management challenges can become opportunities for recycling enterprises.

2.6 THEORETICAL FRAMEWORK

2.6.1 EXPERIENTIAL LEARNING THEORY:

These study is anchored partly on this theory which was developed by Kolb (1984).The theory proposes that effective learning occurs through experience, reflection, conceptualization and experimentation. The theory is relevant because entrepreneurship cannot be adequately developed through theoretical instruction alone. Students need opportunities to create business ideas, develop products, interact with customers, conduct market research and solve practical problems.

2.6.2 HUMAN CAPITAL THEORY:

It is associated with Becker (1964) and it emphasizes investment in education and skills as a means of increasing individual and economic productivity. from this perspective, curriculum innovation represents an investment in human capital. When business education students acquires digital, green and social-enterprise competencies, they become better positioned for employment, entrepreneurship and productive participation in the economy.

2.6.3 TRIPLE BOTTOM LINE PERSPECTIVE:

The triple bottom line perspective developed by Elkington (1997) emphasizes on people, planet and profit.

The concept is relevant to this study because the proposed curriculum seeks to:

A. Profit: Economic viability and enterprise development.
B. Planet: Environmental sustainability and
C. People: Social inclusion and community development.

Digital, green and social entrepreneurship can therefore be understood as complementary component of a modern business education curriculum.

2.7 EMPIRICAL REVIEW

Several empirical studies have examined aspects of business education, digital skills, curriculum innovation and green entrepreneurship in Nigeria. Their findings provide a basis for the present study.

Oko and Wagbara(2022) investigated the digital skills needed by business education graduates for global competitiveness in entrepreneurship in Ebonyi State. The study found that business education graduates needed digital skills to excel in entrepreneurship globally and they further recommended that education and career systems should become more responsive to skill requirements of the 21st century.

Nwagwu and Ofulue(2024) investigated the integration of innovation approaches into the development and implementation of business education curricula in universities in Ebonyi State in the post-COVID-19 era. The findings showed that business educators supported the integration of blending learning, data analytic tools and electronic collaborative projects into the business education curriculum.

Okereke, Onokpaunu & Ukonomwan (2018) examined business educators perceptions of green skills needed in the business education curriculum for creating a sustainable society in Nigeria.

2.8 GAP IN LITERATURE

Despite the contribution of previous studies an important gap remains in the literature. First, there is limited empirical attention to the combined integration of digital entrepreneurship, green entrepreneurship and social entrepreneurship within one business education curriculum framework. Secondly, much of the existing Ebonyi State literature has focused on what skills or innovative approaches are needed rather than developing an integrated curriculum model showing how digital, green and social enterprise competencies can be incorporated into business education. This study therefore seeks to address this gap by bringing the three dimensions-digital enterprise, green enterprise and social enterprise development together within a single curriculum innovation framework for business education in Ebonyi State.

3.0 RESEARCH METHODOLOGY

3.1 INTRODUCTION

Research methodology refers to the systematic and theoretical analysis of the method applied to a study.it encompasses the principles,procedures and techniques used by a researcher to collect, analyse and interpret data in order to answer research question (Osuala,2001). According to Uzoagulu (1998) it provides the blueprint that guides the entire research process and ensure that the findings obtained are valid, reliable and relevant to the problem under investigation.

3.2 RESEARCH DESIGN

The study adopted the descriptive survey design, it was considered appropriate for this study because it allows the researcher to collect data directly from respondents through a structured questionnaire.

3.3 POPULATION OF STUDY

The population of this study comprised of business educators from Alex-Ekwueme Federal University Ndufu-Alike Ikwo, Ebonyi State University and Ebonyi State College Of Education Ikwo. The total population of the study stood at Two Hundred (200) staff as obtained from the personnel records of the above mentioned organizations.

3.4 SAMPLE SIZE

The sample size for this study consists of 133 respondents selected from the above mentioned institutions, it was considered adequate to represent the entire population and provide reliable information for the study.

3.5 DETERMINATION OF SAMPLE SIZE

The sample size was determined using the Taro Yamane (1967) formula

n=N/(1+N(e)2)

Where

n=sample size

N=population size (200)

e=level of significant (0.05)

Substituting the values

N=200

1+200(0.05)2
N=200/[1+200(0.0025)]
N=200/1.5
N=133
Therefore, the sample size for the study is 133 respondents.

4.0 CONCLUSION

The transformation of the global economy requires a corresponding transformation of business education. Digital technologies, environmental sustainability and social challenges are creating new forms of entrepreneurship that requires new knowledge and competencies. Evidence from Ebonyi State demonstrates the importance of this transformation. Oko and Wagbara (2022) established the business education graduates requires digital skills for global competitiveness in entrepreneurship, while Nwagwu and Ofulue (2024) examined innovative approaches that can improve business education curriculum development and implementation in universities in Ebonyi State. Okereke et al (2018) similarly established the importance of green skills in business education in Ebonyi State should move from a predominantly conventional model toward an integrated Digital-Green-Social Enterprise Education model. Digital enterprise education should equip students with competencies in e-commerce, digital marketing, data analytic, artificial intelligence, etc

Green enterprise education should expose students to recycling, waste management, renewable energy, sustainable agriculture and circular-economy opportunities. Social entrepreneurship education should enable students to identify social problems and develop financially sustainable solutions.

Ultimately, the goal of curriculum innovation should be to produce graduates who can create jobs, use technology, protect the environment and solve social problems through sustainable enterprise development.

5.0 RECOMMENDATION

Based on the above discussion, the study recommends that;

1. Business education curricula in Ebonyi State should be periodically reviewed to incorporate digital, green and social enterprise competencies.
2. Digital entrepreneurship should become an integral component of business education.
3. Green entrepreneurship and sustainable education should be incorporated into business education programmes.
4. Social entrepreneurship should be strengthened through community-based projects and social innovation activities.
5. Business educators should receive continuous professional development in emerging digital technologies, green enterprise and social entrepreneurship.
6. Institutions should establish entrepreneurship and innovation hubs where students can develop and test enterprise ideas.
7. Stronger partnership should be established between business education institutions and industry.
8. Experiential, project-based and problem-based learning should receive greater emphasis.
9. Government should improve electricity, internet connectivity and digital infrastructure in educational institution.
10. Business education students should be encouraged to develop enterprises that respond to specific social and environmental challenges in Ebonyi State.

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ARTIFICIAL INTELLIGENCE COMPETENCE AND INNOVATIVE INSTRUCTIONAL PRACTICES AMONG BUSINESS EDUCATION LECTURERS IN TERTIARY INSTITUTIONS IN RIVERS STATE

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Abstract

This study investigated the relationship between artificial intelligence competence and innovative instructional practices among Business Education lecturers in tertiary institutions in Rivers State. Specifically, the study determined the relationships between AI knowledge competence, AI application competence and innovative instructional practices. Two research questions and two null hypotheses guided the study. A correlational research design was adopted. The population comprised 142 Business Education lecturers from the University of Port Harcourt (6), Rivers State University (32), Ignatius Ajuru University of Education (25), and Federal College of Education (Technical), Omoku (79). The entire population was studied using a census approach. Data were collected using the Artificial Intelligence Competence and Innovative Instructional Practices Questionnaire (AICIIPQ). Three experts from Business education and measurement and evaluation validated the instruments. A trial test conducted among Business Education lecturers at Nnamdi Azikiwe University, Awka yielded a Cronbach Alpha reliability coefficient of 0.78. Pearson Product Moment Correlation was used to answer the research questions and test the hypotheses at the .05 level of significance. Findings revealed positive relationships between AI knowledge competence and innovative instructional practices (r = .373, p < .01) and between AI application competence and innovative instructional practices (r = .455, p < .01). Both relationships were statistically significant. The study concluded that AI competence is significantly associated with innovative instructional practices. It was recommended that tertiary institutions strengthen lecturers' AI knowledge and practical application competencies through continuous professional development.

Keywords: AI application competence, AI competence, AI knowledge competence, Business Education, innovative instructional practices

Introduction

Artificial intelligence has emerged as an important technological development influencing education, business and professional practice. AI systems can perform functions involving data analysis, pattern recognition, content generation, automated feedback and decision support. In education, these capabilities have expanded opportunities for personalized learning, instructional content development, assessment and administrative support. Chen et al. (2020) observed that AI applications have progressively moved from conventional computer-assisted systems towards intelligent and adaptive educational technologies capable of supporting teaching and learning. Wang et al. (2024) similarly showed that AI in education now encompasses diverse applications, research themes and educational contexts.

The increasing presence of AI in education places new competency demands on lecturers. Effective integration requires more than awareness of AI tools; educators need knowledge of AI principles, practical application skills, pedagogical judgement and awareness of ethical implications. UNESCO (2024) identifies 15 teacher AI competencies across five dimensions: human-centred mindset, ethics of AI, AI foundations and applications, AI pedagogy, and AI for professional learning. These

competencies demonstrate that teachers need both conceptual understanding and practical capability to integrate AI meaningfully into instruction.

AI competence can therefore be regarded as educators' knowledge, skills and professional capacity to understand, evaluate and appropriately apply AI technologies in educational practice. Chiu et al. (2025) emphasized the importance of assessing teachers' AI competence and self-efficacy as education moves towards greater AI integration. Sperling et al. (2024), in a scoping review of AI literacy in teacher education, similarly found that AI literacy involves theoretical, practical and professional knowledge, although it remains insufficiently developed within teacher education research.

In this study, AI competence is considered through AI knowledge competence and AI application competence. AI knowledge competence concerns lecturers' understanding of AI concepts, capabilities, limitations, ethical considerations and educational applications. AI application competence relates to their ability to employ appropriate AI tools in activities such as lesson preparation, instructional content generation, assessment, feedback, research and learner support. These dimensions correspond substantially with UNESCO's AI foundations, applications and AI pedagogy dimensions.

The importance of these competencies is particularly evident in Business Education. The programme prepares learners for occupations, entrepreneurship and participation in technology-mediated workplaces. Consequently, Business Education lecturers need to respond to changing technologies by adopting instructional approaches that reflect contemporary business environments. Enang (2025) argued that AI tools such as ChatGPT have potential for transforming teaching and learning in Business Education, while Eze et al. (2025) identified intelligent tutoring systems, expert systems, machine-assisted classrooms and related technologies as applicable to teaching and learning in the programme. The relevance of AI competence is further reinforced by Onuotu et al. (2025), who found that AI accounting and AI electronic-office skills were highly required of Business Education students for job performance in the emerging workplace. Similarly, Ikpeama, Nwaokokorom et al. (2025) reported that AI electronic-office and emerging AI skills were highly required of Accounting Education students for effective job performance in the digital era. These findings underscore the responsibility of Business Education lecturers to develop sufficient AI competence to support instructional practices that prepare students for technology-driven occupational environments.

Recent Nigerian studies, however, indicate that the potential of AI has not necessarily translated into extensive instructional application. Adewole (2025) reported low awareness and application of AI among Business educators in Colleges of Education in South-West Nigeria. Similarly, Akeke et al. (2025) found a low extent of adoption and utilization of AI in teaching Business Education content in federal universities in South-South Nigeria. Atah et al. (2025) also reported very low application of intelligent tutoring systems and adaptive learning platforms in delivering Business Education curriculum content in the Colleges of Education investigated. Further evidence suggests that lecturers' awareness of AI may not necessarily translate into effective curriculum integration. Ikpeama, Ekoh-Nweke et al. (2025) found that although Business Education lecturers in tertiary institutions in Anambra State were aware of AI, the availability of AI tools and the extent of their use in curriculum implementation were low. The study further identified inadequate technical know-how and insufficient training and development of lecturers among the challenges confronting AI adoption. These findings suggest that awareness of AI alone may not be sufficient for effective instructional integration; lecturers also require the knowledge and practical competencies needed to translate AI possibilities into instructional practices.

Other studies nevertheless demonstrate considerable possibilities for AI-supported Business Education. Sam-Eleyi and Egajivwie (2025) reported that AI training, AI-driven curriculum and effective student engagement with AI tools could strengthen students' preparation for an evolving labour market. Umeh and Iyoha (2025) maintained that AI could improve learning experiences and teaching efficiency, although its integration involves ethical and technical challenges. Ubaka (2025) also found that Business educators generally perceived AI integration positively while emphasizing that AI should complement rather than replace the human element in teaching.

The relevance of AI competence becomes even clearer when considered alongside innovative instructional practices. Innovative instructional practices involve lecturers' purposeful adoption of new or improved teaching approaches, technologies and learning activities to make instruction more interactive, adaptive, practical and learner-centred. Generative AI, for instance, can support instructional content development, differentiated learning activities, feedback and lesson planning. Kasneci et al. (2023) identified opportunities for large language models to support educational content creation, engagement and personalized learning, while emphasizing the need for appropriate teacher competencies and pedagogical strategies. Tlili et al. (2023) similarly demonstrated both opportunities and challenges associated with educational chatbots.

Despite these opportunities, pedagogically meaningful AI use cannot be assumed merely because AI tools are available. Zawacki-Richter et al. (2019) found limited educator-focused attention in earlier higher-education AI research, while more recent evidence indicates that university educators require deliberate professional and pedagogical competence to use generative AI effectively. This reinforces the proposition that lecturers' competence may be associated with the extent to which they adopt innovative instructional practices.

The issue is especially relevant in Rivers State. Ukata and Nmehielle (2025) found that AI applications were considered highly needed and beneficial for teaching Business Education courses in Rivers State tertiary institutions. However, Ukata and Amadi (2025) identified substantial challenges confronting lecturers in applying AI to Business Education teaching and recommended continuous training. Otum and Okute (2025) likewise identified unavailability of AI resources and difficulty developing appropriate AI-supported pedagogical strategies among challenges to effective AI application in Business Education course delivery.

Although these studies have investigated awareness, application, utilization, benefits and challenges of AI, there remains a need to establish whether lecturers' AI competence is empirically related to their innovative instructional practices, particularly across the major tertiary institutions offering Business Education in Rivers State. Establishing this relationship would provide evidence for designing professional-development initiatives that move beyond awareness of AI towards pedagogically meaningful application. Consequently, this study investigates the relationship between AI competence and innovative instructional practices among Business Education lecturers in tertiary institutions in Rivers State.

Statement of the Problem

Business Education lecturers are expected to prepare students for contemporary workplaces and entrepreneurial environments increasingly shaped by artificial intelligence. This expectation requires lecturers not only to understand AI but also to apply it appropriately in innovative instructional practices. However, available Nigerian evidence suggests a gap between AI's educational potential and its actual instructional application. Akeke et al. (2025) found a low extent of AI adoption and utilization among Business Education lecturers in federal universities in South-South Nigeria, while Adewole (2025) reported low awareness and application among Business educators studied in South-West Nigeria.

More specifically, Ukata and Amadi (2025) identified considerable challenges in applying AI to Business Education teaching in Rivers State. Although previous studies have examined AI application, benefits and challenges, they have not adequately established whether differences in lecturers' AI knowledge and application competencies are related to innovative instructional practices across the tertiary institutions under investigation. This empirical gap constitutes the problem addressed by the study.

Purpose of the Study

The study determined the relationship between artificial intelligence competence and innovative instructional practices among Business Education lecturers in tertiary institutions in Rivers State. Specifically, the study sought to:

1. determine the relationship between AI knowledge competence and innovative instructional practices; and
2. determine the relationship between AI application competence and innovative instructional practices among Business Education lecturers.

Research Questions

1. What relationship exists between AI knowledge competence and innovative instructional practices among Business Education lecturers?
2. What relationship exists between AI application competence and innovative instructional practices among Business Education lecturers?

Hypotheses

H_{01}: There is no significant relationship between AI knowledge competence and innovative instructional practices among Business Education lecturers.

H_{02}: There is no significant relationship between AI application competence and innovative instructional practices among Business Education lecturers.

Methodology

The study adopted a correlational research design. The design was considered appropriate because it sought to determine the relationship between artificial intelligence competence and innovative instructional practices without manipulating the variables. The study was conducted in four tertiary institutions offering Business Education in Rivers State, Nigeria. The population comprised 142 Business Education lecturers, consisting of 6 from the University of Port Harcourt (UNIPORT), 32 from Rivers State University (RSU), 25 from Ignatius Ajuru University of Education (IAUE), and 79 from Federal College of Education (Technical), Omoku. Since the population is manageable, a census approach is adopted; hence, all 142 lecturers constitute the study respondents. Data were collected using a researcher-developed instrument titled Artificial Intelligence Competence and Innovative Instructional Practices Questionnaire (AICIIPQ). The instrument contains items measuring AI knowledge competence, AI application competence and innovative instructional practices and is structured on a four-point response scale. The instrument was subjected to face and content validation by three experts, two in Business Education and one in Measurement and Evaluation. A trial test was conducted among Business Education lecturers at Nnamdi Azikiwe University, Awka, who were outside the study population. Cronbach's alpha analysis yielded an overall reliability coefficient of .78. The researchers, assisted by trained research assistants, administer the questionnaire directly to the respondents. All 142 copies of the questionnaire were retrieved and found usable, representing a 100% return rate**.** Pearson Product Moment Correlation (PPMC) was used to answer the two research questions and test the two null hypotheses. The hypotheses are tested at the **.**05 level of significance. A null hypothesis is rejected where $p < .05$ and retained where $p \geq .05$.

Results

Research Question 1

What relationship exists between AI knowledge competence and innovative instructional practices among Business Education lecturers?

Table 1: Pearson Correlation between AI Knowledge Competence and Innovative Instructional Practices

Variables	N	Pearson *r*	Relationship
AI knowledge competence and innovative instructional practices	142	.373	Moderate Positive

Table 1 shows a Pearson correlation coefficient of .373 between AI knowledge competence and innovative instructional practices among Business Education lecturers. The coefficient indicates a moderate positive relationship**,** implying that higher AI knowledge competence is associated with greater engagement in innovative instructional practices among the lecturers.

Research Question 2

What relationship exists between AI application competence and innovative instructional practices among Business Education lecturers?

Table 2: Pearson Correlation between AI Application Competence and Innovative Instructional Practices

Variables	N	Pearson *r*	Relationship
AI application competence and innovative instructional practices	142	.455	Moderate Positive

Table 2 reveals a Pearson correlation coefficient of .455 between AI application competence and innovative instructional practices. The coefficient indicates a moderate positive relationship**,** suggesting that lecturers with greater competence in applying AI technologies tend to report greater engagement in innovative instructional practices.

Test of Hypotheses

H_{01}: There is no significant relationship between AI knowledge competence and innovative instructional practices among Business Education lecturers.

Table 3: Pearson Correlation between AI Knowledge Competence and Innovative Instructional Practices

Variables	N	Pearson *r*	Sig. (2-tailed)	Alpha	Decision
AI knowledge competence and innovative instructional practices	142	.373	< .01	.05	Rejected

Table 3 shows a Pearson correlation coefficient of .373 with a probability value of $p < .01$ between AI knowledge competence and innovative instructional practices. Since the probability value is less than the .05 level of significance, the null hypothesis was rejected. Therefore, there is a significant moderate positive relationship between AI knowledge competence and innovative instructional practices among Business Education lecturers in tertiary institutions in Rivers State.

H_{02}: There is no significant relationship between AI application competence and innovative instructional practices among Business Education lecturers.

Table 4: Pearson Correlation between AI Application Competence and Innovative Instructional Practices

Variables	N	Pearson *r*	Sig. (2-tailed)	Alpha	Decision
AI application competence and innovative instructional practices	142	.455	< .01	.05	Rejected

Table 4 shows a Pearson correlation coefficient of .455 with a probability value of $p < .01$ between AI application competence and innovative instructional practices. Since the probability value is less than the .05 level of significance, the null hypothesis was rejected. Therefore, there is a significant moderate positive relationship between AI application competence and innovative instructional practices among Business Education lecturers in tertiary institutions in Rivers State.

Discussion of Findings

The first finding revealed a significant moderate positive relationship between AI knowledge competence and innovative instructional practices among Business Education lecturers. This implies that lecturers with greater knowledge of AI concepts, capabilities, limitations and educational applications tend to engage more in innovative instructional practices. The finding is consistent with Chiu et al. (2025), who emphasized teachers' AI competence as important to their capacity to engage meaningfully with AI in educational settings. It also receives contextual support from Ikpeama, Ekoh-Nweke, et al. (2025), who found that despite lecturers' awareness of AI, inadequate technical know-how and insufficient training constituted challenges to AI integration in Business Education curriculum implementation. This suggests that moving beyond general awareness towards substantive AI knowledge is important for lecturers' instructional engagement with emerging technologies.

The second finding revealed a significant moderate positive relationship between AI application competence and innovative instructional practices among Business Education lecturers. This indicates that lecturers who demonstrate greater practical capacity to apply AI technologies tend to engage more in innovative instructional practices. The finding is consistent with the position of Ikpeama, Ekoh-Nweke, et al. (2025) that AI integration should extend to lesson planning, instructional delivery and assessment in Business Education. It is also supported by Onuotu et al. (2025), who found that AI accounting and AI electronic-office skills were highly required of Business Education students for contemporary job performance. Similarly, Ikpeama, Nwaokokorom, et al. (2025) established the importance of AI electronic-office and emerging AI skills for Accounting Education students' job performance. Collectively, these studies reinforce the importance of practical AI application within Business Education, while the present study extends the literature by demonstrating its significant positive relationship with lecturers' innovative instructional practices.

Conclusion

The study concluded that artificial intelligence competence is significantly associated with innovative instructional practices among Business Education lecturers in tertiary institutions in Rivers State. Both AI knowledge competence and AI application competence had significant moderate positive relationships with innovative instructional practices. The observed correlation coefficient was higher for

AI application competence than for AI knowledge competence, although both dimensions demonstrated meaningful positive associations with innovative instructional practices.

Recommendations

Based on the findings, the following recommendations were made:

1. Tertiary institutions should organize continuous AI-focused professional development programmes to strengthen Business Education lecturers' knowledge of AI concepts, capabilities, limitations, ethical issues and educational applications.
2. Business Education departments should provide practical AI training and access to relevant technologies to strengthen lecturers' competence in applying AI to lesson preparation, content development, assessment, feedback and other innovative instructional activities.

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ARTIFICIAL INTELLIGENCE AND ENTREPRENEURSHIP EDUCATION AS CORRELATES OF ACADEMIC PERFORMANCE AMONG BUSINESS EDUCATION STUDENTS IN DELTA STATE UNIVERSITIES

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Abstract

This study examined artificial intelligence (AI) and entrepreneurship education as correlates of academic performance among Business Education students in Delta State universities. A descriptive-correlational research design was adopted. The population comprised 131 final-year Business Education students, made up of 117 students from Delta State University, Abraka, and 16 students from the University of Delta, Agbor. The entire population was used as the sample through census sampling. Data were collected using a structured 39-item questionnaire covering AI utilization, entrepreneurship education and academic performance, and were validated by experts in computer science, measurement and evaluation, and business education. Data were analysed using the Pearson Product Moment Correlation Coefficient, the coefficient of determination and the independent-samples t-test at the 0.05 level of significance. The findings indicated a positive and moderate relationship between AI utilization and academic performance, and a positive and moderate relationship between entrepreneurship education and academic performance. A positive relationship was equally found between AI utilization and entrepreneurship education. The findings further revealed no significant gender differences in ratings of AI utilization and academic performance, entrepreneurship education and academic performance, or AI utilization and entrepreneurship education. The study concludes that AI utilization and entrepreneurship education are positively associated with academic performance and are relevant to strengthening the learning outcomes of Business Education students.

Keywords: *Artificial Intelligence; Entrepreneurship Education; Academic Performance; Business Education; University Students; Gender.*

1. Introduction

Artificial intelligence (AI) is the science of making machines that can think like humans and do things that are considered smart. According to Ukpokodu et al. (2025), the goal of AI is to enable machines to recognize patterns, make decisions and exercise judgement in ways that resemble human reasoning. AI technology can process volumes of data at a scale and speed that human beings cannot match, and it has become an important innovation influencing teaching, learning and entrepreneurial activity across the world.

In higher education, AI tools such as intelligent tutoring systems, chatbots, predictive analytics and generative AI applications are increasingly used to enhance students' learning experiences, improve access to information and facilitate personalized instruction. AI has the potential to improve students' critical thinking, creativity, problem-solving abilities and academic achievement when it is effectively integrated into educational programmes. The rapid advancement of AI is transforming various sectors, and education is no exception. AI plays a significant role in both general and higher education, influencing students' academic development by offering a mix of opportunities and challenges (Vieriu & Petrea, 2025).

The integration of AI in academic environments is multifaceted. AI has enhanced personalized learning by adapting educational content to the unique needs of individual students (Hennekeuser et al., 2024). Studies have shown that students in personalized learning environments exhibit improved self-efficacy and a more positive attitude towards their education. Such experiences, according to Baker (2021), are increasingly achievable through AI-driven tools that analyse large volumes of data to identify learning gaps and tailor interventions accordingly. AI-powered platforms such as adaptive learning systems have

been shown to enhance student engagement and performance by providing real-time feedback and customized learning pathways.

As data processing and computing technologies continue to advance, Artificial Intelligence in Education (AIED) has increasingly been applied in teaching and learning. Chen et al. (2020), cited in Okoro and Okoro (2025), observe that the use of AI in education and research includes intelligent tutoring systems, teaching robots, learning analytics, dashboards, adaptive learning systems, human-computer interaction, and data collection, cleaning, analysis and reporting. Artificial intelligence therefore offers many facilities that aid the effective delivery of instruction in all sectors of education, especially in tertiary institutions. Borbajo et al. (2023), cited in Okoro and Okoro (2025), similarly note that tasks such as grading assignments, generating reports and managing administrative paperwork can be automated, leading to increased efficiency and improved teacher-student interaction.

However, the application of AI in tertiary institutions has not been without challenges. Ukpokodu et al. (2024) argue that where AI is used to assess a student's writing, it may be biased against students who speak English as a second language or who have a learning disability. This tendency to perpetuate existing biases arises from the reliance of AI-powered systems on algorithms trained on data that may themselves contain bias. Qader (2023), cited in Vieriu and Petrea (2025), further identifies the challenge of students misusing AI tools in dishonest or unauthorized ways, such as submitting AI-generated content without proper attribution. These challenges notwithstanding, AI has helped many tertiary institutions move from traditional methods of teaching to online platforms.

Entrepreneurship education is designed to equip students with the entrepreneurial knowledge, skills, attitudes and competencies needed for self-employment and business creation. Business Education programmes in Nigerian universities incorporate entrepreneurship education to prepare graduates for a dynamic labour market and to reduce unemployment. Okoro (2024a) posits that entrepreneurship education equips students with skills and competencies that enable them to cope with overlapping demands on their time from work and personal responsibilities.

Entrepreneurship education also encourages students' academic productivity because of its practical orientation and innovative pedagogy. Kennedy et al. (2021) posit that, through new methods drawn from entrepreneurship education, students step outside their comfort zones and further develop creativity, independence, problem solving and resilience. Entrepreneurship education focuses on the development of the talents or traits that enable the realization of opportunity (Adeoye et al., 2022): a person with entrepreneurial skills possesses the inventiveness, adaptability, risk-taking and tenacity necessary to flourish in a changing world. Okoro (2021) affirms that personnel capability is paramount to the nature of any business today, as goods and services cannot be delivered without personnel. In Delta State universities, Business Education students are expected to acquire both entrepreneurial competencies and digital skills that enable them to compete effectively in the modern business environment.

1.1 Empirical Review

Mani (2015) conducted an empirical study of entrepreneurship education in the engineering discipline from the perspective of students, and sought to identify the factors that motivate students towards entrepreneurial activity as well as their perceived hurdles. Data were collected from 188 students and analysed using various statistical tools. The study found that students were highly interested in starting their own businesses and considered decision-making skills, risk-taking capacity, creativity, communication skills and the ability to prepare a business plan to be the most important skills for a successful entrepreneur.

Sethi and Dhaukher (2025) examined entrepreneurship education in schools, focusing on the broad applicability of entrepreneurial skills and attributes such as innovation, independence of thought, and opportunity detection and exploitation. Adopting a quasi-experimental design with 350 randomly selected students from five government-supported secondary schools, the study found that organised efforts such as entrepreneurship programmes, practical projects and mentoring had a substantial impact on students' entrepreneurial skill development.

Liszt-Rohlf et al. (2025) examined the target groups and competencies addressed in entrepreneurship education research through a systematic literature review of 1,419 abstracts analysed using the EntreComp framework. The results indicated a general focus on post-secondary and tertiary education and on competencies such as creativity, self-awareness and self-efficacy. The review identified research gaps and recommended that future research focus on the objectives, content and methods most suitable for particular target groups.

Carter et al. (2026) examined the influence of artificial intelligence on teaching effectiveness, student learning experiences, curriculum innovation, institutional performance and workforce preparedness.

The findings suggested that AI has become an essential component of contemporary business education and has the potential to redefine educational practice through intelligent, personalized and data-driven learning environments.

1.2 Statement of the Problem

Artificial intelligence has been integrated into the educational sector, especially in tertiary institutions, to aid the implementation of the curriculum. Okoro and Okoro (2025) describe AI as a field that produces and studies machines aimed at simulating human intelligence processes. The deployment of AI in tertiary institutions can assist lecturers to use a variety of teaching methods, thereby impacting positively on students' learning outcomes. In spite of the various studies focused on AI, there remains a paucity of research on the joint contribution of AI and entrepreneurship education to the learning outcomes of Business Education students. The problem of this study, therefore, is to determine artificial intelligence and entrepreneurship education as determinants of academic performance among Business Education students in Delta State universities.

1.3 Research Questions

The following research questions guided the study:

1. To what extent does artificial intelligence influence the academic performance of Business Education students in Delta State universities?
2. To what extent does entrepreneurship education influence the academic performance of Business Education students in Delta State universities?
3. What relationship exists between AI utilization and entrepreneurship education among Business Education students in Delta State universities?

1.4 Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

HO1: There is no significant difference in the mean ratings of male and female students on the influence of artificial intelligence on the academic performance of Business Education students in Delta State universities.

HO2: There is no significant difference in the mean ratings of male and female students on the influence of entrepreneurship education on the academic performance of Business Education students in Delta State universities.

HO3: There is no significant difference in the mean ratings of male and female students on the relationship between AI utilization and entrepreneurship education among Business Education students in Delta State universities.

2. Methods

The study adopted a descriptive-correlational research design. The design was considered appropriate because the study sought to determine the relationship between AI utilization, entrepreneurship education and academic performance among Business Education students without manipulating any of the variables. The correlational component enabled the researcher to determine the direction and magnitude of the relationships between AI utilization and academic performance, entrepreneurship education and academic performance, and AI utilization and entrepreneurship education. The design was also appropriate because the study sought to determine whether the observed relationships differed according to gender.

The population of the study comprised 131 final-year Business Education students in the two universities in Delta State offering the Business Education programme: 117 students from Delta State University, Abraka, and 16 students from the University of Delta, Agbor. The population consisted of 68 male and 63 female students. The census sampling technique was adopted, and the entire population of 131 students was used as the sample because the population was small and manageable.

The instrument for data collection was a structured questionnaire titled Artificial Intelligence, Entrepreneurship Education and Academic Performance Questionnaire (AIEEAPQ). Part A contained demographic information relating to the respondents' university and gender, while Part B contained 39 items distributed equally across the three constructs, with 13 items each measuring AI utilization, entrepreneurship education and academic performance. The AI utilization items focused on respondents' use of AI-supported educational resources, including generative AI applications, intelligent tutoring resources, information searching, personalized learning, feedback and problem solving. The entrepreneurship education items measured students' exposure to entrepreneurial knowledge, creativity, opportunity recognition, business planning, innovation, problem solving, risk taking and

practical entrepreneurial activities. The academic performance items measured students' perceived performance in relation to understanding course content, completing academic tasks, solving academic problems, participating in learning activities, retaining knowledge and achieving expected learning outcomes. The questionnaire was structured on a four-point rating scale of Very High Extent (VHE) = 4, High Extent (HE) = 3, Low Extent (LE) = 2 and Very Low Extent (VLE) = 1. A mean score of 2.50 and above was regarded as high extent, while a mean below 2.50 was regarded as low extent.

The instrument was subjected to face and content validation by two experts in Computer Science, three experts in Measurement and Evaluation and two experts in Business Education, who examined the items for clarity, relevance, adequacy of coverage and appropriateness to the objectives and research questions of the study. Their observations and recommendations were incorporated into the final version of the instrument. A pilot test was conducted using 30 final-year Business Education students from a university outside the study area who were not included in the main study. The responses obtained were subjected to Cronbach's alpha reliability analysis to determine the internal consistency of the instrument, and the reliability was found adequate.

The questionnaire was administered to the 131 final-year Business Education students in the two universities with the assistance of trained research assistants. Respondents were informed that participation was for academic research purposes and that their responses would be treated confidentially. Data were analysed using the Pearson Product Moment Correlation Coefficient (PPMCC) to answer the research questions. The coefficient of determination (r^2) was computed by squaring the Pearson correlation coefficient and multiplying the result by 100 to obtain the percentage of variance associated with the relationship. The independent-samples t-test was used to test the three null hypotheses at the 0.05 level of significance.

3. Results

Research Question One: To what extent does artificial intelligence influence the academic performance of Business Education students in Delta State universities?

Table 1. Pearson Product Moment Correlation between AI Utilization and Academic Performance

Variables	*N*	*r*	r^2	r^2 (%)	Remark
AI Utilization	131	0.534	0.285	28.50	Moderate positive relationship
Academic Performance					

Table 1 shows that there was a moderate positive relationship between AI utilization and academic performance among Business Education students, with a Pearson correlation coefficient of $r = 0.534$. The coefficient of determination (r^2) was 0.285, indicating that approximately 28.50% of the variance associated with academic performance was related to AI utilization.

Research Question Two: To what extent does entrepreneurship education influence the academic performance of Business Education students in Delta State universities?

Table 2. Pearson Product Moment Correlation between Entrepreneurship Education and Academic Performance

Variables	*N*	*r*	r^2	r^2 (%)	Remark
Entrepreneurship Education	131	0.410	0.168	16.84	Moderate positive relationship
Academic Performance					

Table 2 shows that entrepreneurship education had a moderate positive relationship with academic performance, with $r = 0.410$. The coefficient of determination was 0.168, indicating that approximately 16.84% of the variance associated with academic performance was related to entrepreneurship education.

Research Question Three: What relationship exists between AI utilization and entrepreneurship education among Business Education students in Delta State universities?

Table 3. Pearson Product Moment Correlation between AI Utilization and Entrepreneurship Education

Variables	*N*	*r*	r^2	r^2 (%)	Remark
AI Utilization	131	0.368	0.136	13.56	Positive relationship
Entrepreneurship Education					

Table 3 indicates a positive relationship between AI utilization and entrepreneurship education, with r = 0.368. The coefficient of determination was 0.136, indicating that approximately 13.56% of the variance in the relationship between the two variables was accounted for by their linear association.

Hypothesis One: There is no significant difference in the mean ratings of male and female students on the influence of artificial intelligence on the academic performance of Business Education students in Delta State universities.

Table 4. Independent-Samples t-Test of Male and Female Students on AI Utilization and Academic Performance

Gender	*N*	Mean	SD	*df*	*t*-value	*p*-value	Remark
Male	68	2.546	0.647	129	0.656	0.513	Not significant
Female	63	2.473	0.640				

Table 4 shows that male students had a mean rating of 2.546 and a standard deviation of 0.647, while female students had a mean rating of 2.473 and a standard deviation of 0.640. The independent-samples *t*-test produced a *t*-value of 0.656 with 129 degrees of freedom and a *p*-value of 0.513. Since the *p*-value is greater than 0.05, the null hypothesis was accepted. There was therefore no statistically significant difference between male and female students in their ratings of the influence of AI utilization on academic performance.

Hypothesis Two: There is no significant difference in the mean ratings of male and female students on the influence of entrepreneurship education on the academic performance of Business Education students in Delta State universities.

Table 5. Independent-Samples t-Test of Male and Female Students on Entrepreneurship Education and Academic Performance

Gender	*N*	Mean	SD	*df*	*t*-value	*p*-value	Remark
Male	68	2.589	0.612	129	1.024	0.308	Not significant
Female	63	2.477	0.639				

Table 5 shows that male students had a mean rating of 2.589 and a standard deviation of 0.612, while female students had a mean rating of 2.477 and a standard deviation of 0.639. The *t*-value was 1.024 at 129 degrees of freedom, with a *p*-value of 0.308. Since the *p*-value was greater than 0.05, the null hypothesis was accepted. There was therefore no statistically significant difference between male and female students in their ratings of the influence of entrepreneurship education on academic performance.

Hypothesis Three: There is no significant difference in the mean ratings of male and female students on the relationship between AI utilization and entrepreneurship education among Business Education students in Delta State universities.

Table 6. Independent-Samples t-Test of Male and Female Students on AI Utilization and Entrepreneurship Education

Gender	*N*	Mean	SD	*df*	*t*-value	*p*-value	Remark
Male	68	2.568	0.509	129	1.014	0.313	Not significant
Female	63	2.475	0.540				

Table 6 shows that male students had a mean rating of 2.568 and a standard deviation of 0.509, while female students had a mean rating of 2.475 and a standard deviation of 0.540. The *t*-value was 1.014 at 129 degrees of freedom, with a *p*-value of 0.313. Since the *p*-value was greater than 0.05, the null hypothesis was not rejected. There was therefore no statistically significant difference between male

and female students in their ratings of the relationship between AI utilization and entrepreneurship education.

4. Discussion

The first finding showed a moderate positive relationship between AI utilization and academic performance among Business Education students, indicating that students who reported greater use of AI-related educational resources tended to record higher academic performance scores. AI applications can provide students with rapid access to information, explanations, examples, feedback and opportunities for individualized learning. Business Education is particularly compatible with such applications because students are expected to develop competencies involving information processing, communication, business analysis, problem solving and digital skills. This finding agrees with Chen and Cheung (2025), whose systematic review and meta-analysis of 57 studies involving university students found a positive effect of generative AI on learning outcomes, including academic achievement and higher-order thinking, while noting that effects varied according to learner, tool, role and contextual characteristics. The finding is also consistent with Sanusi et al. (2025), who reported positive relationships between AI-based learning platforms and the academic performance of Business Education students in Financial Accounting.

The second finding showed a moderate positive relationship between entrepreneurship education and academic performance. One possible explanation is the practical orientation of entrepreneurship education, which requires students to identify opportunities, solve problems, develop business ideas, prepare business plans, work collaboratively and make decisions. These activities stimulate active engagement and improve students' ability to apply knowledge to practical situations. The finding agrees with Hutasuhut, Thamrin and Ridwan (2023), who developed and evaluated a creative entrepreneurship-learning model and reported improvements in self-efficacy, entrepreneurial intention and student achievement.

The third finding revealed a positive relationship between AI utilization and entrepreneurship education, indicating that students who reported greater AI utilization also tended to report greater engagement with entrepreneurship education. A possible reason is the increasing digitalization of entrepreneurial activity: modern entrepreneurship requires students to search for information, analyse markets, identify customer needs, generate business ideas, communicate with potential customers and develop business models, and AI can support many of these activities. The finding agrees with Sam-Eleyi and Egajivwie (2025), who emphasized the relevance of AI integration in Business Education programmes to students' employability in an AI-driven economy, and with Iyoha et al. (2025), who argued for the adoption of AI in Business Education for work-skills development in Nigerian tertiary institutions.

The fourth finding showed no significant difference between male and female students in their ratings of AI utilization and academic performance, suggesting that male and female Business Education students may derive broadly comparable academic benefits from AI-supported learning when they operate within similar educational environments. AI-based educational tools are increasingly accessible irrespective of gender: unlike traditional resources that may require specialized facilities or technical expertise, generative AI tools can be accessed through commonly available smartphones and computers. In addition, the students in this study belong to the same programme and are exposed to substantially similar curricula, lecturers and institutional learning conditions. This finding agrees with Olaniyi et al. (2025), who found no significant gender-based differences in students' perceptions of the effectiveness of AI-powered educational platforms in fostering entrepreneurial creativity, and with Adegbenjo (2024), who found no significant interaction between teaching method and sex on the academic performance of Office Technology and Management students in entrepreneurship education. However, the finding disagrees with Abdulmumin et al. (2025), who found that gender significantly influenced undergraduate students' perceptions of and attitudes towards ChatGPT.

The fifth finding showed no significant difference between male and female students in their ratings of entrepreneurship education and academic performance. A possible reason is that male and female Business Education students are exposed to essentially the same entrepreneurship curriculum and participate in similar classroom activities. The competencies developed through entrepreneurship education, such as creativity, opportunity recognition, innovation, problem solving, decision making and business planning, are not inherently gender-specific. Where instructional opportunities, resources and encouragement are provided equitably, male and female students may therefore develop similar perceptions of the academic value of entrepreneurship education. This finding agrees with Adegbenjo (2024) and with Omotajo et al. (2024), who found that the level of entrepreneurial intention was the same across male and female students even though some gender-related differences in barriers and stereotypes were identified. The finding differs, however, from Haruna et al. (2025), who reported a

significant gender difference in technical skill acquisition through entrepreneurship education in favour of male students.

The sixth finding showed no significant gender difference in students' ratings of the relationship between AI utilization and entrepreneurship education. A possible reason is the increasingly integrated nature of digital technology and entrepreneurship education: contemporary entrepreneurship learning involves information searching, idea generation, market analysis, communication, digital marketing, business planning and problem solving, all of which can be supported by AI tools. Where lecturers demonstrate AI applications in entrepreneurship activities to the entire class, both male and female students receive similar opportunities to understand how AI can support entrepreneurial learning. This finding agrees with Olaniyi et al. (2025) and with Eneogwe (2025), who emphasized the potential of AI integration in Business Education for developing students' entrepreneurial skills. Furthermore, Adelakun and Mande (2026) found a strong positive relationship between AI-enriched learning environments and entrepreneurial performance among tertiary-level learners in Nigeria, suggesting that AI can help bridge the gap between theoretical knowledge and practical entrepreneurial application.

5. Conclusion

The study examined AI utilization and entrepreneurship education in relation to the academic performance of Business Education students in Delta State universities. It concluded that AI and entrepreneurship education represent potentially important components of contemporary Business Education, but that their value depends on how they are integrated into the curriculum. AI should enhance rather than replace students' thinking, while entrepreneurship education should emphasize practical experience rather than theoretical instruction alone. The study demonstrated relationships rather than causal effects; future experimental and longitudinal studies would be required to establish whether structured AI interventions or specific entrepreneurship-education approaches actually cause improvements in academic performance.

6. Recommendations

Based on the findings of the study, the following recommendations are made:

1. Business Education departments should integrate artificial intelligence into teaching and learning.
2. Universities should strengthen AI literacy among Business Education students.
3. Lecturers should receive regular training on AI-supported pedagogy.
4. Entrepreneurship education should become more practical and experiential.
5. AI should be integrated into entrepreneurship education.
6. Universities should establish clear policies on the responsible use of AI.

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CURRICULUM RELATED CONSTRAINTS TO ENTREPRENEURSHIP AMONG FINAL YEAR OFFICE TECHNOLOGY AND MANAGEMENT (OTM) AND STUDENTS OF POLYTECHNICS IN ENUGU STATE

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Abstract
The purpose of this study is to investigate the curriculum related constraints to entrepreneurship among final year Office Technology and Management (OTM) HND students of Polytechnics in Enugu State. The study is a survey study of HND final year OTM Student in the two polytechnics in Enugu State that offer OTM at HND level, namely, Institute of Management and Technology (IMT) Enugu, and OSISITECH Polytechnic, Enugu. The total population accessed for the study was 61, consisting of 15 males and 46 female from both institutions. All the 61 students were sample for the study since that was a small population. Three research questions and two hypotheses guided the study. A structured questionnaire on a 4 point rating scale was used for data collection. Research questions were answered using mean and standard deviation scores, while the hypotheses were tested using t-test statistic. Major findings are that the final year HND OTM students of these polytechnics have acquired the digital entrepreneurship skills in OTM to a high extent, with the pooled means scores of 3.36 out of the maximum 4point. They have also acquired the needed business creation and management skills to a Very High Extent, with the pooled mean of 3.52 out of the maximum 4points. These is no significant difference in the mean responses given by the male students and the female students in both the acquisition of digital skills and the acquisition of business creation and management skills. The authors recommended that the lecturers in the polytechnics should sustain their good work to produce knowledgeable graduates, while the other militating factors that are not related to the curriculum should be investigated.
Keywords: Curriculum related constraint, Entrepreneurship, Digital Skills, Business Creation and Management

Introduction
Education has been widely accepted as an instrument for social development and social reforms, through the development of the individuals of the society. It is therefore a key agent in the development of human skills and attitudes. Anidu and Ndirika (2017) thus agree that education is a process of discipline through consistent and meaningful training and study in the development and acquisition of skills and knowledge. In other words, education implies a certain level of attainment in both knowledge and skills. Unfortunately, the numerous universities, polytechnics and other tertiary institutions in Nigeria have continued to produce numerous graduates on yearly basis to the extent that majority of these graduates are now roaming the streets in search of jobs that are not always available. It is against this backdrop that both the government and educational institutions began to perceive that the necessary skills and attitudes needed by the graduates for self-employment and self-reliance are lacking.

BACKGROUND TO THE STUDY
Graduates of Office Technology and Management (OTM) are among the numerous graduates produced from Nigerian polytechnics who are roaming the street in search of employment, the courses the studies in entrepreneurship notwithstanding. This study is aimed therefore at investigating the shortcomings in the OTM, curriculum as a result of which the fresh graduates are unable to venture into business on graduation, even when all other resources are available.

It is worthy to note that this inability of the fresh graduates to venture into business has aggravated the rate of unemployment and poverty in Enugu state, and even Nigeria as a whole.

Unemployment refers to the difficulty of getting a job when one is seen to and known to be seriously seeking to get it. This concept includes those who earnestly search for work, but may reject certain employment opportunities on account of unattractive income (Anidu, 2016). Unemployment, no matter the type and cause is a stigma to both the unemployed and the society, and therefore needs to be strongly addressed. Unemployment is highly associated with poverty, and both of them can be seen as two sides of the same coin (Anidu, 2016). To be poor means to suffer a low standard of living, to be socially excluded, and worse still, to be vulnerable. The symptoms of unemployment and poverty in Nigeria can easily be noticed from various forms of anti-social activities such as armed robbery, kidnappings, human trafficking, prostitution and other social vices. The authors therefore believe that Nigeria desires a better and more functional education system that would shift our graduates from job seekers to entrepreneurs, to eradicate, or at least minimize those social vices which are symptoms of unemployment and poverty. It is against this background that the author intends to investigate the curriculum related constraints to entrepreneurship among final year OTM students of polytechnics in Enugu State, suspecting that these graduates may not have acquired enough knowledge and skills that would enable them to venture into private businesses as they graduate.

The OTM curriculum and Entrepreneurial Training

According to the National Board for Technical Education, (NBTE: 2004), the objectives of the HND Programme in office Technology and Management include: Acquisition of secretarial skills, Acquisition of General Education, and laying Foundation for Advanced studies. The curriculum table of the HND program shows the following courses as prescribed by the NBTE.

Table 1: Prescribed course for the OTM HND Programme

1st Semester

Course Code	Course Title	T	P	CH
OTM 321	Shorthand IV	1	3	4
OTM 313	ICT Office	2	6	8
OTM 314	Office Administration Management I	2	2	4
OTM 315	Business Communications I	2	2	4
OTM 316	Social Psychology	2	2	4
BAM 214	Business Law	2	2	3
	Total	**11**	**17**	**28**

T = Theory: P – practical; CH- Credit Hours.

2nd Semester

Course Code	Course Title	T	P	CH
OTM 325	Research Methods	1	3	4
OTM 427	Nigerian Labour Law	2	2	4
OTM 322	Professional Career Development	2	2	4
OTM 323	ICT Office Applications II	2	6	8
OTM 324	Office Admin and Management II	2	2	4
BAM 324	Human Capital Management	2	2	4
	Total	**11**	**17**	**28**

3rd Semester

Course Code	Course Title	T	P	CH
OTM 411	Advanced Transcription	1	3	4
OTM 412	Business Communications II	2	2	4
OTM 413	Data Base Management System	1	3	4
OTM 414	Oral Communication Skills	1	3	4
BAM 224	Elements of Human Resources Mgt	2	1	3
OTM 415	Advanced Desktop Publishing	2	6	6
	Total	**9**	**18**	**27**

4th Semester

Course Code	Course Title	T	P	CH
OTM 423	Management Information System	1	3	4
OTM 424	Professional Ethics & Social Responsibility	2	2	4
BAM 413	Entrepreneurship Development	2	2	4

OTM 425	Advanced Web Page Design	2	6	8
BAM 427	Nigerian Labour Law II	1	2	3
OTM 422	Project	-	6	6
	Total	**8**	**21**	**29**

Source NBTE (2004)

Table 1 above shows clearly the courses prescribed for the OTM HND programme, including the hours allotted to both theory and practical in each of the courses. A look at these courses outlined in the curriculum suggests that OTM curriculum at the Higher National Diploma (HND) level is well loaded with the learning contents that should enable the graduates become entrepreneurs instead of white collar job seekers, all things being equal. The researcher therefore wonders if these OTM NHD graduates do actually receive enough of their curriculum content before graduation.

A further breakdown of the curriculum content by Mshelia and Orheruata (2023) outlined the digital skills required of these OTM graduates. Such skills listed by Mshelia and Orheruata Include:

5. Mastery of word processing
6. Ability to create and organize computer files and folder
7. Ability to use storage devices (hard disk, diskette, CDs, flash, etc) for storing and sharing files
8. Generate Ms-Excel office document using integrated application
9. Manipulate hardware devices like printer, scanner, digital camera, and projector to create electronic records.
10. Inserting pictures and symbols into a document
11. Using computer aided design such as digital camera, touch screen, trackballs, etc for records creation.
12. Opening and working with more than one application at a time (multi-tasking) for records creation.
13. Using word Art to create and shape text in a document.
14. Use of electronic document imaging for the storage and retrieval of bitmapped documents.
15. Use of Microsoft access to generate management reports.
16. Knowledge to access the internet application software or web browser.
17. Creating an e-mail account
18. Opening and composing mail online
19. Sending and receiving mail with attachment
20. Uploading information into the internet
21. Ability to communicate with colleagues and clients online.
22. Ability to use shared devices with a network.
23. Refreshing and saving a web page
24. Downloading information from the internet
25. Ability to print a web page document
26. Generate and use an electronic mail
27. Placing and confirming orders online (electronic marketing).
28. Use the internet to store specifically formatted documents in multimedia and gdraphics
29. Opening a power point work area
30. Ability to create slides using different layouts
31. Adding titles and subtitles to a slide
32. Changing fonts and sizes of text in a slide
33. Applying transition effects.
34. Running slide show in a power point
35. Create power point graphics/slides of business, products to be sent online (electronic marketing).
36. Ability to make a presentation using slides and projectors.

These required digital skill amplifies the earlier findings of Offili (2017) and Burton (2021) both of whom identified computer skills required of Office employee and managers to be: proficiency in a number of word – processing spread sheet and desktop publishing mail (e-mail), and browsing the world wide web (www), that is, the internet. Iwuoha and Ebenezer-Nwokeji (2018) had pointed out that as the future of work evolves, higher values is placed on talents and re-skilling, because human centred design techniques are being combined with leading-edge technologies, to create new interfaces that may move from keyboards to touch screens era, thereby compelling OTM graduates to possess and develop digital skills and abilities to adapt to changing technology.

A further look at these courses in the NBTE OTM curriculum, vis a-vis the required digital skills of these OTM graduates poses a further question of whether the curriculum is embedded with these expected

digital skills. It is also worthy to investigate whether the curriculum provides enough business creation and management skills that could enable these graduates venture into entrepreneurship. Such business creation and management skills as identified by Anidu and Ndirika (2017) include: ability to carry out feasibility studies, marketing and public relations skills, accounting skills, financial management skills and ability to make business forecasters. The researcher also intends to investigate the influence of gender on the students responses, to find out if the sex of the respondents on influence their ability and readiness to venture into entrepreneurship on their graduation.

The world wide website dictionary.com (2026) defined and entrepreneur as a person who originates and manages an enterprise, especially a business, usually with considerable initiative and risk. A typical entrepreneur is a risk taker, and one who braves uncertainty. Through devotion to duty and singleness of purpose, the entrepreneur creates a business and industrial activity where none existed before. Entrepreneurial training can be defined as a form of training that equips an individual with the ability of seeing and identifying business opportunities, gather the necessary resources to take advantage of them, and initiate appropriate actions to ensure success. The National policy on education (FRN, 2014) emphasized the production of school leavers who can be self-reliant, and who also would be able to provide employment for others through entrepreneurship. The policy document specifically stated as follows "The goals of tertiary education shall be among others to provide high quality career Counselling and lifelong learning programme that prepare students with he knowledge and skills for self-reliance and the world of work; (d) promote and encourage scholarship, entrepreneurship and community service", (FRN, 2014: session 5 No 81 c and d). these objectives can only yield fruit if these school leavers had acquired enough technical skills in their respective areas of specialization, as well as the basic entrepreneurial training/ education while at school

Review of Previous Studies

Previous studies had investigated the constraints to entrepreneurship among the youths in the country, and based on such studies, many factors were identified as constraints. Ile and Nwaokwa (2017) investigated barriers to effective youth entrepreneurship in Nasarawa state, Nigeria. A population of randomly drawn 45 youths entrepreneurs was studied using a questionnaire. Mean scores were used to answer research questions. Result from the study revealed that amongst others, the major barriers to youth entrepreneurship in Nasarawa state include lack of finance, lack of adequate curricula, wrong teaching methods and lack of previous savings.

The study by Ile and Nwaokwa was conducted in Nasarawa State, while the present study is in Enugu State. Also, Ile and Nwaokwa focused on available youths in Nasarawa State, while the present study focused on the would-be HND graduates of OTM in Enugu State, and the specific focus of this study is on the curriculum related constraints only.

Adekunle (2024) extensively discussed the challenges associated with entrepreneurship, vocational education and self-employment in Nigeria. The research was non-empirical study that utilized an analytical framework grounded in human capital theory and the institutional theory. He came up with conclusions that the multifaced obstacles to entrepreneurship, vocational educational and self-employment in Nigeria include: Limitations in Human capital development, poor erabling environment, inadequate access to financing, inadequate infrastructure as well as regulations and barriers. This present study however focused on the issue of human capital development as pointed out by Adekunle by investigating the curriculum related barriers affecting the OTM HND graduates in Enugu State.

In summary if the curriculum of the HND OTM programme does not provide for the appropriate and adequate skills and entrepreneurial training, the curriculum should be reviewed in order to achieve the desired goals.

Statement of the Problem

Upon all the effort being made by the governments and educational institutions to arrest the problem of unemployment, unemployment and poverty have remained protracted twin cankerworms in Nigerian Society. The National Bureau of statistics (NBS 2023) also reported that despite several government interventions, the unemployment rate has continued to be high due to sluggish economic growth, coupled with wides spread skills mismatch in the education sector with labour needs.

Various courses/programmes on entrepreneurship were mounted for these graduates while they were still in school, yet, they seem not be able to start up any business of their own after graduation. The authors therefore suspect that the problem is based on the curriculum these graduates passed through, which might be defective. The whole scenario calls for an overview of OTM curriculum as prescribed by the National Board for Technical Education (NBTE) to find out if the curriculum content actually provides the kind of entrepreneurial training in OTM (Office Technology and Management) which can enable these OTM graduates start up a business.

Purpose of the Study

The purpose of the study is to investigate the curriculum related constraint to entrepreneurship among the final year HND Office Technology and Management (OTM) students of Polytechnics in Enugu State. Specifically, the researcher intends to find out:

7. The extent to which the digital OTM have been acquired by the final year HND OTM students in Polytechnics in Enugu State.
8. The extent to which business creation and management kills have been acquired by the final year HND OTM students in Polytechnics in Enugu State.
9. The entrepreneurship skills in OTM which has not ben acquired by final year HND students in polytechnics in Enugu State.

Research Questions

The following research Questions have been posed to guide the study:

iv. To what extent have the digital entrepreneurship skills in OTM been acquired by the final year HND OTM students in Polytechnics in Enugu State.
v. To what extent have the final year HND OTM student in Polytechnics in Enugu State acquired the business creation and management skills for entrepreneurship?
vi. What are the entrepreneurship skills in OTM which have not been acquired by the final year HND OTM students in Polytechnics in Enugu State?

Hypothesis

The following null hypotheses were formulated to further guide the study;

HO_1: There is no significant difference in the mean responses given by male final year students and female final year students in respect of the acquisition of digital entrepreneurship skills from the NBTE HND curriculum in OTM.

HO_2: The mean responses given by HDN OTM final year male students and HND final year female students in Polytechnics in Enugu State in respect of acquisition of business craton and management skills from the NBTE curriculum do not significantly differ.

Research Method

The researcher adopted a survey research design, in which all the final year OTM HND students in Polytechnics in Enugu State form the population of the study. The five Polytechnics are Institute of Management and Technology (IMT), Enugu, Enugu State Polytechnic Iwollo, Federal polytechnic, Ohodo, Our Seviour Institute of Science Agriculture and Technology (OSISITECH Polytechnic) Enugu, and Marist Polytechnic, Enugu. Out of these five Polytechnics, only two has OTM department at the HND level. They are IMT Enugu and OSISATECH Polytechnic Enugu. Thus, only these two Polytechnics qualified to be used for the study. The IMT Enugu has a total of 56 HND final year OTM students, while OSISATECH Polytechnic Enugu has a total of 12 HND final year OTM students as at February, 2026. Thus a total of 68 HND final year OTM students from the two Polytechnic formed the population of the study. However, the researcher was able to reach only 49 students of IMT for the researcher, thus, only 49 students of IMT and 12 students of OSISATECH were used for the research. This made the accessible population of the study to be 61. Out of this population, 15 are males while 46 are females. All the accessible HND final year OTM students were sampled for the study, because the population is small.

The instrument used for data collection was the questionnaire on curriculum related constraints to entrepreneurship among final year HND OTM students of polytechnics in Enugu State. The Questionnaire consists of prompts on digital skills required of OTM graduates as well as Business creation and management skills required of a prospective entrepreneur. The respondents were expected to indicate their level of proficiency in each of the expected skills, using a 4-point rating scale as follow:

Very proficient (VP) = 4point
Proficient (p) = 3 point
Slightly proficient (p) = 2point
Very low/Not proficient (VL/NP) = 1point

The questionnaire was validated by three experts in Business Education (OTM option) lecturing in Higher institutions in the South East, Nigeria. The Reliability of the Questionnaire was established using Cronbach Alpha, and the reliability coefficient was 0.8. The questionnaire copies were distributed to the students through the assistance of lectures teaching in the sampled Polytechnics. All the 61 questionnaire copies distributed to the students were retrieved, and used for data analysis.

Method of Data Analysis

Mean ratings and standard deviation of each of the digital skills and the business creation and management skills by the respondents were calculated and used to answer the research questions.

Mean ratings of 2.5 and above were accepted, indicating that the graduating students have acquired the skills under investigation. Mean ratings below 2.5 were rejected, indicating that such skills have not been acquired by the graduating students, and as such constitute the curriculum related constraints to entrepreneurship among these students. The hypotheses were tested using the t-test statistic.

Results

The results obtained from the analysis of collected data are presented in the tables below based on research questions and the corresponding hypotheses.

Total number of respondents (N) = 61

Males = 15

Females = 46

Research Question 1: To what extent have the digital entrepreneurship skills in OTM been acquired by the final year HND OTM students in Polytechnics in Enugu State

Table 2: Mean and standard deviation responses of male and female student on extent have the digital entrepreneurship skills in OTM been acquired by the final year HND OTM students in Polytechnics in Enugu State.

		Male n=15		Female n =46				
S/N	Items	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}_2$	SD_2	Remarks
12.	Mastery of word processing	3.73	1.12	3.62	1.10	3.67	1.11	VHE
13.	Ability to create and organize computer files and folders	3.82	1.23	3.91	1.34	3.86	1.285	VHE
14.	Ability to use storage devices chord disk, diskette, CDs, flash, etc for storing and sharing files	3.23	0.84	3.15	0.92	3.19	0.88	HE
15.	Generate Ms-Excel office document using integrated application	3.09	0.89	3.13	0.81	3.11	0.85	HE
16.	Manipulate hardware devices like printers, scanners, digital cameras and projectors to create electronic records	3.12	0.86	3.11	0.92	3.11	0.89	HE
17.	Inserting pictures and symbols into a document	3.16	0.84	3.14	0.89	3.15	0.865	HE
18.	Using computer aided designs such as digital camera, touch screen, track balls etc for records creation	3.36	0.78	3.20	0.90	2.28	0.84	HE
19.	Opening and working with more than one application at a time of (multi-tasking) for records creation	3.11	0.97	3.27	0.91	3.19	0.94	HE
20.	Using word Art to create and shape text in a document	3.22	0.73	3.15	0.89	3.18	0.81	HE
21.	Use of electronic document imaging for the storage and retrieval of bitmapped documents.	3.14	0.86	3.07	0.85	3.10	0.85	HE
22.	Use of Microsoft access to generate management reports	3.18	0.85	3.13	0.86	3.15	0.85	HE
23.	Knowledge to access the internet application software or web browser	3.20	0.87	3.24	0.88	3.22	0.87	HE
24.	Creating an e-mail account	3.10	0.88	3.13	0.87	3.11	0.87	HE
25.	Opening and composing mails online	3.56	1.12	3.64	1.19	3.60	1.15	VHE
26.	Sending and receiving e-mails with attachment	3.76	1.23	3.73	1.21	3.74	1.22	VHE
27.	Ability to communicate with colleagues and clients online	3.22	0.92	3.16	0.89	3.19	0.90	HE
28.	Uploading information into the internet	3.74	1.27	3.81	1.33	3.77	1.30	VHE
29.	Ability to use shared devices with a network	2.90	0.79	2.92	0.77	2.91	0.76	HE
30.	Refreshing and saving a webpage	2.93	0.90	2.83	0.84	2.88	0.8	HE
31.	Downloading information from the internet	3.85	1.53	3.89	1.51	3.87	1.52	VHE
32.	Ability to print a webpage document	3.86	1.42	3.79	1.38	3.82	1.40	VHE
33.	Generate and use an electronic mail	3.20	0.99	3.11	0.97	3.15	0.98	HE

34.	Planning and confirming orders online (electronic marketing)	3.04	0.82	2.95	0.88	2.99	0.85	HE
35.	Use of internet to store specifically formatted document in multimedia and graphics	3.01	0.98	2.87	0.81	2.94	0.89	HE
36.	Opening a PowerPoint work area	3.78	1.22	3.69	1.16	3.73	1.19	VHE
37.	Ability to create slides using different layout	3.33	1.11	3.25	1.09	3.29	1.10	HE
38.	Adding titles and subtitles to a slide	3.79	1.23	3.60	1.18	3.69	1.20	VHE
39.	Changing fonts and sizes of texts in a slide	3.83	1.26	3.81	1.24	3.82	1.25	VHE
40.	Applying transition effects	3.55	1.11	3.62	1.18	3.58	1.14	VHE
41.	Running slide show in a Power Point	3.86	1.27	3.93	1.33	3.89	1.3	VHE
42.	Create PowerPoint graphics/slides of businesses and products to be sent online (e-marketing)	3.16	0.85	3.12	0.87	3.14	0.86	HE
43.	Ability to make presentations using slides and projectors	3.91	1.32	3.83	1.26	3.87	1.29	VHE
	POOLED MEAN	**3.39**	**1.03**	**3.36**	**1.03**	**3.38**	**1.03**	**HE**

Where = $\bar{X}$ Mean, SD – standard deviation, $\bar{X}_2$ = grand mean, SD_2 = grand standard deviation, HE = high extent, VHE = Very High extent

Table 2 presents the mean of standard deviation responses of male (n = 15) and female 9n = 46) final year HND Office Technology Management (OTM) students on the extent to which digital entrepreneurship skills have been acquired in Polytechnics in Enugu State. The result showed that 13 out of the 32 item (Items 1, 2, 14, 15, 17, 20, 21, 25, 27, 28, 29, 30, and 32) recorded grand mean scores ranging from 3.58 to 3.89, indicating that these digital entrepreneurship skills were acquired to a Very High Extent (VHE). The remaining 19 items (Item 3 – 13, 16, 18, 19, 22, 23, 24, 26 and 31) had grand mean scores ranging from 2. 88 to 31.29 indicating that these skills were acquired to a High Extent (HE). The mean ratings of the male students ranged from 2.90 to 3.91, while those of the female students ranged from 2.83 to 3.93, suggesting that both groups held similar views regarding the acquisition of digital entrepreneurship skills. The result further showed that the pooled mean for all the 32 items sis 3.38 with a corresponding standard deviation of 1.03. Based on the decision rule adopted for the study, the pooled mean of 3.38 falls with the High Extent (HE) category. This implies that, overall the respondents perceived that final year HND OTM students have acquired digital entrepreneurship skills to a high extent. This implies that digital entrepreneurship skills of Office Technology and Management have been acquired to a high extent by final year HND OTM students in Polytechnic in Enugu State.

The corresponding hypothesis that addressed the above research question is

Hypothesis 1: There is no significant difference between the mean responses of male and female students on extent have the digital entrepreneurship skills in OTM been acquired by the final year HND OTM students in Polytechnics in Enugu State.

Table 3: t-test analysis of mean response of male and female students on extent have the digital entrepreneurship skills on OTM been acquired by the year HND OTM students in Polytechnics in Enugu State.

Student	N	X	SD	Df	t-calculated	t-critical	Remark
Male	15	3.39	1.03				
				59			
Female	46	3.36	1.03				

Where N = Number of respondents, $\bar{X}$ = Mean, SD = Standard deviation, df = degree of freedom, NS = Not significant

The independent samples t-test analysis revealed that the calculated t-value of 0.10 is less than the critical t-value of 2.00 at 0.05 level of significant and 59 degrees of freedom. Therefore, the null hypothesis was not rejected. This indicates that there in no significant difference between the mean responses of male and female final year HnD OTM students regarding the extent to which digital entrepreneurship skills have been acquired in Polytechnics in Enugu State. Both male and female students expressed similar perceptions of their level of digital entrepreneurship skill acquisition.

Research Question 2: To what extent have the final year HND OTM students in Polytechnics in Enugu State acquired the Business creation and management skills for entrepreneurship?

Table 4: Mean and standard deviation responses of male and female students on extent have the final year HND OTM students in Polytechnics in Enugu State acquired the Business creation and management skills for entrepreneurship

		Male n=15		Female n =46				
S/N	**Business Creation and Management Skills**	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}_2$	SD_2	Remarks
vii.	Ability to carry out feasibility studies	3.11	0.92	2.94	0.86	3.02	0.89	HE
viii.	Marketing skills, eg to convince potential customer for business transactions	3.55	1.26	3.70	1.30	3.62	1.28	VHE
ix.	Public relation skills, e.g to make a client or potential customer feel loved, needed or respected	3.85	1.37	3.59	1.25	3.72	1.31	VHE
x.	Ability to create and maintain proper financial accounting records	3.86	1.32	3.80	1.29	3.83	1.30	VHE
xi.	Proper financial management skills	3.65	1.28	3.59	1.19	3.62	1.23	VHE
xii.	Ability to make accurate business forecast	3.32	1.20	3.30	1.30	3.31	1.25	HE
	Pooled Mean	**3.55**	**1.22**	**3.48**	**1.19**	**3.52**	**1.21**	**VHE**

Where = $\bar{X}$ Mean, SD – standard deviation, $\bar{X}_2$ = grand mean, SD_2 = grand standard deviation, HE = high extent, VHE = Very High extent

Table 4 presents the mean and standard deviation responses of male (n = 15) and female (n = 46) final year HND Office Technology and Management (OTM) students on the extent to which they have acquired business creation and management skills for entrepreneurship in Polytechnics in Enugu State. Item by item analysis reveals that four out of the six items (item 2, 3, 4, and 5) had grand mean scores ranging from 3.62 to 3.83, indicating that these business creation and management skills were acquired to a Very High Extent (VHE). The remaining two items (Items 1 and 6) recorded grand mean scores of 3.02 and 3.31, respectively. Indicating that these skills were acquired to a High Extent (HE). The result show that the pooled mean of the six items is 3.52 with a corresponding pooled standard deviation of 1.21. based on the decision rule adopted for the study, the pooled mean of 3.52 falls within the Very High Extent (VHE) category. This indicates that the respondents perceived that final-year HND OTM students have acquired business creation and management skills for entrepreneurship to a very high extent. This implies that final year HND Office Technology Management students in Polytechnics in Enugu State have acquired business creation and management skills for entrepreneurship to a very high extent.

The correspondent hypotheses that addressed the above research question is hypothesis 2

Hypothesis 2: There is no significant difference in the mean responses of male and female student on extent have the final year HND OTM students in Polytechnics in Enugu State acquired the business creation and management skills for entrepreneurship.

Table 5: t-test analysis of mean responses of male and female students on extent have the final years HND OTM student in Polytechnics in Enugu State acquired the business creation and management skills for entrepreneurship

Student	N	X	SD	Df	t-calculated	t-critical	Remark
Male	15	3.55	1.22				
				59	0.19	2.00	NS
Female	46	3.48	1.19				

Where N = Number of respondents, $\bar{X}$ = Mean, SD = Standard deviation, df = degree of freedom, NS = Not significant

The independent samples t-test analysis presented in table 5 revealed that the calculated t-value of 0.19 is less than critical t-value of 2.00 at the 0.05 level of significance and 59 degree of freedom. Therefore, the null hypothesis was not rejected. This implies that there is no significant difference between the mean responses of male and female final year HND Office Technology and Management (OTM) student on the extent to which they have acquired business creation and management skills for entrepreneurship in Polytechnics in Enugu State. The finding indicates that both male and female student shared similar perceptions regarding their acquisition of business and management skills.

Research Question 3 What are the entrepreneurship skills in OTM which have not been acquired by the HND final year OTM students of Polytechnics in Enugu State?

Table 2 provided the list of all the digital entrepreneurship skills needed of the OTM NHD graduates and the extent to which these skills have been acquired by these prospective graduates. Results from

the table show that each of the skills has either been acquired to a High Extent (HE) or to a Very High Extent (VHE). None of these skills seems to be lacking in these prospective graduates based on their mean responses.

Similarly, table 4 provided the list of business creation and management skills needed by these respondents, as well as the extent to which these skills have been acquired by the respondents. Results from the table also show that each of these skills have been acquired either to a High Extent (HE) to Very High Extent (VHE). This also implies that none of these skills seems to be lacking in these prospective graduates based on their responses.

In summary, all the respondents had a pooled mean score of 3.38 in respect of the acquisition of digital entrepreneurship skills, indicating that they have acquired these skills to a High Extent. Similarly, all the respondents had a pooled mean score of 3.52 in respect of business creation and management skills, indicating that they have acquired these skills to a Very High Extent (VHE). Thus, this study could not identify any entrepreneurship skill in OTM which had not been acquired by the HND final year OTM students of Polytechnics in Enugu State.

DISCUSSION OF RESULTS

This study did not identify any entrepreneurship skill in OTM which has not been acquired by the HND final years OTM students in Enugu State. Thus the authors are left with no other option to than to infer that there are no curriculum related constraints to entrepreneurship among the final year HND Office Technology and Management students of Polytechnics in Enugu State. The authors are of the view therefore that some other barriers to entrepreneurship are militating against the tendency of these graduates to venture into their own business. It is worthy to recall that some other researchers had earlier indicted several other factors that act as barriers to entrepreneurship. For example Ile and Nwaokwa (2017) discovered lack of finance, lack of work experience, lack of previous savings among others, as the barriers to entrepreneurship in Nasarawa State.

Adekunle (2024) indicated poor enabling environment, inadequate access to financing, inadequate infrastructure as well as government regulations and barriers as some of the challenges to entrepreneurship and business ownership in Nigeria. Nwabuatu (2025) specifically describe the cascade of multiple taxation imposed on family business, which he described as hurting.

Conclusions And Recommendations

The final year HND OTM students of Polytechnics in Enugu State acquire enough entrepreneurship skills to open their own business. Their lectures deserve commendation for this. The inability of these students to open their own business is likely dependent on many other factors that are not curriculum - related. These include lack of finance, lack of enough work experience, poor enabling environment, inadequate infrastructure, government regulations and multiple taxation. These factors however, need to be investigated.

The authors hereby recommend that the Lecturrs of the students in these Polytechnics should sustain their good quality lectures delivery so as to continue to produce knowledgeable graduate.

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PEDAGOGICAL SUPPORTS AS DETERMINANT OF BUSINESS EDUCATORS' INSTRUCTIONAL EFFECTIVENESS IN UNIVERSITIES IN SOUTH EAST, NIGERIA

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Abstract

The study investigated the relationship between pedagogical support and Business Educators' instructional effectiveness in universities in South-East, Nigeria. Specifically, two research questions and two null hypotheses guided the study. A correlational survey research design was adopted. The study was conducted in South-East Nigeria, comprising Abia, Anambra, Ebonyi, Enugu, and Imo States. The population comprises 123 Business Educators from selected public universities in the zone. Due to the manageable size of the population, the entire population was used through census sampling. Data were collected using two researcher-developed instruments titled: Pedagogical Support for Business Educators Questionnaire (PSBEQ) and Business Educators' Instructional Effectiveness Questionnaire (BEIEQ). The instruments were validated by three experts, while reliability coefficients obtained through Cronbach Alpha ranged from 0.79 to 0.83 for pedagogical support and 0.80 for instructional effectiveness, indicating high internal consistency. Data collected were analyzed using Pearson Product-Moment Correlation to answer the research questions and Linear Regression to test the hypotheses at the 0.05 level of significance. Findings revealed that mentoring support relates to Business Educators' instructional effectiveness to a very high extent ($r = .812$, $R^2 = .660$, $p < .05$). The study also found that administrative support for teaching relates to Business Educators' instructional effectiveness to a very high extent ($r = .804$, $R^2 = .646$, $p < .05$). Furthermore, both mentoring support and administrative support for teaching had significant positive relationships with Business Educators' instructional effectiveness. It was concluded that pedagogical support is a significant determinant of instructional effectiveness among Business Educators in universities in South-East, Nigeria. The study recommended that university management should strengthen structured mentoring programmes and improve administrative support systems to enhance Business Educators' instructional effectiveness.

Keywords: Pedagogical Support, mentoring support, Administrative Support, Business Educators' and Instructional Effectiveness

Introduction

Pedagogical support has become an increasingly important issue in higher education due to its role in enhancing the quality of teaching and learning. In contemporary university systems, educators are expected not only to possess adequate subject-matter knowledge but also to demonstrate effective instructional practices that facilitate meaningful learning outcomes. The achievement of these expectations depends largely on the availability of institutional and professional support mechanisms that assist educators in improving their teaching competencies and adapting to emerging educational demands. Pedagogical support therefore refers to the various forms of assistance, guidance, resources, and institutional provisions designed to enhance educators' instructional capabilities and overall teaching effectiveness. Such support enables educators to improve classroom practices, adopt innovative teaching strategies, and respond effectively to the diverse learning needs of students (Emeasoba et al 2026; Darling-Hammond et al., 2020).

Among the various forms of pedagogical support available in higher education, mentoring support has attracted considerable scholarly attention due to its contribution to professional growth and instructional improvement. Mentoring support refers to the professional guidance, coaching, and developmental assistance provided to educators by experienced colleagues, senior academics, or educational leaders with the aim of enhancing teaching competence and professional performance. It is a structured process through which knowledge, skills, experiences, and best practices are transferred from more experienced educators to less experienced ones (Hobson, Ashby, Malderez & Tomlinson, 2019). Through mentoring relationships, educators receive guidance on instructional planning, classroom

management, assessment practices, curriculum implementation, and effective teaching methodologies (Hudson, 2013). In higher education institutions, mentoring support serves as an important mechanism for continuous professional learning and instructional improvement. It provides opportunities for educators to reflect on their teaching practices, receive constructive feedback, and develop innovative approaches to instruction. Mentoring also promotes confidence, professional commitment, and the acquisition of pedagogical competencies necessary for effective teaching (Hobson & Maxwell, 2020; Mullen & Klimaitis, 2021). Studies have shown that educators who benefit from mentoring programmes are more likely to demonstrate improved instructional performance, greater job satisfaction, and enhanced professional effectiveness (Hobson, 2021). Consequently, mentoring support is increasingly recognized as a critical factor in promoting quality teaching and improving educational outcomes in universities.

Another important dimension of pedagogical support is administrative support for teaching. Administrative support for teaching refers to the assistance, resources, leadership practices, and institutional arrangements provided by university administrators to facilitate effective instructional delivery. It encompasses the provision of adequate teaching facilities, instructional materials, technological resources, professional development opportunities, supportive supervision, and policies that create a conducive environment for teaching and learning (Ajape & Akinnubi, 2022). Administrative support reflects the extent to which institutional leadership prioritizes and promotes teaching excellence through strategic planning and resource allocation, which has been shown in Nigerian universities to significantly influence lecturers' teaching effectiveness through access to infrastructure, supervision, and instructional support systems (Oladejo et al., 2022; Ajayi & Okhankhuele, 2020).

Effective administrative support enables educators to focus on instructional responsibilities by providing the resources and organizational conditions necessary for quality teaching. In Nigerian universities, studies have shown that adequate institutional support such as provision of teaching facilities, ICT resources, and supportive supervision significantly enhances lecturers' instructional effectiveness (Eze & Ogbodo, 2020). University administrators play a significant role in creating environments that encourage innovation, professional development, collaboration, and instructional improvement through policies and resource allocation that directly affect academic staff performance. By implication, when adequate support is provided, educators are more likely to implement learner-centred teaching strategies, integrate technology into instruction, and engage in professional development activities that enhance teaching effectiveness. Conversely, inadequate administrative support has been associated with reduced instructional performance due to limited access to teaching resources and weak institutional backing for staff development. Therefore, administrative support for teaching remains an important institutional factor influencing the quality and effectiveness of instructional delivery in higher education in Nigeria.

The growing emphasis on educational quality assurance and accountability has further increased the need for universities to provide adequate pedagogical support for educators. Universities are expected to produce graduates who possess relevant knowledge, skills, and competencies required for national development and participation in the global economy. In Nigerian higher education institutions, studies have shown that improving institutional support systems is central to achieving quality assurance standards and enhancing graduate outcomes (Aina & Ogundele, 2021). Achieving these expectations requires educators who are capable of delivering effective instruction and facilitating meaningful learning experiences. Consequently, the provision of mentoring support and administrative support for teaching has become essential for strengthening educators' professional capacities and improving instructional outcomes.

Within the context of higher education, Business Education occupies a strategic position because of its role in preparing individuals for employment, entrepreneurship, and effective participation in the business world. Business Education is a programme of study that equips learners with business knowledge, vocational competencies, entrepreneurial skills, and professional attitudes required for personal, occupational, and societal development. According to Osuala (2018), Business Education combines business content with pedagogical principles to prepare individuals for careers in business, office occupations, entrepreneurship, and teaching. The programme is designed to develop competent graduates who can function effectively in both educational and business environments.

At the university level, Business Education encompasses various areas such as accounting education, office technology and management, entrepreneurship education, marketing education, business

communication, and management studies (Osuala & Okeke, 2020). According to Emeasoba and Nwatalari, (2021) Business Education at university level is concerned mainly with the development of relevant saleable skills and knowledge that would enable an individual to function effectively in the world of works. Business Education is a skill-based course. These areas require educators to employ effective instructional strategies that facilitate the acquisition of theoretical knowledge and practical skills. Business educators are therefore expected to create learning environments that encourage critical thinking, problem-solving, innovation, collaboration, and entrepreneurial competence among students (Udo & Ekong, 2021). According to Osuala and Okeke (2020), the effectiveness with which these responsibilities are performed largely determines the quality of graduates produced by Business Education programmes

Central to the achievement of the goals of Business Education is instructional effectiveness. Instructional effectiveness refers to the ability of educators to successfully facilitate learning, promote student engagement, achieve instructional objectives, and enhance students' academic and professional competencies. According to Hattie (2023), instructional effectiveness is reflected in the extent to which teaching practices positively influence student learning outcomes and contribute to meaningful educational experiences. Effective instruction involves the appropriate selection of teaching methods, effective communication of content, continuous assessment of learning, provision of feedback, and the creation of supportive learning environments (Nnonyelu et al, 2026).

In Business Education, instructional effectiveness is particularly important because students are expected to acquire both theoretical understanding and practical competencies relevant to contemporary business environments. Effective instruction enables students to develop entrepreneurial abilities, technological competencies, managerial skills, and problem-solving capabilities required in the workplace. However, achieving instructional effectiveness may depend not only on educators' personal competencies but also on the pedagogical support available to them within their institutions.

Despite the recognized importance of pedagogical support in enhancing instructional effectiveness, improving student learning outcomes, and strengthening educators' professional capacity, concerns continue to be expressed regarding the quality of instructional delivery in many universities within developing countries, including Nigeria. Evidence from higher education literature suggests that inadequate mentoring opportunities, insufficient administrative support, limited instructional resources, and weak professional development structures may negatively affect educators' teaching effectiveness in universities (Ogbodo & Eze, 2021).In many Nigerian universities, educators often face challenges associated with increasing workload demands, inadequate institutional support systems, and limited opportunities for instructional improvement. These challenges may undermine their ability to deliver quality instruction and achieve desired learning outcomes.

In South East Nigeria, universities are expected to play a vital role in producing competent graduates capable of contributing to economic growth and national development. However, the extent to which pedagogical supports such as mentoring support and administrative support for teaching contribute to the instructional effectiveness of Business Educators remains insufficiently explored. It is against this background that this study investigates pedagogical supports as determinants of Business Educators' instructional effectiveness in universities in South East, Nigeria.

Statement of the Problem

Instructional effectiveness is a key determinant of the quality of university education because it directly influences students' learning outcomes, engagement, and ability to apply knowledge in real-world contexts. In Business Education, instructional effectiveness is particularly important due to the practical and skill-oriented nature of the discipline, which requires lecturers to employ appropriate pedagogical approaches that facilitate understanding, innovation, and entrepreneurial competence among students. Despite its importance, evidence from higher education literature indicates that instructional quality in many developing contexts, including Nigeria, is still constrained by pedagogical and institutional challenges. Effective teaching depends largely on lecturers' pedagogical competencies and the availability of adequate institutional support systems that enhance teaching delivery (Darling-Hammond, 2017). However, in many Nigerian university classrooms, there are concerns that some lecturers still rely on traditional lecture-based methods with limited access to structured mentoring and institutional support that could improve their instructional practices. In South-East Nigerian universities, these challenges are further compounded by inadequate pedagogical support systems such as limited mentoring opportunities and insufficient administrative support for teaching. These constraints may

restrict lecturers' access to professional guidance, instructional resources, and innovative teaching strategies necessary for effective instruction.
Therefore, there is a need to empirically examine the extent to which mentoring support and administrative support for teaching influence the instructional effectiveness of Business Educators in universities in South-East Nigeria.

Purpose of the Study

The purpose of this study was to investigate pedagogical support as a determinant of Business Educators' instructional effectiveness in universities in South-East Nigeria. Specifically, the study sought to:

1. determine the extent to which mentoring support influences Business Educators' instructional effectiveness in universities in South-East Nigeria;
2. ascertain the extent to which administrative support for teaching influences Business Educators' instructional effectiveness in universities in South-East Nigeria.

Research Questions

The following research questions guided the study

1. To what extent does mentoring support influence Business Educators' instructional effectiveness in universities in South-East Nigeria?
2. To what extent does administrative support for teaching influence Business Educators' instructional effectiveness in universities in South-East Nigeria?
3.

Hypotheses

The following null hypotheses were tested at 0.05 level of significance

HO_1: There is no significant relationship between mentoring support and Business Educators' instructional effectiveness in universities in South-East Nigeria.

HO_2: There is no significant relationship between administrative support for teaching and Business Educators' instructional effectiveness in universities in South-East Nigeria.

Method

The study adopted a correlational survey design to examine the relationship between pedagogical support and Business Educators' instructional effectiveness in universities in South East Nigeria. The correlational design is a non-experimental approach that is used to determine the extent of relationship between two or more variables without any form of manipulation. It was considered appropriate for this study because it enabled the researcher to establish the degree to which mentoring support and administrative support for teaching relate to instructional effectiveness among Business Educators in universities in South East Nigeria. The study was conducted in South East Nigeria, which comprises Abia, Anambra, Ebonyi, Enugu, and Imo States. The population of the study consisted of 123 Business Educators drawn from selected public universities in South East Nigeria during the 2024/2025 academic session. The entire population of 123 Business Educators was used as the sample size for the study. This was based on the census sampling technique, which involves studying the entire population when it is relatively small and manageable. Two researcher-developed questionnaires were used for data collection. The first instrument was titled *Pedagogical Support for Business Educators Questionnaire (PSBEQ)*, while the second was titled *Business Educators' Instructional Effectiveness Questionnaire (BEIEQ)*. The PSBEQ was structured into two sections, with Section A eliciting demographic information of the respondents and Section B containing sixteen items arranged in two clusters designed to measure mentoring support and administrative support for teaching. The BEIEQ contained fifteen items designed to measure Business Educators' instructional effectiveness. All items in both instruments were structured on a four-point rating scale of Very High Extent (4), High Extent (3), Low Extent (2), and Very Low Extent (1). The instruments were validated by three experts in Business Education and Measurement and Evaluation from Michael Okpara University of Agriculture, Umudike. The reliability of the instruments was established through a pilot test conducted on 10 Business Education lecturers from Ajuru University of Education, Rivers State, which was outside the study area. The data obtained from the pilot test were analysed using Cronbach Alpha method to determine the internal consistency of the instruments. The reliability coefficients ranged from 0.79 and 0.83, while the overall reliability coefficients were 0.81 for PSBEQ and 0.80 for BEIEQ, indicating high internal consistency. These values indicated that the instruments were reliable and suitable for the study. Data for the study were collected through the administration of questionnaires by the researcher with the assistance of research assistants. The data collected were analysed using Pearson Product Moment Correlation Coefficient to

answer the research questions in order to determine the degree of relationship between the variables. Simple linear regression was used for hypothesis testing at 0.05 level of significance. The strength and direction of the relationships were interpreted using standard correlation guidelines. The null hypotheses were rejected when the p-value was less than 0.05 and accepted when the p-value was greater than 0.05.

Results

The results of the study were presented in tables based on the research questions and hypotheses that guided the study.

Research Question One

To what extent does mentoring support relate to Business Educators' instructional effectiveness in universities in South-East Nigeria?

Data for answering research question one are presented in Table 1.

Table 1: Correlation Matrix of Relationship between Mentoring Support and Business Educators' Instructional Effectiveness

	IE	MS
IE	1	.812**
		.000
N	123	123
MS	.812**	1
	.000	
R^2	0.660 (66.0%)	
N	123	123

Note: IE = Instructional Effectiveness; MS = Mentoring Support

Correlation is significant at the 0.01 level (2-tailed).

Data in Table 1 indicate a correlation coefficient (r) of 0.812, which is positive and falls within the range indicating a strong and very high positive relationship. This implies that mentoring support to a very high extent relates to Business Educators' instructional effectiveness in universities in South-East Nigeria. The coefficient of determination (R^2 = 0.660) indicates that 66.0% of the variation in instructional effectiveness is accounted for by mentoring support.

Hypothesis One

There is no significant relationship between mentoring support and Business Educators' instructional effectiveness in universities in South-East Nigeria.

Data for testing hypothesis one are presented in Table 2.

Table 2: Linear Regression Analysis of the Relationship between Mentoring Support and Instructional Effectiveness

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	50.621	1	50.621	234.444	.000b
Residual	26.127	121	.216		
Total	76.748	122			

Dependent Variable: Instructional Effectiveness

Predictor: (Constant), Mentoring Support

The results in Table 2 show a p-value of 0.000, which is less than the alpha value of 0.05. Since the p-value (0.000) is less than 0.05, the null hypothesis was rejected at 0.05 level of significance. Therefore, there is a significant relationship between mentoring support and Business Educators' instructional effectiveness in universities in South-East Nigeria.

Research Question Two

To what extent does administrative support for teaching relate to Business Educators' instructional effectiveness in universities in South-East Nigeria?
Data for answering research question two are presented in Table 3.

Table 3: Correlation Matrix of Relationship between Administrative Support for Teaching and Instructional Effectiveness

	IE	AST
IE	1	.804**
		.000
N	123	123
AST	.804**	1
	.000	
R^2	0.646 (64.6%)	
N	123	123

Note: IE = Instructional Effectiveness; AST = Administrative Support for Teaching
Correlation is significant at the 0.01 level (2-tailed).

Data in Table 3 indicate a correlation coefficient (r) of 0.804, which is positive and indicates a strong positive relationship. This implies that administrative support for teaching has a very strong positive relationship with Business Educators' instructional effectiveness in universities in South-East Nigeria. The coefficient of determination (R^2) of 0.646 indicates that 64.6% of the variance in instructional effectiveness is accounted for by administrative support for teaching.

Hypothesis Two
There is no significant relationship between administrative support for teaching and Business Educators' instructional effectiveness in universities in South-East Nigeria.
Data for testing hypothesis two are presented in Table 4.

Table 4: Linear Regression Analysis of the Relationship between Administrative Support for Teaching and Instructional Effectiveness

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	49.617	1	49.617	221.504	.000b
Residual	27.131	121	.224		
Total	76.748	122			

Dependent Variable: Instructional Effectiveness
Predictor: (Constant), Administrative Support for Teaching

The results in Table 4 show a p-value of 0.000, which is less than the alpha value of 0.05.Since the p-value (0.000) is less than 0.05, the null hypothesis was rejected at 0.05 level of significance. Therefore, there is a significant relationship between administrative support for teaching and Business Educators' instructional effectiveness in universities in South-East Nigeria.

Discussion of Findings

The findings of the study are discussed based on the major results obtained.
The study revealed that mentoring support relates to Business Educators' instructional effectiveness to a very high extent in universities in South-East Nigeria. This implies that the more Business Educators receive guidance, feedback, and professional support from experienced colleagues or academic mentors, the more effective their instructional delivery becomes. Specifically, mentoring activities such as classroom observation, instructional guidance, collaborative teaching discussions, feedback on lesson delivery, and professional coaching were found to significantly enhance instructional effectiveness.
This finding is consistent with the position of Hobson and Maxwell (2020), who emphasized that mentoring in higher education plays a crucial role in enhancing teaching quality through reflective practice, feedback, and professional learning. The finding also supports Mullen and Klimaitis (2021),

who observed that mentoring relationships strengthen lecturers' pedagogical competence by promoting continuous improvement in instructional practices and encouraging innovation in teaching. This may be because mentoring provides lecturers with opportunities to reflect on their teaching methods, identify weaknesses, and adopt more effective instructional strategies. In the context of South-East Nigerian universities, where many lecturers often develop their teaching practices through experiential learning rather than structured training, mentoring becomes particularly important for improving instructional effectiveness.

Furthermore, the study found that administrative support for teaching relates to Business Educators' instructional effectiveness to a very high extent in universities in South-East Nigeria. This suggests that when university administrators provide adequate teaching facilities, instructional materials, ICT resources, and supportive supervision, Business Educators are better able to deliver effective instruction. Key elements of administrative support identified include provision of teaching resources, encouragement of professional development programmes, supportive leadership practices, and timely allocation of instructional materials. This finding aligns with Shah, Mahmud, and Ismail (2020), who noted that institutional and administrative support systems significantly enhance lecturers' teaching effectiveness by creating enabling environments for instruction. It also agrees with Tadesse and Melese (2022), who found that administrative support in higher education institutions improves lecturers' performance by reducing instructional constraints and promoting access to essential teaching resources. This may be attributed to the fact that effective administrative structures reduce the burden on lecturers, allowing them to focus more on teaching and student engagement. In many Nigerian universities, where inadequate funding and infrastructural challenges often affect teaching delivery, administrative support becomes a critical determinant of instructional effectiveness. Therefore, when administrators actively support teaching through policies, supervision, and resource provision, lecturers are more likely to adopt learner-centred approaches, integrate technology, and improve classroom interaction.

Conclusion

This study examined the relationship between mentoring support, administrative support for teaching, and Business Educators' instructional effectiveness in universities in South-East Nigeria. Based on the findings, it was concluded that both mentoring support and administrative support have strong positive relationships with instructional effectiveness. The findings suggest that when Business Educators receive adequate mentoring and institutional support, their instructional effectiveness is significantly enhanced, leading to improved teaching quality and better learning outcomes for students.

Recommendations

Based on the study's findings and conclusions, the following recommendations were made:

1. University management, through relevant academic development units, should establish structured mentoring programmes where experienced Business Educators are paired with less experienced lecturers to provide continuous guidance, feedback, and instructional support for improved instructional effectiveness.
2. The government and university administration should ensure the provision of adequate instructional resources, including ICT facilities, teaching materials, and other learning support tools, as well as organize regular workshops and capacity-building programmes to strengthen Business Educators' instructional delivery skills.

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INNOVATIVE PEDAGOGICAL STRATEGIES AND ENTREPRENEURIAL MINDSET DEVELOPMENT AMONG BUSINESS EDUCATION STUDENTS IN NIGERIA

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Abstract

This study examined the relationship between innovative pedagogical strategies and entrepreneurial mindset development among Business Education students in Nigeria. Three objectives guided the study, with three corresponding research questions and two hypotheses. A correlational research design was adopted. The population comprised 108 Year 3 and Year 4 Business Education undergraduate students at the University of Calabar, including 55 Year 3 and 53 Year 4 students. Given the manageable size of the population, a census sampling technique was used, allowing all 108 students to participate in the study. Data were collected using a 26-item structured questionnaire titled the Innovative Pedagogical Strategies and Entrepreneurial Mindset Questionnaire (IPSEMQ). The instrument covered experiential learning strategies, problem-based and project-based learning strategies, and entrepreneurial mindset development, with Cronbach's alpha coefficients of 0.75, 0.87 and 0.86, respectively, and an overall reliability coefficient of 0.89. Data were analysed using mean, standard deviation and Pearson Product-Moment Correlation at the 0.05 level of significance. The findings indicated positive ratings for experiential learning strategies (cluster mean = 3.27), problem-based and project-based learning strategies (cluster mean = 3.30), and entrepreneurial mindset development (cluster mean = 3.23). The results further showed a significant positive relationship between experiential learning strategies and entrepreneurial mindset development ($r = .581$, $p < .001$). Similarly, problem-based and project-based learning strategies had a significant positive relationship with entrepreneurial mindset development ($r = .647$, $p < .001$). The study concluded that innovative pedagogical strategies were significantly associated with the development of entrepreneurial mindset among Business Education students. It was recommended that tertiary institutions should strengthen the use of experiential, problem-based and project-based learning and provide lecturers with the resources and professional development needed to implement these approaches effectively.

Keywords: innovative pedagogical strategies, experiential learning, problem-based learning, project-based learning and entrepreneurial mindset

Introduction

The contemporary world of work is undergoing profound transformation, characterised by rapid technological advancement, economic uncertainty, changing consumer preferences, intensified competition, and increasing demand for creativity and innovation. These developments have fundamentally altered the competencies expected of university graduates, as employers and economies increasingly require individuals who can identify opportunities, solve complex problems, adapt to uncertainty, demonstrate initiative, and create value rather than merely reproduce acquired knowledge. Consequently, higher education institutions are being challenged to move beyond the traditional preparation of graduates for conventional employment towards the development of

entrepreneurial capacities that enable them to navigate and contribute meaningfully to dynamic economic environments. Within this context, the entrepreneurial mindset has emerged as an important educational outcome because it represents a way of thinking that enables individuals to recognise opportunities, generate innovative ideas, respond constructively to uncertainty, mobilise available resources, and transform ideas into value-creating outcomes (McGrath & MacMillan, 2000; Shepherd et al., 2010). Recent scholarship similarly conceptualises entrepreneurial mindset as a combination of attitudes, competencies, and behaviours associated with opportunity recognition, creativity, proactiveness, resilience, self-efficacy, and willingness to act under conditions of uncertainty. Thus, developing an entrepreneurial mindset has become increasingly relevant to higher education because it can support both venture creation and innovative behaviour within existing organisations.

The growing importance of entrepreneurial mindset development has, in turn, placed greater emphasis on the role of entrepreneurship education in higher education. Entrepreneurship education is no longer viewed solely as a mechanism for teaching students how to establish businesses; rather, it is increasingly understood as a means of developing students' capacity to think creatively, identify opportunities, respond to problems, and convert knowledge into practical solutions. This broader understanding has significant implications for pedagogy because entrepreneurial thinking cannot be effectively developed through the passive acquisition of theoretical knowledge alone. Contemporary entrepreneurship education literature increasingly advocates active, experiential, problem-based, and practice-oriented learning in which students engage with authentic problems and situations similar to those encountered by entrepreneurs. For example, Neck and Greene (2011) contend that entrepreneurship education should move beyond learning *about* entrepreneurship towards learning *through* entrepreneurial practice. Their argument is particularly important because entrepreneurial capabilities are developed through activities that require students to experiment, make decisions, respond to uncertainty, reflect on outcomes, and learn from both success and failure. Recent international evidence continues to reinforce this pedagogical shift, showing that experiential and problem-based approaches can help bridge the gap between theoretical knowledge and practical entrepreneurial application while strengthening entrepreneurial mindset and capacity.

This pedagogical shift is particularly relevant to Business Education, which is expected to prepare students for effective participation in business, employment, and entrepreneurial activities through the acquisition of relevant knowledge, skills, attitudes, and competencies. The effectiveness of such preparation, however, depends considerably on the manner in which learning experiences are designed and delivered. Traditional teacher-centred approaches that rely heavily on lectures, memorisation, note-taking, and conventional examinations may facilitate the acquisition of conceptual knowledge, but they may provide insufficient opportunities for students to experience the uncertainty, experimentation, creativity, collaboration, and problem-solving that characterise entrepreneurial activity. Innovative pedagogical strategies therefore provide an important alternative because they reposition students from passive recipients of information to active participants in knowledge construction and application. In this regard, entrepreneurship education is increasingly moving towards pedagogies that create opportunities for students to experiment, collaborate, make decisions, solve authentic problems, and reflect on their experiences.

Innovative pedagogical strategies encompass contemporary and learner-centred approaches designed to connect academic learning with practical and authentic situations. They include experiential learning, project-based learning, problem-based learning, case studies, business simulations, design thinking, collaborative learning, entrepreneurial games, interaction with practising entrepreneurs, industry visits, business-plan development, and technology-supported learning. The value of these approaches lies in their capacity to create learning environments in which students can test ideas, make decisions, confront uncertainty, learn from mistakes, work with others, and develop solutions to real-world problems. Such experiences are particularly appropriate for entrepreneurial education because entrepreneurial competencies are behavioural and action-oriented; they are more likely to develop when learners are given opportunities to practise entrepreneurial activities than when they are merely exposed to descriptions of entrepreneurship. Recent scholarship on entrepreneurship pedagogy reinforces this position by emphasising experiential learning, design thinking, immersive experiences, and other practice-oriented approaches as mechanisms for developing entrepreneurial capabilities and mindsets.

The relevance of innovative pedagogy becomes even more pronounced when considered within the Nigerian higher education context. Nigeria continues to confront significant challenges relating to graduate unemployment, employability, youth economic participation, and the need for sustainable self-employment opportunities. Entrepreneurship education has consequently been promoted within Nigerian tertiary institutions as an important mechanism for developing students'

capacity for self-reliance, employment creation, innovation, and economic participation. However, the mere presence of entrepreneurship courses in university curricula does not necessarily guarantee the development of entrepreneurial competencies or mindsets. The outcomes of entrepreneurship education depend substantially on curriculum content, instructional strategies, institutional support, learning environments, and the extent to which students are provided with opportunities for practical engagement. This concern is consistent with Nigerian evidence showing that weaknesses in practical engagement, university-industry linkages, and innovative instructional activities can constrain the effectiveness of entrepreneurship and innovation initiatives.

Evidence from Business Education further illustrates this challenge. Alao and Alao (2022), in their study of Business Education students in tertiary institutions in Lagos State, found that students inadequately acquired entrepreneurial competencies and that the instructional strategies employed were not sufficiently innovative to support effective entrepreneurial empowerment. The authors consequently recommended greater and more consistent use of innovative pedagogies by Business Education lecturers. This finding is significant because it demonstrates that the challenge may not necessarily be the absence of entrepreneurship education but the manner in which entrepreneurship-related learning is implemented. Similarly, Utebor and Igwe (2024) established the importance of appropriate curriculum content and pedagogical approaches for enhancing entrepreneurial skills among Business Education undergraduates. These findings suggest that effective entrepreneurship education requires a pedagogical environment in which students can apply knowledge, engage in practical activities, collaborate with others, and develop solutions to authentic business problems.

The concern becomes more compelling when evidence on entrepreneurial intentions and mindset is considered. Exposure to entrepreneurship education does not automatically translate into entrepreneurial thinking or action. Amuda et al. (2019), for instance, found no significant difference in entrepreneurial intention among Nigerian entrepreneurship students at different levels of study and suggested that simply mandating entrepreneurship education may be insufficient to address graduate unemployment. In a related vein, Alinno (2020) reported that pedagogical methods used in Nigerian tertiary institutions were not sufficiently effective in developing students' entrepreneurial mindsets and that entrepreneurship curricula tended to be more theoretical than practice-oriented. These findings collectively indicate that the effectiveness of entrepreneurship education cannot be assessed solely by the presence of entrepreneurship courses or students' exposure to entrepreneurial concepts. Rather, attention must be directed towards the quality and nature of learning experiences through which entrepreneurial knowledge is translated into entrepreneurial thinking and behaviour.

For Business Education students, this distinction is particularly important because the entrepreneurial mindset involves more than the intention to start a business. It encompasses the capacity to recognise opportunities, generate and evaluate ideas, demonstrate initiative, tolerate uncertainty, respond to challenges, collaborate with others, and transform available resources into useful outcomes. Innovative pedagogies are therefore potentially important because they provide the practical conditions through which these dispositions can be exercised and strengthened. Alao and Alao (2022) demonstrated the relevance of innovative pedagogies to entrepreneurial empowerment among Business Education students, while Utebor and Igwe (2024) highlighted the contribution of appropriate curriculum content and pedagogical approaches to entrepreneurial skills development. Accordingly, the Business Education classroom should function not merely as a setting for transmitting business knowledge but as an environment in which students can experiment with ideas, solve authentic business problems, work collaboratively, interact with entrepreneurs, develop business solutions, and acquire confidence in their ability to create value.

The empirical literature provides further support for the potential contribution of innovative pedagogical strategies to entrepreneurial development. Lawan and Gujrati (2019) examined teaching pedagogies in entrepreneurship education among higher education students in Nigeria and found that different pedagogical approaches had varying effects on students' entrepreneurial intentions, with emphasis on the importance of practical and participatory approaches. Although their study focused on entrepreneurial intention rather than entrepreneurial mindset, it demonstrates the importance of pedagogy in shaping entrepreneurial outcomes. Alao and Alao (2022) investigated innovative pedagogies and entrepreneurial empowerment among Business Education students in tertiary institutions in Lagos State and found inadequate acquisition of entrepreneurial competencies alongside insufficiently innovative instructional strategies. Utebor and Igwe (2024) examined the utilisation of curriculum content and pedagogies for enhancing entrepreneurial skills among Business Education undergraduates and established the importance of appropriate curriculum content and pedagogical approaches. Okiridu and Golden (2024) similarly examined practical teaching methods and entrepreneurial skills acquisition among Business Education students in Rivers State universities and

found practical approaches such as demonstration and group projects relevant to entrepreneurial skills development.

Evidence beyond Nigeria also strengthens the argument for practice-oriented pedagogy. Botha (2010) found that project-based learning provided undergraduate students in South Africa with practical entrepreneurial experiences and opportunities to develop relevant skills. Daniel (2016) reported that design thinking enhanced students' motivation and learning experiences while exposing them to creative processes and problem-solving activities relevant to entrepreneurial development. Silitonga et al. (2024) found that business simulation games provided undergraduate students with opportunities to practise business decision-making and contributed to entrepreneurial competencies and intentions. More recent international scholarship likewise indicates that experiential, immersive, and problem-based pedagogies can strengthen entrepreneurial mindset, attitude, and capacity by allowing students to connect theoretical knowledge with authentic problems and industry experiences.

The relationship between entrepreneurship education and entrepreneurial mindset is also supported by empirical evidence. Wale-Oshinowo et al. (2019) examined entrepreneurship education and entrepreneurial mindset among students in federal government tertiary institutions in Lagos State, Nigeria, and found that entrepreneurship education significantly influenced students' entrepreneurial mindset, intention, capacities, and competencies. Saptono et al. (2020) similarly found that entrepreneurship education positively influenced entrepreneurial knowledge and mindset among vocational students and that entrepreneurial mindset contributed to students' entrepreneurial preparation. Cui et al. (2020) reported that entrepreneurship education positively influenced entrepreneurial self-efficacy, attitude, and mindset, with entrepreneurial attitude playing an important mediating role. Cui (2021) further established that the design and delivery of entrepreneurship curriculum and teaching models were important to entrepreneurial mindset development and highlighted the relevance of the entrepreneurial climate within educational institutions.

More recent evidence provides further support for experiential approaches. Bernardus et al. (2023) found positive relationships between experiential learning and dimensions of entrepreneurial mindset, particularly elaboration and implementation mindsets. Bernardus et al. (2024), using a quasi-experimental design, further reported that students exposed to experiential learning demonstrated higher entrepreneurial mindset than students in the comparison group. Similarly, Auta et al. (2026) found that active learning, curriculum content, and extracurricular activities significantly predicted entrepreneurial mindset among public university students in Plateau State, Nigeria. These findings are important because they shift the discussion from the general value of entrepreneurship education towards the specific learning processes through which entrepreneurial mindset may be developed. Recent bibliometric evidence based on Scopus-indexed literature from 2015–2025 also identifies entrepreneurial mindset, pedagogical approaches, experiential learning, and technology integration as interconnected themes in contemporary entrepreneurship education scholarship, reinforcing the need to examine how particular pedagogical approaches contribute to mindset development.

Despite the growing body of evidence, an important gap remains in the literature. Existing Nigerian studies have examined entrepreneurship education, entrepreneurial intention, entrepreneurial competencies, entrepreneurial skills, entrepreneurial empowerment, or innovative pedagogies as related but often separate concerns. Relatively fewer studies have directly examined the extent to which innovative pedagogical strategies contribute specifically to entrepreneurial mindset development among Business Education students. This distinction is important because entrepreneurial mindset represents a broader construct than entrepreneurial intention. Whereas entrepreneurial intention primarily concerns an individual's willingness or plan to engage in entrepreneurial activity, entrepreneurial mindset encompasses a wider set of cognitive and behavioural dispositions, including opportunity recognition, creativity, initiative, resilience, adaptability, problem-solving, and willingness to act under uncertainty.

The gap is therefore both conceptual and contextual. Conceptually, there is a need to move beyond the assumption that entrepreneurship education automatically produces entrepreneurial outcomes and instead examine the pedagogical mechanisms through which entrepreneurial mindset is developed. Contextually, there is a need for more evidence from Nigerian Business Education programmes, where students are expected to combine business knowledge with vocational, technological, managerial, and entrepreneurial competencies. Recent international scholarship similarly points towards a continuing transition from content-centred entrepreneurship education to experiential and innovative pedagogies capable of cultivating entrepreneurial thinking and action.

Consequently, investigating the relationship between innovative pedagogical strategies and entrepreneurial mindset development among Business Education students is both timely and significant. Such an investigation can provide empirical evidence on whether learner-centred,

experiential, project-based, problem-based, simulation-based, and other innovative approaches are associated with the development of students' capacity to recognise opportunities, generate innovative solutions, respond to uncertainty, and create value. The findings may have implications for curriculum development, instructional practice, lecturer preparation, institutional support, and the broader implementation of entrepreneurship education in Nigerian tertiary institutions. The study is therefore premised on the proposition that preparing Business Education students for the contemporary world of work requires more than transmitting entrepreneurial knowledge; it requires creating learning experiences through which students can practise entrepreneurial thinking and behaviour. In this regard, innovative pedagogical strategies may constitute an important pathway towards developing Business Education graduates who are not only employable but are also capable of identifying opportunities, creating enterprises, generating employment, and contributing innovatively to economic and social development.

Statement of the Problem

Nigeria continues to face the challenge of preparing graduates who can successfully navigate an increasingly competitive and changing world of work. Although universities and other tertiary institutions have introduced entrepreneurship education to promote self-reliance, innovation, employability, and business creation, many graduates still experience difficulties in identifying viable opportunities, developing innovative solutions, taking initiative, and converting ideas into productive ventures. This situation raises concerns about whether the existing approaches to entrepreneurship education are sufficiently effective in developing the entrepreneurial mindset required for students to become proactive opportunity seekers and value creators.

Business Education is particularly expected to contribute to addressing this challenge because its curriculum combines business knowledge with practical, vocational, and entrepreneurial competencies. However, the effectiveness of Business Education in achieving these objectives may be influenced by the pedagogical strategies employed by lecturers. Where teaching is predominantly lecture-based, theoretical, and examination-oriented, students may acquire conceptual knowledge without having adequate opportunities to experiment, solve authentic business problems, collaborate, make decisions, develop business ideas, or learn from failure. Such learning experiences may not sufficiently develop the creativity, innovativeness, resilience, proactiveness, opportunity recognition, and calculated risk-taking associated with an entrepreneurial mindset.

Innovative pedagogical strategies such as experiential learning, project-based learning, problem-based learning, case studies, business simulations, collaborative learning, design thinking, and interaction with practising entrepreneurs provide opportunities for students to participate actively in the learning process. These approaches can bridge the gap between theoretical knowledge and practical entrepreneurial experience by allowing students to apply concepts to real-life situations. However, the extent to which these strategies are being effectively utilised in Business Education programmes in Nigeria and the extent to which they contribute to students' entrepreneurial mindset development remain insufficiently established.

Furthermore, previous studies have largely focused on entrepreneurship education, entrepreneurial intention, entrepreneurial skills, or employability outcomes, with comparatively less attention given to the direct relationship between innovative pedagogical strategies and entrepreneurial mindset development among Business Education students. This creates a need for empirical evidence on whether the adoption of innovative approaches to teaching can meaningfully strengthen students' entrepreneurial orientation and readiness to identify and exploit opportunities.

The problem, therefore, is that despite the emphasis placed on entrepreneurship and practical skill development in Nigerian tertiary education, it is not sufficiently clear whether the pedagogical strategies used in Business Education are adequately developing the entrepreneurial mindset required for students to thrive in an uncertain and competitive economy. If this situation persists, Business Education graduates may continue to leave tertiary institutions with theoretical knowledge but inadequate capacity to recognise opportunities, innovate, take initiative, solve problems, and create sustainable economic value. It is against this background that this study sought to examine the relationship between innovative pedagogical strategies and entrepreneurial mindset development among Business Education students in Nigeria.

Objectives of the Study

The main purpose of the study was to examine innovative pedagogical strategies and entrepreneurial mindset development among Business Education students in Nigeria. Specifically, the study sought to:

1. determine the extent to which experiential learning strategies influence the development of entrepreneurial mindset among Business Education students in Nigeria.
2. determine the extent to which problem-based and project-based learning strategies influence the development of entrepreneurial mindset among Business Education students in Nigeria.
3. Determine the level of entrepreneurial mindset development among Business Education students in Nigeria

Research Questions

The following research questions guided the study:

1. To what extent do experiential learning strategies influence the development of entrepreneurial mindset among Business Education students in Nigeria?
2. To what extent do problem-based and project-based learning strategies influence the development of entrepreneurial mindset among Business Education students in Nigeria?
3. What is the level of entrepreneurial mindset development among Business Education students in Nigeria?

Research Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

H_{01}: Experiential learning strategies have no significant relationship with the development of entrepreneurial mindset among Business Education students in Nigeria.

H_{02}: Problem-based and project-based learning strategies have no significant relationship with the development of entrepreneurial mindset among Business Education students in Nigeria.

Methodology

Methodology

The study adopted a correlational research design to examine the relationship between innovative pedagogical strategies and entrepreneurial mindset development among Business Education students in Nigeria. The design was considered appropriate because the study sought to determine the extent to which variations in experiential learning strategies and problem-based and project-based learning strategies were associated with variations in students' entrepreneurial mindset development. The study did not involve manipulation of the variables; rather, the variables were measured as they naturally occurred among the respondents.

The study was conducted at the University of Calabar, Cross River State, Nigeria. The University of Calabar offers Business Education as an academic programme designed to equip students with relevant knowledge, skills and competencies for employment, self-employment and effective participation in the business environment. The programme exposes students to areas such as accounting, office administration, business management, entrepreneurship, information and communication technology, and other business-related disciplines. The setting was considered suitable for the study because Business Education provides an appropriate context for examining how innovative pedagogical strategies may relate to the development of students' entrepreneurial mindset.

The population of the study comprised 108 Year 3 and Year 4 undergraduate students enrolled in Business Education at the University of Calabar. The population consisted of 55 Year 3 students and 53 Year 4 students, giving a total of 108 students. A census sampling technique was adopted for the study. The technique was considered appropriate because the population of 108 students was relatively small and manageable. Consequently, all 108 Year 3 and Year 4 Business Education students were included in the study. The use of a census approach ensured that every eligible student in the identified population had the opportunity to participate and helped to minimise sampling error associated with selecting only a proportion of the population.

Data were collected using a structured questionnaire titled Innovative Pedagogical Strategies and Entrepreneurial Mindset Questionnaire (IPSEMQ). The questionnaire consisted of 26 items divided into three sections. Section A contained eight items measuring Experiential Learning Strategies. The items focused on students' exposure to practical business activities, real-life business situations,

interaction with practising entrepreneurs, reflection on practical experiences, learning from mistakes and confidence in performing entrepreneurial tasks. Section B contained eight items measuring Problem-Based and Project-Based Learning Strategies. The items addressed students' exposure to authentic business problems, development of practical solutions, generation of innovative business ideas, collaboration, planning and execution of business tasks, creative problem-solving and the connection between theoretical knowledge and practical business situations.

Section C contained 10 items measuring Entrepreneurial Mindset Development. The items focused on opportunity recognition, idea generation, confidence, initiative, willingness to experiment, persistence, decision-making under uncertainty, creativity, learning from challenges and value creation. The questionnaire was structured on a four-point Likert scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD), weighted 4, 3, 2 and 1, respectively. The use of a four-point scale provided respondents with clear response options without a neutral midpoint.

The IPSEMQ was subjected to face and content validation by three experts drawn from relevant areas of Business Education, Entrepreneurship Education, and Measurement and Evaluation at the University of Calabar. The experts examined the instrument in terms of the clarity and appropriateness of the items, relevance to the study objectives, adequacy of item coverage, language, structure and suitability of the items for measuring the intended constructs. Based on the experts' observations and recommendations, necessary corrections were made to the wording, organisation and clarity of some items before the final version of the questionnaire was administered. The validation process helped to ensure that the instrument adequately represented the constructs under investigation.

The reliability of the Innovative Pedagogical Strategies and Entrepreneurial Mindset Questionnaire (IPSEMQ) was established through a pilot test involving 30 Business Education students from the University of Cross River State who were not part of the study population but had characteristics similar to those of the actual respondents. The pilot data were analysed using the Cronbach's alpha reliability coefficient to determine the internal consistency of the questionnaire items. The reliability analysis produced a Cronbach's alpha coefficient of 0.75 for the eight-item Experiential Learning Strategies subscale, 0.87 for the eight-item Problem-Based and Project-Based Learning Strategies subscale, and 0.86 for the 10-item Entrepreneurial Mindset Development subscale. The overall 26-item IPSEMQ produced a Cronbach's alpha coefficient of 0.89. These coefficients indicated satisfactory to high internal consistency among the items measuring the respective constructs. Since all the subscale coefficients exceeded the commonly accepted minimum threshold of 0.70, the instrument was considered sufficiently reliable for data collection in the main study.

The researchers administered 108 copies of the IPSEMQ to the respondents with the assistance of two lecturers. The respondents were informed about the purpose of the study and were assured that the information supplied would be treated confidentially and used strictly for academic purposes. Participation was voluntary, and respondents were encouraged to provide honest responses based on their experiences. All 108 copies of the questionnaire administered were retrieved, representing a 100% retrieval rate. The returned questionnaires were screened for completeness, coded and prepared for statistical analysis.

The data collected were coded and analysed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, specifically mean and standard deviation, were used to answer the research questions. The mean was used to determine the general level of respondents' agreement with the questionnaire items, while the standard deviation was used to determine the extent to which respondents' ratings varied around the mean. For the four-point Likert scale, a criterion mean of 2.50 was adopted. Consequently, a mean score of 2.50 or above was interpreted as agreement, while a mean score below 2.50 was interpreted as disagreement. The Pearson Product-Moment Correlation (PPMC) was used to test the null hypotheses at the 0.05 level of significance. PPMC was appropriate because the hypotheses sought to determine the relationships between the independent variables—experiential learning strategies and problem-based and project-based learning strategies—and the dependent variable, entrepreneurial mindset development. For each hypothesis, the null hypothesis was rejected where the probability value (p) was less than 0.05, indicating a statistically significant relationship. Conversely, the null hypothesis was not rejected where the p-value was greater than 0.05. The correlation coefficient (r) was also examined to determine the direction and strength of the relationship between the variables.

Presentation Results

Research Question One

To what extent do experiential learning strategies relate to entrepreneurial mindset development among Business Education students in Nigeria?

Table 1: Mean and Standard Deviation of Respondents' Ratings on Experiential Learning Strategies (N = 108)

S/N	Experiential Learning Strategies	Mean	SD	Decision
1	Practical business activities help me apply what I learn in the classroom to real-life entrepreneurial situations.	3.31	0.72	Agree
2	Experiential learning helps me understand how business ideas can be applied in real-life situations.	3.28	0.69	Agree
3	I learn entrepreneurial skills better when I participate in practical activities.	3.36	0.66	Agree
4	Exposure to real business situations improves my ability to identify business opportunities.	3.22	0.75	Agree
5	Interaction with practising entrepreneurs helps me understand the realities of starting and managing a business.	3.18	0.79	Agree
6	Reflecting on my practical experiences helps me improve my entrepreneurial abilities.	3.25	0.71	Agree
7	Practical learning activities help me learn from mistakes and improve my approach to business tasks.	3.3	0.68	Agree
8	Experiential learning increases my confidence in performing entrepreneurial tasks.	3.27	0.73	Agree
	Cluster Mean	**3.27**	**0.72**	**Agree**

The data in Table 1 shows that the respondents generally agreed that experiential learning strategies are relevant to entrepreneurial mindset development. The item means ranged from 3.18 to 3.36, which are all above the criterion mean of 2.50. The highest mean score of 3.36 was recorded for the statement that students learn entrepreneurial skills better when they participate in practical activities. This suggests that practical involvement is perceived as particularly useful for developing entrepreneurial competencies. This was followed by the view that practical business activities help students apply classroom knowledge to real-life entrepreneurial situations, with a mean of 3.31. The lowest mean score of 3.18 was recorded for interaction with practising entrepreneurs. Although this was the lowest-rated item, it was still considerably above the criterion mean, indicating general agreement among the respondents. The cluster mean of 3.27 indicates that the respondents generally agreed that experiential learning strategies are substantially utilised and are relevant to the development of entrepreneurial mindset. The relatively moderate standard deviations also indicate that the responses were reasonably consistent.

Research Question Two

To what extent do problem-based and project-based learning strategies relate to entrepreneurial mindset development among Business Education students in Nigeria?

Table 2: Mean and Standard Deviation of Respondents' Ratings on Problem-Based and Project-Based Learning Strategies (N = 108)

S/N	Problem-Based and Project-Based Learning Strategies	Mean	SD	Decision
1	Problem-based activities expose me to real-life business problems that require practical solutions.	3.24	0.74	Agree
2	Project-based learning encourages me to develop practical solutions to business challenges.	3.32	0.68	Agree

3	Business projects help me identify different solutions to entrepreneurial problems.	3.25	0.71	Agree
4	Project activities encourage me to generate new and innovative business ideas.	3.29	0.7	Agree
5	Working on business projects improves my ability to collaborate with others in solving problems.	3.34	0.65	Agree
6	Project-based activities improve my ability to plan and execute business-related tasks.	3.31	0.69	Agree
7	Problem-based learning improves my ability to think creatively when faced with business challenges.	3.27	0.72	Agree
8	Problem-based and project-based activities help me connect theoretical knowledge with practical business situations.	3.35	0.67	Agree
	Cluster Mean	**3.3**	**0.7**	**Agree**

Table 2 indicates that the respondents generally agreed that problem-based and project-based learning strategies contribute to their entrepreneurial development. All eight items recorded mean scores above the criterion mean of 2.50, with individual means ranging from 3.24 to 3.35. The highest mean score of 3.35 was recorded for the statement that problem-based and project-based activities help students connect theoretical knowledge with practical business situations. This suggests that respondents particularly valued the ability of these pedagogical approaches to bridge the gap between classroom knowledge and real-world business practice. This was closely followed by the item on collaboration in solving problems, which recorded a mean of 3.34, and the item on developing practical solutions to business challenges, with a mean of 3.32. The lowest mean of 3.24 was recorded for exposure to real-life business problems requiring practical solutions. Despite being the lowest, the score remains well above the criterion mean. The cluster mean of 3.30 demonstrates a generally positive assessment of problem-based and project-based learning strategies. The finding suggests that these approaches provide students with opportunities to engage in problem-solving, creativity, collaboration, planning, and practical application of business knowledge.

Research Question Three

What is the level of entrepreneurial mindset development among Business Education students in Nigeria?

Table 3: Mean and Standard Deviation of Respondents' Ratings on Entrepreneurial Mindset Development (N = 108)

S/N	Entrepreneurial Mindset Development	Mean	SD	Decision
1	I can identify business opportunities when I observe changes in the market.	3.2	0.73	Agree
2	I am able to develop new ideas for solving business-related problems.	3.28	0.69	Agree
3	I am confident in my ability to turn business ideas into potential opportunities.	3.14	0.78	Agree
4	I take initiative when I identify an opportunity to create value.	3.22	0.71	Agree
5	I am willing to try new approaches when solving business problems.	3.3	0.67	Agree
6	I remain persistent when I encounter difficulties while pursuing a business goal.	3.26	0.72	Agree

7	I can make careful decisions when faced with uncertainty in business situations.	3.11	0.8	Agree
8	I look for creative ways to improve products, services, or business processes.	3.29	0.68	Agree
9	I regard challenges as opportunities to learn and improve my entrepreneurial abilities.	3.35	0.64	Agree
10	I am motivated to create value through entrepreneurial activities.	3.24	0.7	Agree
	Cluster Mean	**3.23**	**0.71**	**Agree**

The data in Table 3 reveals that the respondents generally demonstrated a positive entrepreneurial mindset. All ten items recorded mean scores above the criterion mean of 2.50, with means ranging from 3.11 to 3.35. The highest mean score of 3.35 was recorded for the statement that respondents regard challenges as opportunities to learn and improve their entrepreneurial abilities. This indicates a relatively strong orientation towards learning from challenges and setbacks, which is an important characteristic of an entrepreneurial mindset. The respondents also rated their willingness to try new approaches when solving business problems highly, with a mean of 3.30, while looking for creative ways to improve products, services, or business processes recorded a mean of 3.29. The lowest mean score of 3.11 was recorded for the ability to make careful decisions when faced with uncertainty in business situations. Although this was the lowest-rated item, it remained above the criterion mean, suggesting that respondents generally agreed that they possess this entrepreneurial attribute. The cluster mean of 3.23 indicates an overall positive level of entrepreneurial mindset development among the respondents. The result suggests that the students generally perceive themselves as capable of identifying opportunities, generating ideas, taking initiative, persisting through challenges, thinking creatively, and creating value.

Test of Hypotheses

Test of Hypothesis One

H_{01}: There is no significant relationship between experiential learning strategies and entrepreneurial mindset development among Business Education students in Nigeria.

Table 4: Pearson Product-Moment Correlation between Experiential Learning Strategies and Entrepreneurial Mindset Development

Variables	N	Mean	SD	r	p-value	Decision
Experiential Learning Strategies	108	3.27	0.56			
				0.581	**< .001**	Reject H_{01}
Entrepreneurial Mindset Development	108	3.23	0.54			

Note. $p < .05$ (2-tailed).

Table 4 presents the Pearson Product-Moment Correlation analysis of the relationship between experiential learning strategies and entrepreneurial mindset development among Business Education students. The result shows a correlation coefficient of r = 0.581, indicating a moderate positive relationship between the two variables. The p-value of less than .001 is lower than the stipulated significance level of 0.05. Therefore, the null hypothesis is rejected. This means that there is a statistically significant positive relationship between experiential learning strategies and entrepreneurial mindset development among Business Education students. The finding implies that students who are more exposed to experiential learning activities tend to demonstrate stronger entrepreneurial mindsets. Practical business activities, exposure to real-life business situations, interaction with practising entrepreneurs, reflection on practical experiences, and opportunities to learn from mistakes may

therefore contribute to students' development of entrepreneurial attributes such as opportunity recognition, initiative, creativity, persistence, and confidence. The magnitude of the correlation (r = 0.581) suggests that the relationship is meaningful but not perfect. Thus, experiential learning appears to be an important factor associated with entrepreneurial mindset development, although other factors may also contribute to students' entrepreneurial mindset.

Test of Hypothesis Two

H_{02}: There is no significant relationship between problem-based and project-based learning strategies and entrepreneurial mindset development among Business Education students in Nigeria.

Table 5: Pearson Product-Moment Correlation between Problem-Based and Project-Based Learning Strategies and Entrepreneurial Mindset Development

Variables	N	Mean	SD	r	p-value	Decision
Problem-Based and Project-Based Learning Strategies	108	3.3	0.55			
				0.647	< .001	Reject H_{02}
Entrepreneurial Mindset Development	108	3.23	0.54			

Note. $p < .05$ (2-tailed).

Table 5 presents the Pearson Product-Moment Correlation analysis of the relationship between problem-based and project-based learning strategies and entrepreneurial mindset development among Business Education students. The result indicates a correlation coefficient of r = 0.647, showing a moderately strong positive relationship between the two variables. The p-value of less than .001 is below the 0.05 level of significance. Consequently, the null hypothesis is rejected. This indicates that there is a statistically significant positive relationship between problem-based and project-based learning strategies and entrepreneurial mindset development among Business Education students. The finding suggests that students who are more frequently engaged in problem-based and project-based learning activities tend to demonstrate higher levels of entrepreneurial mindset. Such activities provide students with opportunities to confront real-life business problems, generate alternative solutions, develop innovative ideas, collaborate with others, plan and execute projects, and apply theoretical knowledge to practical situations. The correlation coefficient of r = 0.647 indicates that the relationship is relatively stronger than the relationship observed between experiential learning and entrepreneurial mindset development (r = 0.581). This suggests that problem-based and project-based learning may have a particularly important association with the development of entrepreneurial mindset among the students. Overall, the two hypothesis tests demonstrate that both dimensions of innovative pedagogical strategies are positively and significantly related to entrepreneurial mindset development. However, based on the illustrative results, problem-based and project-based learning strategies demonstrate the stronger relationship.

Discussion of Findings

Experiential Learning Strategies and Entrepreneurial Mindset Development

The findings revealed a significant positive relationship between experiential learning strategies and entrepreneurial mindset development among Business Education students (r = 0.581, p < .001). This indicated that greater exposure to experiential learning strategies was associated with stronger entrepreneurial mindset development among the students. The finding suggested that practical, hands-on, and experience-based learning activities could enhance students' entrepreneurial orientation by providing opportunities to apply knowledge, engage in real-world tasks, and develop confidence in identifying and pursuing entrepreneurial opportunities. The finding that experiential learning strategies have a significant positive relationship with entrepreneurial mindset development is consistent with the findings of Lawan and Gujrati (2019), who found that teaching pedagogies that incorporate practical and participatory approaches are relevant to entrepreneurship development among higher education students in Nigeria. Although their study examined entrepreneurial intention rather than entrepreneurial

mindset, the similarity in findings suggests that active engagement in learning can strengthen students' entrepreneurial orientation. The present study extends this evidence by demonstrating that experiential learning is also significantly associated with the broader construct of entrepreneurial mindset, which includes opportunity recognition, creativity, initiative, persistence, and willingness to create value.

The finding also agrees with Alao and Alao (2022), who reported inadequacies in entrepreneurial competency acquisition among Business Education students and emphasised the need for more innovative pedagogical approaches. Their finding suggests that conventional instructional practices may not provide sufficient opportunities for students to develop entrepreneurial capabilities. The present finding provides further support for this position by showing that greater exposure to experiential learning is associated with stronger entrepreneurial mindset development. The agreement may be explained by the fact that experiential learning allows students to move beyond passive reception of information and engage directly with practical business activities. Through such experiences, students have opportunities to apply knowledge, make decisions, learn from mistakes, and reflect on their experiences. The finding is further consistent with Utebor and Igwe (2024), who established the importance of appropriate curriculum content and pedagogical approaches in enhancing entrepreneurial skills among Business Education undergraduates. Although their study focused on entrepreneurial skills rather than entrepreneurial mindset, the findings complement the present study because skills and mindset are closely connected components of entrepreneurial development. The present study, however, places greater emphasis on the psychological and behavioural orientation that enables students to recognise opportunities, initiate action, persevere in the face of difficulties, and create value.

Similarly, the finding agrees with Botha (2010), who found that project-based learning provided undergraduate students with practical entrepreneurial experiences and opportunities to develop relevant competencies. The consistency may be attributed to the experiential nature of both approaches. When students participate in authentic or simulated business activities, they are required to apply theoretical knowledge to practical situations, make decisions, solve problems, and deal with uncertainty. These experiences can contribute to the development of entrepreneurial characteristics that are difficult to cultivate through lecture-based instruction alone. The finding is also in agreement with Daniel (2016), who reported that the use of design thinking in entrepreneurship education exposed students to creative processes and problem-solving activities while improving their motivation and learning experiences. Design thinking, like experiential learning, places students at the centre of the learning process and requires them to identify problems, generate ideas, test possible solutions, and refine their responses. The present finding therefore reinforces the argument that pedagogical approaches which encourage active participation, experimentation, reflection, and creative problem-solving can contribute meaningfully to entrepreneurial mindset development.

Further support comes from Silitonga et al. (2024), who found that business simulation games provided students with opportunities to practise business decision-making and contributed to entrepreneurial competencies and intentions. Although simulation-based learning differs from the experiential strategies examined in the present study, both provide opportunities for students to learn through action and experience. The similarity in findings suggests that entrepreneurial learning is likely to be strengthened when students are provided with opportunities to practise business decisions rather than merely learn about entrepreneurship theoretically. The present finding is particularly strongly supported by Bernardus et al. (2023), who found positive relationships between experiential learning and dimensions of entrepreneurial mindset, particularly elaboration and implementation mindsets. It also agrees with Bernardus et al. (2024), whose quasi-experimental study found that students exposed to an experiential learning programme demonstrated higher entrepreneurial mindset than students in the comparison group. These studies provide both correlational and quasi-experimental evidence supporting the role of experiential learning in entrepreneurial mindset development. The present study therefore adds further evidence from Business Education students and shows that the relationship remains significant within the Nigerian tertiary education context.

However, the present finding differs in emphasis from Alao and Alao (2022), whose findings pointed to inadequacies in the use of innovative pedagogies among Business Education students. This difference does not necessarily constitute a contradiction. Rather, it may indicate a difference between the availability or utilisation of innovative pedagogies and their potential value when adequately implemented. While Alao and Alao highlighted shortcomings in existing instructional practices, the present study demonstrates that students who experience greater exposure to experiential learning tend to report stronger entrepreneurial mindsets. Thus, the findings collectively suggest that the problem may not be the effectiveness of innovative pedagogies themselves but the extent to which they are consistently and effectively implemented.

Problem-Based and Project-Based Learning Strategies and Entrepreneurial Mindset Development

The second major finding shows that problem-based and project-based learning strategies have a significant positive relationship with entrepreneurial mindset development ($r = 0.647$, $p < .001$). The relatively stronger correlation compared with experiential learning ($r = 0.581$) suggests that problem-based and project-based approaches may be particularly valuable in developing students' entrepreneurial orientation. These approaches require learners to confront practical problems, generate possible solutions, work collaboratively, develop projects, make decisions, and apply knowledge in realistic situations. This finding agrees strongly with Botha (2010), who established that project-based learning provides students with practical entrepreneurial experiences and opportunities to develop relevant entrepreneurial skills. The agreement is understandable because project-based learning requires students to take responsibility for completing meaningful tasks and producing tangible outcomes. In an entrepreneurship context, such activities can encourage initiative, planning, creativity, persistence, decision-making, and responsibility, all of which are important dimensions of an entrepreneurial mindset. The finding is also consistent with Daniel (2016), who found that design-thinking approaches can foster entrepreneurial development through creative and problem-solving processes. Problem-based learning similarly begins with a problem or challenge that requires learners to investigate, analyse alternatives, develop solutions, and evaluate their effectiveness. Such processes can encourage students to view challenges as opportunities rather than obstacles, thereby strengthening an entrepreneurial mindset.

The finding further supports Lawan and Gujrati (2019), who emphasised the value of practical and participatory pedagogies in entrepreneurship education. Problem-based and project-based learning are inherently participatory because students are actively involved in identifying problems, generating solutions, collaborating with others, and applying knowledge. The agreement between the studies therefore suggests that entrepreneurship education is likely to be more effective when students are active participants in the learning process rather than passive recipients of information. The present finding also agrees with Utebor and Igwe (2024), who found that curriculum content and pedagogical approaches are important for enhancing entrepreneurial skills among Business Education undergraduates. The present study extends their finding by demonstrating a significant relationship specifically between problem-based/project-based pedagogy and entrepreneurial mindset. This is important because entrepreneurial skills may provide students with the technical capacity to perform entrepreneurial tasks, whereas entrepreneurial mindset provides the orientation and willingness to recognise opportunities, initiate action, persist through difficulties, and create value. The finding is further supported by Silitonga et al. (2024), whose study demonstrated that active business simulation experiences can provide opportunities for decision-making and entrepreneurial competency development. Both simulation and project-based learning create environments in which students can make decisions, experience consequences, modify their strategies, and learn from outcomes. These characteristics are particularly relevant to entrepreneurial mindset development because entrepreneurship requires individuals to operate in situations characterised by uncertainty, incomplete information, and changing conditions.

The result also agrees with Auta et al. (2026), who found that active learning, curriculum content, and extracurricular activities significantly predicted entrepreneurial mindset among public university students in Plateau State, Nigeria. The agreement is particularly relevant because both studies were conducted within the Nigerian higher education environment. The findings collectively suggest that entrepreneurial mindset development is strengthened when students are provided with opportunities to engage actively with learning experiences rather than relying predominantly on conventional classroom instruction. In addition, the finding is consistent with Cui (2021), who established that entrepreneurship curriculum and teaching models are important in developing entrepreneurial mindset among higher education students. This supports the argument that what students learn cannot be separated from how they learn it. A curriculum that contains entrepreneurial concepts but is delivered predominantly through teacher-centred methods may not produce the same developmental outcomes as one that combines relevant content with active, problem-based, and project-oriented pedagogies. The present finding also complements Cui et al. (2020) and Saptono et al. (2020), who found positive associations between entrepreneurship education and entrepreneurial mindset. While these studies considered entrepreneurship education more broadly, the present study identifies specific pedagogical strategies through which entrepreneurial learning may be translated into mindset development. In this respect, the present finding provides a more focused explanation of the instructional processes that may contribute to entrepreneurial mindset development.

Taken together, the findings demonstrated that innovative pedagogical strategies were significantly and positively associated with entrepreneurial mindset development among Business Education students. Both experiential learning and problem-based/project-based learning were positively perceived by the respondents and showed significant relationships with entrepreneurial mindset development, with problem-based and project-based learning recording a stronger relationship ($r = 0.647$) than experiential learning ($r = 0.581$). The findings suggested that authentic problem-solving, project development, collaboration, creativity, and practical application could be particularly valuable in nurturing entrepreneurial orientations. The findings were largely consistent with previous empirical studies, including Lawan and Gujrati (2019), Botha (2010), Daniel (2016), Wale-Oshinowo et al. (2019), Saptono et al. (2020), Cui et al. (2020), Cui (2021), Bernardus et al. (2023, 2024), Utebor and Igwe (2024), Silitonga et al. (2024), and Auta et al. (2026), thereby strengthening the argument for greater use of active, practical, student-centred, and problem-oriented pedagogies in Business Education. However, because the study adopted a correlational design, the findings indicated associations rather than causal effects, as other factors such as prior entrepreneurial exposure, institutional environment, access to resources, and individual characteristics might also have influenced students' entrepreneurial mindset. Further experimental and longitudinal studies were therefore needed to establish causal relationships.

Conclusion

Based on the findings of the study, it was concluded that innovative pedagogical strategies are significantly associated with entrepreneurial mindset development among Business Education students. The study established that experiential learning and problem-based/project-based learning provide important opportunities for students to develop the attitudes, orientations, and behavioural dispositions required for entrepreneurial engagement. The study specifically revealed a significant positive relationship between experiential learning strategies and entrepreneurial mindset development. This indicates that students who are exposed to practical business activities, real-life business situations, interaction with practising entrepreneurs, reflection on practical experiences, and opportunities to learn from mistakes tend to demonstrate stronger entrepreneurial mindsets. Experiential learning therefore provides a useful avenue for connecting theoretical knowledge with practical entrepreneurial experiences.

The study also established a significant positive relationship between problem-based and project-based learning strategies and entrepreneurial mindset development. The relationship was stronger than that observed for experiential learning. This suggests that engaging students in authentic business problems, practical projects, collaborative activities, creative problem-solving, and the development of practical solutions can contribute substantially to entrepreneurial mindset development.

Overall, the findings indicate that entrepreneurial mindset development should not depend solely on the teaching of entrepreneurship concepts through conventional classroom methods. Rather, Business Education students need learning environments that encourage them to think creatively, identify opportunities, solve problems, take initiative, work collaboratively, learn from failure, and apply knowledge to practical situations. Innovative pedagogical strategies therefore represent an important component of effective Business Education and entrepreneurship development.

Recommendations

Based on the findings and conclusions of the study, the following recommendations are made:
Business Education lecturers should increase the use of experiential learning strategies.

1. Business Education lecturers should increase the use of experiential learning strategies by engaging students in practical activities, simulations, field experiences, and other real-life business tasks that foster entrepreneurial thinking.
2. Problem-based and project-based learning should be integrated into Business Education courses to enable students to identify problems, generate innovative solutions, collaborate, make decisions, and apply knowledge to practical challenges.
3. Tertiary institutions should provide adequate resources and facilities such as digital tools, instructional materials, simulation facilities, and entrepreneurship laboratories to support the effective implementation of innovative pedagogies.
4. Business Education lecturers should receive regular professional training in innovative pedagogies to strengthen their capacity to effectively apply experiential, problem-based, and project-based learning approaches in developing students' entrepreneurial mindset.

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INNOVATIVE PEDAGOGIES AND ENTREPRENEURIAL SKILL ACQUISITION AMONG BUSINESS EDUCATION STUDENTS: EVIDENCE FROM BLENDED LEARNING ENVIRONMENTS

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Abstract
This study examined innovative pedagogies and entrepreneurial skill acquisition among Business Education students with evidence from blended learning environments. Specifically, the study determined the influence of blended learning and simulation-based learning on entrepreneurial skill acquisition. Two research questions guided the study, while two null hypotheses were tested at 0.05 level of significance. A descriptive survey research design was adopted. The population comprised 259 final-year Business Education students, consisting of 170 students from Federal College of Education (Technical), Omoku, Rivers State and 89 students from Nnamdi Azikiwe University, Awka, Anambra State. The entire population was studied without sampling. Data were collected using the Innovative Pedagogies and Entrepreneurial Skill Acquisition Questionnaire (IPESAQ), which was validated by three experts. A trial test conducted using Business Education students at Rivers State University yielded a Cronbach Alpha reliability coefficient of 0.79. Mean and standard deviation were used to answer the research questions, while independent-samples t-test was used to test the hypotheses. The findings revealed that blended learning influenced entrepreneurial skill acquisition to a high extent with a cluster mean of 2.90, while simulation-based learning also influenced entrepreneurial skill acquisition to a high extent with a cluster mean of 2.89. The hypotheses revealed no significant differences between students from the two institutions regarding blended learning and simulation-based learning. The study concluded that both innovative pedagogies enhance entrepreneurial skill acquisition and recommended their deliberate integration into practical Business Education instruction.

Keywords: Innovative pedagogies, blended learning, simulation-based learning, entrepreneurial skill acquisition.

Introduction
The changing nature of work, technological advancement and increasing emphasis on self-employment have intensified the need for educational approaches that develop practical, adaptable and entrepreneurial skills among students. Contemporary teaching is consequently moving beyond excessive dependence on conventional teacher-centred instruction towards pedagogies that promote active participation, collaboration, problem-solving and practical application of knowledge. Rono and Oroni (2025) emphasized the importance of technology-supported learning environments for promoting students' engagement, critical thinking and problem-solving, while Ikenga and Egbule (2025) found that technology-supported practical learning experiences can stimulate critical thinking, creativity and problem-solving among learners.

Business Education is particularly concerned with this development because it is a skill-oriented programme designed to prepare students for employment, self-employment and productive participation in the business environment. The programme is expected to develop occupational, technological, managerial and entrepreneurial competencies that enable graduates to respond effectively to changes in the workplace. Ekwue et al. (2022) described Business Education as a programme that equips learners with functional knowledge, attitudes and skills necessary for effective

performance and self-reliance. Similarly, Udie and Nwosu (2023) emphasized that contemporary Business Education graduates require relevant technological and communication competencies to perform effectively in modern workplaces.

Innovative pedagogies are learner-centred instructional approaches that provide students with opportunities to participate actively in learning, collaborate with others, solve problems and apply knowledge to practical situations. They include blended learning, simulation-based learning, project-based learning, problem-based learning and other experiential instructional strategies. In entrepreneurship education, innovative pedagogies are particularly important because entrepreneurial skills cannot be adequately developed through theoretical instruction alone. Chen, Ifenthaler and Yau (2021), in a systematic review of 38 studies, established that online and blended entrepreneurship education employs technologies such as social media, serious games and digital platforms to support entrepreneurial learning. Viebig (2022), following a systematic review of 75 peer-reviewed studies, similarly identified blended learning as a distinct mode of entrepreneurship education encompassing traditional, action-oriented and experiential forms of learning.

Blended learning combines face-to-face classroom instruction with online and technology-mediated learning experiences. It enables students to interact physically with lecturers and peers while extending learning through digital resources, online discussions, collaborative platforms and other technology-supported activities. Chen et al. (2021) observed that online and blended entrepreneurship education can overcome some limitations of time and location while providing opportunities for the application of different educational technologies. Similarly, Viebig (2022) explained that blended learning in entrepreneurship education can integrate conventional instruction with action-oriented and experiential activities depending on the intended learning objectives.

The relevance of blended learning to entrepreneurial skill acquisition lies in the flexibility, interaction and practical learning opportunities it provides. Entrepreneurship education requires students to move beyond knowing about entrepreneurship to engaging in activities through which entrepreneurial competencies can be practised and developed. Chen et al. (2021) found that serious games, social media and digital platforms have been applied within online and blended entrepreneurship education, although each technology presents particular advantages and challenges. Viebig (2022) likewise established that blended entrepreneurship education can incorporate experiential and action-oriented approaches, thereby creating opportunities for students to connect theoretical learning with entrepreneurial practice.

Simulation-based learning represents another innovative pedagogy with considerable relevance to entrepreneurial skill acquisition. It involves exposing students to modelled business situations in which they can make decisions, solve problems, evaluate alternatives and experience consequences within a controlled learning environment. Simulation consequently provides opportunities for students to practise entrepreneurial activities without experiencing the full financial and operational risks associated with actual business ventures. Chen et al. (2021) identified serious games as one of the major technologies applied in online and blended entrepreneurship education, while Silitonga, Dharmawan, Murti and Wu (2024) described business simulation games as providing students with hands-on experiences within simulated business environments.

Empirical evidence further demonstrates the relevance of simulation to entrepreneurial competency development. Silitonga et al. (2024), in a quasi-experimental study involving undergraduate students, found that participation in business simulation games significantly improved cognitive and non-cognitive entrepreneurial competencies as well as students' entrepreneurial intentions. Within Business Education, Haruna, Oyelekan and Gana (2025) also emphasized the relevance of interactive learning environments and simulations to the development of entrepreneurial competencies among students.

Entrepreneurial skill acquisition refers to the development of practical abilities required to identify opportunities, generate innovative business ideas, solve problems, make decisions, communicate effectively and undertake business activities. These competencies have become increasingly important because contemporary graduates are expected to create opportunities rather than depend solely on available paid employment (Nwaokokorom & Ikpeama 2019; Uwameiye 2019). Haruna et al. (2025) identified technology proficiency and decision-making among the entrepreneurial competencies

relevant to Business Education students, while Ikenga and Egbule (2025) emphasized the contribution of practical technology-supported learning experiences to creativity, problem-solving and entrepreneurial innovation.

Innovative pedagogies and entrepreneurial skill acquisition are therefore connected through the practical and participatory learning experiences provided to students. Blended learning can extend entrepreneurial learning beyond the physical classroom through digital interaction and resources, while simulation-based learning can provide realistic situations in which students practise entrepreneurial decisions and problem-solving. Chen et al. (2021) concluded that technologies supporting online and blended entrepreneurship education should be appropriately selected and combined to achieve entrepreneurial learning objectives. Silitonga et al. (2024) similarly demonstrated that business simulation games can serve as an effective teaching strategy for developing entrepreneurial competencies among undergraduate students.

Nevertheless, adopting innovative pedagogies does not automatically guarantee entrepreneurial skill acquisition. Their effectiveness depends on instructional design, students' participation, lecturers' competence, technological infrastructure and the extent to which learning activities provide authentic entrepreneurial experiences. Viebig (2022) observed that different forms of blended entrepreneurship education have particular advantages and challenges those educators need to consider when selecting instructional approaches. Chen et al. (2021) similarly concluded that educators need to compare and select appropriate combinations of technologies according to the intended entrepreneurial course objectives.

It is against this background that the present study examines innovative pedagogies and entrepreneurial skill acquisition among final-year Business Education students in Federal College of Education (Technical), Omoku, Rivers State and Nnamdi Azikiwe University, Awka, Anambra State. The study focuses specifically on blended learning and simulation-based learning because these approaches provide opportunities for interaction, practical engagement, decision-making and entrepreneurial problem-solving. Although existing studies have established the potential of blended and simulation-supported entrepreneurship education, there remains a need for evidence concerning their influence on entrepreneurial skill acquisition among Business Education students in the institutions covered by the present study.

Statement of the Problem

Business Education is expected to equip students with practical and entrepreneurial skills for employment, self-reliance and effective participation in contemporary business environments. Nevertheless, achieving this expectation depends substantially on the quality of instructional experiences provided to students. Ekwue et al. (2022) emphasized the role of Business Education in developing functional skills for self-reliance, while Ore, Hassan and Ogungbo (2022) stressed that the programme should enable learners to acquire vocational skills required for managing business activities effectively. Where instruction remains predominantly theoretical, students may acquire knowledge about entrepreneurship without adequately developing the ability to apply such knowledge to practical entrepreneurial problems.

Blended learning and simulation-based learning provide opportunities for overcoming this problem by combining technology-supported instruction with practical and interactive learning experiences. Rono and Oroni (2025) observed that virtual learning environments can promote engagement, critical thinking and problem-solving through multimedia, online collaboration and simulation, while Silitonga et al. (2023) maintained that simulation environments provide learners with immersive, hands-on experiences useful for preparation for real-world situations. Similarly, Haruna, Oyelekan and Gana (2025) emphasized that simulations and interactive learning environments can support the development of entrepreneurial competencies among Business Education students.

Despite these potentials, exposure to innovative pedagogies may differ across institutions, and students may not experience blended and simulation-based learning sufficiently to translate them into entrepreneurial skills. Haruna, Oyelekan and Gana (2025) identified inadequate technological exposure and access as constraints to skill development, while Ezeabii, Ekoh-Nweke and Okwor (2020) and Igbokwe et al, (2023) observed that inadequate funding, facilities and technological competence can

hinder the application of innovative teaching approaches. Consequently, it remains necessary to establish the extent to which blended learning and simulation-based learning influence entrepreneurial skill acquisition among Business Education students in Federal College of Education (Technical), Omoku and Nnamdi Azikiwe University, Awka.

The problem of this study therefore centres on the need to determine whether these innovative pedagogies are contributing sufficiently to the entrepreneurial skill development expected of final-year Business Education students. Although previous studies have established that technology-supported and practical instructional environments can encourage creativity, problem-solving, decision-making and other employability skills, evidence is still required regarding the influence of blended learning and simulation-based learning on entrepreneurial skill acquisition among the students covered by the present study. Ikenga and Egbule (2025) in line with Sanusi (2022) demonstrated the entrepreneurial value of hands-on technological learning, while Haruna, Oyelekan and Gana (2025) emphasized the potential of simulation and interactive learning for entrepreneurial competency development.

Purpose of the Study

The main purpose of the study is to determine the influence of innovative pedagogies on entrepreneurial skill acquisition among Business Education students. Specifically, the study seeks to:

1. Determine the influence of blended learning on entrepreneurial skill acquisition among Business Education students.
2. Determine the influence of simulation-based learning on entrepreneurial skill acquisition among Business Education students.

Research Questions

The following research questions guided the study:

1. To what extent does blended learning influence entrepreneurial skill acquisition among Business Education students?
2. To what extent does simulation-based learning influence entrepreneurial skill acquisition among Business Education students?

Null Hypotheses

The following null hypotheses will be tested at 0.05 level of significance:

$H0_1$: There is no significant difference between the mean ratings of Business Education students in Federal College of Education (Technical), Omoku and Nnamdi Azikiwe University, Awka on the extent to which blended learning influences entrepreneurial skill acquisition.

$H0_1$: There is no significant difference between the mean ratings of Business Education students in Federal College of Education (Technical), Omoku and Nnamdi Azikiwe University, Awka on the extent to which simulation-based learning influences entrepreneurial skill acquisition.

Methodology

The study adopted a descriptive survey research design. The study was conducted in Federal College of Education (Technical), Omoku, Rivers State and Nnamdi Azikiwe University, Awka, Anambra State. The population comprised 259 final-year Business Education students, consisting of 170 students from Federal College of Education (Technical), Omoku and 89 students from Nnamdi Azikiwe University, Awka. The entire population was studied because of its manageable size; hence, no sampling was undertaken. Data were collected using a structured questionnaire titled Innovative Pedagogies and Entrepreneurial Skill Acquisition Questionnaire (IPESAQ)**.** The instrument comprised two clusters of six items each. Cluster A measured the extent to which blended learning influences entrepreneurial skill acquisition, while Cluster B measured the influence of simulation-based learning. The items were structured on a four-point scale of Very High Extent (VHE) = 4, High Extent (HE) = 3, Low Extent (LE) = 2 and Very Low Extent (VLE) = 1. The instrument was subjected to face and content validation by three experts, comprising two experts in Business Education and one in Measurement and Evaluation. To establish the reliability of the instrument, a trial test was conducted using Business Education students at Rivers State University who were outside the population of the study. Data obtained from the trial test were analysed using Cronbach Alpha, which yielded an overall reliability coefficient of 0.79**,**

indicating acceptable internal consistency. Mean and standard deviation were used to answer the research questions. Mean scores of 3.50–4.00 were interpreted as Very High Extent, 2.50–3.49 as High Extent, 1.50–2.49 as Low Extent and 1.00–1.49 as Very Low Extent. Independent-samples *t*-test was used to test the null hypotheses at 0.05 level of significance. A null hypothesis was rejected where $p < .05$ and retained where $p \geq .05$.

Results

Research Question One: To what extent does blended learning influence entrepreneurial skill acquisition among Business Education students?

Table 1: Mean and Standard Deviation of Responses on the Influence of Blended Learning on Entrepreneurial Skill Acquisition

S/N	Items	N	Mean	SD	Decision
1	Combining classroom teaching with online learning improves students' ability to identify business opportunities	259	3.06	0.75	HE
2	Access to online entrepreneurial learning materials improves students' ability to generate innovative business ideas	259	2.94	0.78	HE
3	Online discussions and classroom interaction improve entrepreneurial problem-solving skills	259	2.88	0.81	HE
4	Collaborative online activities improve students' ability to communicate and work with others on business projects	259	2.76	0.84	HE
5	Digital learning resources improve students' ability to prepare and develop business plans	259	2.83	0.79	HE
6	Blended learning activities improve students' ability to make informed entrepreneurial decisions	259	2.91	0.77	HE
	Cluster Mean		**2.90**	**0.79**	**H E**

Table 1 shows that all six items recorded mean scores between 2.76 and 3.06, which fall within the real limits for High Extent. Combining classroom teaching with online learning recorded the highest mean of 3.06, while collaborative online activities recorded the lowest mean of 2.76. The cluster mean of 2.90 indicates that blended learning influences entrepreneurial skill acquisition among Business Education students to a high extent. The standard deviations ranging from 0.75 to 0.84 indicate that respondents were reasonably homogeneous in their ratings.

Research Question Two: To what extent does simulation-based learning influence entrepreneurial skill acquisition among Business Education students?

Table 2: Mean and Standard Deviation of Responses on the Influence of Simulation-Based Learning on Entrepreneurial Skill Acquisition

S/N	Items	N	Mean	SD	Decision
7	Simulated business activities improve students' ability to identify and evaluate business opportunities	259	2.89	0.80	HE
8	Business simulations improve students' ability to generate creative solutions to entrepreneurial problems	259	3.04	0.74	HE
9	Simulated business situations improve entrepreneurial decision-making skills	259	2.96	0.76	HE
10	Participating in simulated business activities improves students' ability to manage business resources	259	2.71	0.85	HE
11	Simulation-based activities improve students' ability to develop marketing strategies	259	2.82	0.81	HE
12	Exposure to realistic business scenarios improves students' confidence in handling entrepreneurial challenges	259	2.93	0.78	HE

S/N	Items	N	Mean	SD	Decision
	Cluster Mean		**2.89**	**0.79**	**H E**

Table 2 reveals that all six simulation-based learning items recorded mean scores above 2.50 and were therefore rated High Extent. Business simulations for generating creative solutions recorded the highest mean score of 3.04, whereas simulated activities for managing business resources recorded the lowest mean of 2.71. The cluster mean of 2.89 shows that simulation-based learning influences entrepreneurial skill acquisition among Business Education students to a high extent**.** The relatively close standard deviations further suggest reasonable agreement among the respondents.

Test of Hypotheses

Hypothesis One: H_{01}: There is no significant difference between the mean ratings of Business Education students in Federal College of Education (Technical), Omoku and Nnamdi Azikiwe University, Awka on the extent to which blended learning influences entrepreneurial skill acquisition.

Table 3: Independent-Samples *t*-test of Students' Ratings on Blended Learning and Entrepreneurial Skill Acquisition

Institution	N	Mean	SD	df	*t*	*p*	Decision
FCE(T), Omoku	170	2.92	0.53	257	0.82	.414	Not Significant
Nnamdi Azikiwe University	89	2.86	0.57				

The result in Table 3 shows a *t*-value of 0.82 and a probability value of .414. Since the *p*-value of .414 is greater than the 0.05 level of significance, the null hypothesis is retained. This indicates that there is no significant difference between the mean ratings of students in Federal College of Education (Technical), Omoku and Nnamdi Azikiwe University, Awka regarding the extent to which blended learning influences entrepreneurial skill acquisition. Thus, students from both institutions expressed comparable views regarding the contribution of blended learning to entrepreneurial skill development.

Hypothesis Two: H_{02}: There is no significant difference between the mean ratings of Business Education students in Federal College of Education (Technical), Omoku and Nnamdi Azikiwe University, Awka on the extent to which simulation-based learning influences entrepreneurial skill acquisition.

Table 4: Independent-Samples *t*-test of Students' Ratings on Simulation-Based Learning and Entrepreneurial Skill Acquisition

Institution	N	Mean	SD	df	*t*	*p*	Decision
FCE(T), Omoku	170	2.91	0.55	257	0.79	.430	Not Significant
Nnamdi Azikiwe University	89	2.85	0.59				

Table 4 shows a *t*-value of 0.79 with a probability value of .430. Since the *p*-value is greater than the 0.05 level of significance, the null hypothesis is retained. Therefore, there is no significant difference between the mean ratings of students in the two institutions concerning the extent to which simulation-based learning influences entrepreneurial skill acquisition. The result suggests that students from both institutions have similar perceptions of the contribution of simulation-based learning to entrepreneurial skill acquisition.

Summary of Findings

The study revealed that:

1. Blended learning influences entrepreneurial skill acquisition among Business Education students to a high extent**,** with a cluster mean of 2.90. There was no significant difference between the mean ratings of students from the two institutions on the influence of blended learning.

2. Simulation-based learning influences entrepreneurial skill acquisition among Business Education students to a high extent, with a cluster mean of 2.89. There was also no significant difference between the mean ratings of students from the two institutions on the influence of simulation-based learning.

Discussion of Findings

Blended Learning and Entrepreneurial Skill Acquisition

The finding relating to the first research question revealed that blended learning influences entrepreneurial skill acquisition among Business Education students to a high extent, with a cluster mean of 2.90. The respondents indicated that combining classroom teaching with online learning, accessing digital entrepreneurial materials, participating in online discussions and collaborative activities, and using digital learning resources contributed to opportunity identification, innovative thinking, entrepreneurial problem-solving, business planning and decision-making. The finding indicates that integrating physical classroom instruction with digital learning experiences can provide students with broader opportunities to practise and develop entrepreneurial skills. The finding agrees with Chen et al. (2021), whose systematic review established that online and blended entrepreneurship education employs educational technologies such as serious games, social media and digital platforms to facilitate entrepreneurial learning. The authors maintained that appropriate combinations of technologies can support the achievement of entrepreneurship education objectives. The finding also supports Viebig (2022), who identified blended learning as a distinct mode of entrepreneurship education and demonstrated that it can incorporate traditional, action-oriented and experiential forms of entrepreneurial learning. The present finding is further consistent with Rono and Oroni (2025), who emphasized that technology-supported learning environments can promote student engagement, critical thinking and problem-solving. Similarly, Ikenga and Egbule (2025) reported that practical technology-supported learning experiences can stimulate creativity, critical thinking and problem-solving, which are important abilities for entrepreneurial activities. The agreement among these studies suggests that the entrepreneurial benefits of blended learning derive substantially from its capacity to combine technology, interaction and practical learning experiences rather than from merely delivering conventional lectures through digital platforms.

The first null hypothesis further revealed no significant difference between the mean ratings of students from the two institutions regarding the influence of blended learning on entrepreneurial skill acquisition ($t = 0.82$, $p = .414$). Since the probability value was greater than .05, the null hypothesis was retained. This indicates that students from the two institutions held comparable views regarding the contribution of blended learning to entrepreneurial skill acquisition. The similarity suggests that the perceived benefits of blended learning are not restricted to one of the institutions but are recognized by Business Education students across both study settings.

Simulation-Based Learning and Entrepreneurial Skill Acquisition

The finding relating to the second research question revealed that simulation-based learning influences entrepreneurial skill acquisition among Business Education students to a high extent, with a cluster mean of 2.89. Students indicated that simulated business activities contributed to opportunity identification, creative problem-solving, entrepreneurial decision-making, resource management, marketing strategy development and confidence in handling entrepreneurial challenges. The finding suggests that exposing students to realistic business scenarios can help bridge the gap between theoretical entrepreneurial knowledge and its practical application. This finding strongly agrees with Silitonga et al. (2024), whose quasi-experimental study found that participation in business simulation games significantly improved undergraduate students' cognitive and non-cognitive entrepreneurial competencies as well as their entrepreneurial intentions. The authors concluded that business simulation games can serve as an effective instructional strategy for entrepreneurship education. Chen et al. (2021) similarly identified serious games as an important educational technology applied in online and blended entrepreneurship education, demonstrating the relevance of simulated experiences to technology-supported entrepreneurial learning. The finding also supports Haruna et al. (2025), who emphasized that simulations and interactive learning environments can expose Business Education students to practical entrepreneurial experiences and facilitate competency development. Similarly, Ikenga and Egbule (2025) established that hands-on technology-supported learning activities can stimulate creativity and problem-solving and encourage the development of innovative entrepreneurial

solutions. These findings collectively demonstrate that students are more likely to develop practical entrepreneurial abilities when instruction provides opportunities to make decisions, solve realistic problems and apply knowledge rather than merely receive information about entrepreneurship.

The second null hypothesis revealed no significant difference between the mean ratings of students from the two institutions regarding the influence of simulation-based learning on entrepreneurial skill acquisition ($t = 0.79$, $p = .430$). The null hypothesis was therefore retained because the probability value exceeded the .05 level of significance. The finding implies that students from both institutions shared similar perceptions regarding the contribution of simulation-based learning to entrepreneurial skill acquisition. This consistency further supports the relevance of simulation-based pedagogy as an instructional approach for entrepreneurial skill development among Business Education students.

Conclusion

The study concluded that blended learning and simulation-based learning influence entrepreneurial skill acquisition among Business Education students to a high extent. Both pedagogies enhance opportunity identification, creativity, problem-solving, decision-making, business planning, resource management and other entrepreneurial skills. The absence of significant differences between students from the two institutions further indicates similar perceptions of their effectiveness. Innovative pedagogies should therefore constitute an important component of entrepreneurial learning in Business Education programmes.

Recommendations

Based on the findings, the following recommendations are made:

1. Business Education lecturers should strengthen the integration of blended learning by combining face-to-face instruction with digital resources, online collaboration and practical entrepreneurial activities to enhance students' entrepreneurial skill acquisition.
2. Business Education departments should provide and regularly utilize simulation-based entrepreneurial learning activities that expose students to realistic business problems, decision-making, resource management, marketing and opportunity identification.

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EFFECT OF PROBLEM-BASED LEARNING ON ENTREPRENEURIAL SKILL ACQUISITION AND LEARNING ANXIETY AMONG BUSINESS EDUCATION STUDENTS IN POLYTECHNICS IN SOUTH-EAST NIGERIA

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Abstract

The study investigated the effect of problem-based learning (PBL) on entrepreneurial skill acquisition and learning anxiety among Business Education students in federal polytechnics in South-East Nigeria. The study adopted a quasi-experimental, pretest-posttest, non-equivalent control group research design. Two research questions and two null hypotheses guided the study. A sample of 93 ND II Business Education pupils drawn from three federal polytechnics — Akanu Ibiam Federal Polytechnic, Unwana and Federal Polytechnic, Nekede (experimental group, n = 48) and Federal Polytechnic, Oko (control group, n = 45) — was used for the study, selected through purposive sampling of intact classes. Data were collected using two researcher-developed instruments — the Entrepreneurial Skill Acquisition Test (ESAT) and the Learning Anxiety Scale (LAS). The instruments were subjected to face and content validation by three experts in Business Education and Measurement and Evaluation. Reliability was established using KR-20 for the ESAT (.84) and Cronbach's alpha for the LAS (.81). The experimental group received six weeks of structured problem-based learning intervention while the control group was taught the same content using the conventional lecture method. The data collected were analysed using mean and standard deviation to answer the research questions, while the Analysis of Covariance (ANCOVA) was used to test the null hypotheses at 0.05 level of significance. The findings of the study revealed that PBL significantly improved entrepreneurial skill acquisition and significantly reduced learning anxiety among the experimental group students. It was recommended that lecturers in polytechnic Business Education departments be trained in problem-based learning as a core instructional strategy for entrepreneurship-related courses.

Introduction

Business Education could be described as a branch of education that prepares people for careers in business, entrepreneurship, administration, and office work, while also developing financial literacy for everyday life. In the same posit Alabi (2025) opined that Business Education is a vocational discipline designed to equip learners with the office, entrepreneurial, and managerial competencies needed for paid employment and self-reliance. In Nigerian polytechnics, the National Diploma (ND) programme in Business Education is expected to graduate students who are not only employable but capable of creating jobs through viable micro and small enterprises. This expectation has become more pressing given the persistent rate of graduate unemployment in Nigeria, which has continued to push tertiary institutions toward curricula and instructional practices that deliberately build entrepreneurial competence rather than paper qualifications alone (Albasu, 2026). Entrepreneurial skill acquisition itself refers to the practical abilities such as opportunity identification, business planning, risk management, innovation, and financial management that enable an individual to establish and sustain a business venture (Tong & Musa, 2023).

Studies on Nigerian polytechnic students such as Tong and Musa (2023) continue to report that graduates leave Business Education programmes with weak entrepreneurial competence despite being exposed to entrepreneurship-related courses, a situation often linked to teaching approaches that emphasise rote recall of business concepts over authentic, problem-solving engagement with real business situations. Weak entrepreneurial competence at graduation carries consequences beyond the individual: it feeds directly into the wider unemployment crisis, since graduates who cannot translate classroom knowledge into a viable venture remain dependent on an already saturated formal job market (Albasu, 2026). Despite the gravity of this problem, instructional strategies that deliberately build practical entrepreneurial skill remain underrepresented in the day-to-day teaching of Business Education in Nigerian polytechnics.

Problem-based learning (PBL) has emerged globally as a student-centred instructional approach in which learners are first presented with an authentic, ill-structured problem and then work, usually in groups, to identify what they already know, what they need to find out, and how to arrive at a workable solution, with the lecturer acting as a facilitator rather than a transmitter of information (Cambodian Education Forum, 2023). Unlike lecture-based approaches that may leave business concepts abstract and inert, PBL requires learners to apply those concepts to realistic situations, an arrangement associated across disciplines with stronger problem-solving ability, deeper conceptual understanding, and more positive attitudes toward the subject being studied (Koçoğlu & Kanadlı, 2025).

Alongside the skill deficit, Oribhabor (2020) noted that many Business Education students also report a measure of learning anxiety which includes discomfort, tension, and apprehension learners experience when confronted with tasks they consider difficult, evaluative, or unfamiliar. Where a teaching method is teacher-centred, tightly timed, and examination-driven, learners with limited confidence in a subject area are more prone to this anxiety, which in turn depresses attention, participation, and ultimately performance (Oribhabor, 2020). Recent commentary on the Nigerian school system has similarly linked a culture of fear of failure among students to constant evaluation and pressure to perform, describing anxiety as a quiet but consequential barrier to learning that has received far less attention than infrastructural and curriculum problems (Edugist, 2026).

However, the Nigerian research landscape reveals a critical lacuna: there is a paucity of quasi-experimental studies examining the joint effect of PBL on entrepreneurial skill acquisition and learning anxiety specifically among Business Education students in South-East Nigerian polytechnics. Most available studies are either descriptive surveys reporting the extent of entrepreneurial skills acquisition or reviews of PBL outcomes drawn from other disciplines, without empirical validation within the Nigerian polytechnic Business Education context (Tong & Musa, 2023). This gap motivates the present investigation, which seeks to provide empirical evidence from a field experiment conducted within three federal polytechnics in South-East Nigeria.

The rationale for selecting Akanu Ibiam Federal Polytechnic, Unwana; Federal Polytechnic, Nekede; and Federal Polytechnic, Oko is rooted in two considerations. First, all three are federal polytechnics running an ND programme in Business Education under a broadly comparable National Board for Technical Education curriculum, allowing entrepreneurship-related content to be taught and assessed consistently across the experimental and control sites. Second, the three institutions, drawn from Ebonyi, Imo, and Anambra States respectively, give the study a spread across the South-East geopolitical zone rather than a single-institution, single-state picture of PBL's effect.

Several studies have revealed that problem-centred, constructivist instructional approaches promote both practical competence and the ability to work through ill-structured, real-world problems more effectively than approaches in which learners simply receive ready-made content (Savaengkan & Chaijaroen, 2022; Mir, Alam & Modi, 2025). Problem-based learning is widely regarded as one of the clearest classroom expressions of this constructivist principle, since it deliberately organises instruction around a problem that learners must reason through together rather than around a sequence of content to be delivered.

Despite the importance of entrepreneurial competence to the self-reliance mandate of Business Education, many ND II students in federal polytechnics in South-East Nigeria complete entrepreneurship-related courses still unable to confidently identify a viable business opportunity, prepare a workable business plan, or manage the risks of a small venture, while also reporting considerable anxiety around business-related tasks. This unfortunate state of affairs may be attributed to varied factors; however, one major variable that appears to have contributed is the continued dominance of the conventional lecture method, which leaves students able to recite business concepts without practising the skills those concepts describe, and which does little to ease the anxiety students feel around unfamiliar or evaluative business tasks.

Available literature such as Koçoğlu and Kanadlı (2025) and Ogbeba (2019), drawn largely from outside Business Education, tends to suggest that PBL may be effective in building practical skill and easing task-related anxiety among learners generally. This study therefore investigated the effect of problem-based learning on entrepreneurial skill acquisition and learning anxiety among Business Education students in federal polytechnics in South-East Nigeria.

Purpose of the Study

The purpose of this study was to investigate the effect of problem-based learning on entrepreneurial skill acquisition and learning anxiety among Business Education students in federal polytechnics in South-East Nigeria. Specifically, the study sought to:

1. determine the mean entrepreneurial skill acquisition scores of Business Education students taught using PBL and those taught using the conventional lecture method, before and after treatment.
2. determine the mean learning anxiety scores of Business Education students taught using PBL and those taught using the conventional lecture method, before and after treatment.

Research Questions

The following research questions guided the study:

1. What are the mean entrepreneurial skill acquisition scores of Business Education students taught using PBL and those taught using the conventional lecture method, before and after treatment?
2. What are the mean learning anxiety scores of Business Education students taught using PBL and those taught using the conventional lecture method, before and after treatment?

Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance.

Ho_1: There is no significant difference between the mean entrepreneurial skill acquisition scores of Business Education students taught using PBL and those taught using the conventional lecture method, after controlling for pretest scores.

Ho_2: There is no significant difference between the mean learning anxiety scores of Business Education students taught using PBL and those taught using the conventional lecture method, after controlling for pretest scores.

Methodology

The study employed a quasi-experimental research design, adopting a pretest-posttest, non-equivalent control group design to investigate the effect of problem-based learning on entrepreneurial skill acquisition and learning anxiety among Business Education students in federal polytechnics in South-East Nigeria. The population for the study comprised all 365 ND II Business Education students enrolled in three federal polytechnics in South-East Nigeria — Akanu Ibiam Federal Polytechnic, Unwana (118 students); Federal Polytechnic, Nekede (96 students); and Federal Polytechnic, Oko (151 students) as at the period of the study. The sample for the study consisted of 93 ND II Business Education students drawn using purposive selection of one intact class from each polytechnic, followed by simple random sampling by balloting to assign the intact classes to the experimental and control groups: the intact classes from Akanu Ibiam Federal Polytechnic, Unwana (30 students) and Federal Polytechnic, Nekede (18 students) were balloted into the experimental group, giving a combined experimental group of 48 students, while the intact class from Federal Polytechnic, Oko (45 students) was balloted into the control group. Intact classes were used to prevent contamination effects between institutions.

Two instruments were used for data collection: the Entrepreneurial Skill Acquisition Test (ESAT), a 50-item multiple-choice achievement-type instrument covering five domains of entrepreneurial competence drawn from the approved ND Business Education curriculum which includes opportunity identification, business plan preparation, risk management, innovation and creativity, and financial and record-keeping skills with scores converted to a scale of 0 to 100; and the Learning Anxiety Scale (LAS), a 20-item, four-point Likert-type scale (Strongly Agree = 4 to Strongly Disagree = 1) measuring the tension, worry, and avoidance students reported in connection with entrepreneurship-related learning tasks, with higher mean scores indicating higher learning anxiety. Both instruments were subjected to face and content validation by three experts - two in Business Education and one in Measurement and Evaluation. The instruments were further trial-tested on 20 ND II Business Education students in a federal polytechnic outside the three institutions used for the main study. The Kuder-Richardson Formula 20 (KR-20) was used to determine the internal consistency of

the ESAT, yielding a coefficient of .84, while Cronbach's alpha was used to determine the internal consistency of the LAS, yielding a coefficient of .81, both considered adequate for the study.

Two regular Business Education lecturers in each polytechnic served as research assistants and were trained by the researcher for two weeks on the delivery of the treatment. Lecturers handling the experimental group were trained to organise instruction around authentic, ill-structured business problems and case scenarios such as planning a small poultry enterprise, managing working capital for a retail outlet, or conducting a simple market survey before starting a business with students working in small groups to define the problem, identify what they needed to learn, and propose and defend a solution, while the lecturer facilitated rather than lectured. Lecturers handling the control group taught the same entrepreneurship-related content over the same period using the conventional lecture method. Both groups covered identical content and were taught by lecturers of comparable qualification and experience over a period of six weeks. The ESAT and LAS were administered to both groups as a pretest before treatment began and as a posttest immediately after the six weeks of treatment.

The data collected were analysed using mean and standard deviation to answer the two research questions, while the hypotheses were tested using the Analysis of Covariance (ANCOVA) at 0.05 level of significance, with pretest scores serving as the covariate. The rejection or acceptance of null hypotheses was determined by comparing the p-value with the alpha value of 0.05. Therefore, the null hypothesis was rejected when the p-value was lower than or equal to the alpha level of 0.05 and accepted when the p-value was greater than the alpha level.

Results

The results from the data analysis done were presented in the tables below:

Research Question 1

What are the mean entrepreneurial skill acquisition scores of Business Education students taught using PBL and those taught using the conventional lecture method, before and after treatment? The results for answering research question 1 were presented in Table 1.

Table 1. Pretest and posttest mean entrepreneurial skill acquisition scores of Business Education students taught using PBL and those taught using the conventional lecture method

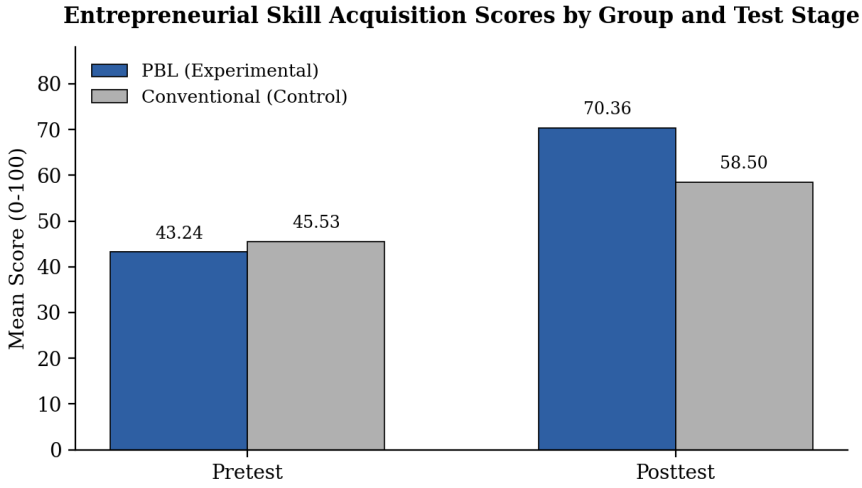
Group	N	Pretest ($\bar{X}$)	SD	Posttest ($\bar{X}$)	SD	Mean Gain
PBL (Exp.)	48	43.24	7.01	70.36	9.45	27.12
Conv. Mtd. (Control)	45	45.53	7.35	58.50	8.71	12.97

Exp. = Experimental Group; Conv. Mtd. = Conventional Lecture Method (Control)

The data in Table 1 showed that Business Education students in the experimental group who were taught using PBL had a pretest mean entrepreneurial skill acquisition score of 43.24 with a standard deviation of 7.01 and a posttest mean score of 70.36 with a standard deviation of 9.45, while those in the control group who were taught using the conventional lecture method had a pretest mean score of 45.53 with a standard deviation of 7.35 and a posttest mean score of 58.50 with a standard deviation of 8.71. The result further showed that the experimental group recorded a mean gain of 27.12, indicating a substantial improvement in entrepreneurial skill acquisition, while the control group recorded a mean gain of only 12.97. This showed that PBL had a considerable positive effect on entrepreneurial skill acquisition among the experimental group students, having recorded a markedly higher mean gain than the control group.

Figure 1

Entrepreneurial Skill Acquisition Scores by Group and Test Stage



A corresponding hypothesis that addressed the above research question is:

Hypothesis 1

There is no significant difference between the mean entrepreneurial skill acquisition scores of Business Education students taught using PBL and those taught using the conventional lecture method, after controlling for pretest scores.

Table 2. Analysis of Covariance (ANCOVA) on the mean entrepreneurial skill acquisition scores of Business Education students taught using PBL and those taught using the conventional lecture method

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Decision
Corrected Model	7806.96a	2	3903.48	117.21	.000	
Intercept	403.71	1	403.71	12.12	.001	
Pretest	4535.47	1	4535.47	136.19	.000	
Group	4515.70	1	4515.70	135.60	.000	Sig.
Error	2997.24	90	33.30			
Total	399161.64	93				
Corrected Total	10804.20	92				

Significant at 0.05 level of significance

Table 2 shows that a significant probability (p)-value of .000 was obtained for the Group factor, which is less than the 0.05 alpha level. This implies that the null hypothesis of no significant difference was rejected. Therefore, there was a significant difference between the mean entrepreneurial skill acquisition scores of Business Education students taught using PBL and those taught using the conventional lecture method, after controlling for pretest scores, in favour of the experimental group. PBL significantly improved entrepreneurial skill acquisition among students in the experimental group.

Research Question 2

What are the mean learning anxiety scores of Business Education students taught using PBL and those taught using the conventional lecture method, before and after treatment?

The results for answering research question 2 were presented in Table 3.

Table 3. Pretest and posttest mean learning anxiety scores of Business Education students taught using PBL and those taught using the conventional lecture method

Group	N	Pretest ($\bar{X}$)	SD	Posttest ($\bar{X}$)	SD	Mean Reduction
PBL (Exp.)	48	2.84	0.36	1.94	0.43	0.90

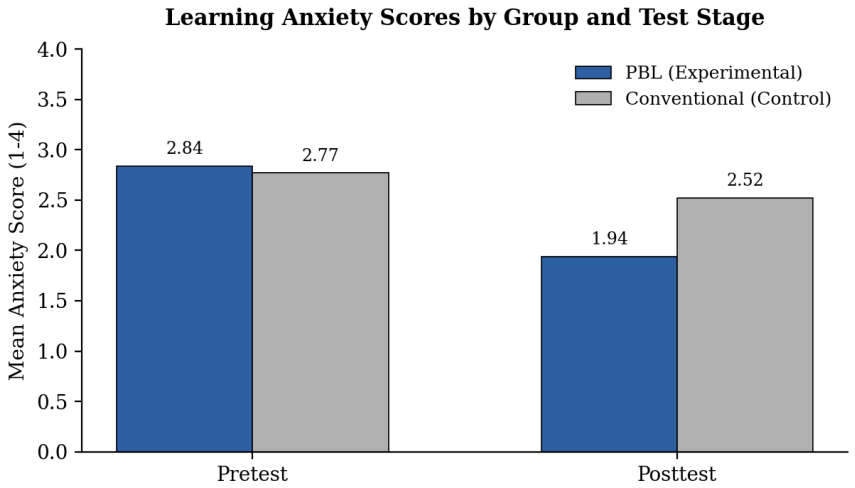
Group	N	Pretest ($\bar{X}$)	SD	Posttest ($\bar{X}$)	SD	Mean Reduction
Conv. Mtd. (Control)	45	2.77	0.43	2.52	0.44	0.25

Exp. = Experimental Group; Conv. Mtd. = Conventional Lecture Method (Control)

The data in Table 3 revealed that Business Education students in the experimental group who were taught using PBL had a pretest mean learning anxiety score of 2.84 with a standard deviation of 0.36 and a posttest mean score of 1.94 with a standard deviation of 0.43, while those in the control group who were taught using the conventional lecture method had a pretest mean score of 2.77 with a standard deviation of 0.43 and a posttest mean score of 2.52 with a standard deviation of 0.44. The experimental group recorded a mean reduction of 0.90 in learning anxiety, while the control group recorded a mean reduction of only 0.25. This showed that PBL had a considerable anxiety-reducing effect among the experimental group students, having recorded a markedly higher mean reduction than the control group.

Figure 2

Learning Anxiety Scores by Group and Test Stage



A corresponding hypothesis that addressed the above research question is:

Hypothesis 2

There is no significant difference between the mean learning anxiety scores of Business Education students taught using PBL and those taught using the conventional lecture method, after controlling for pretest scores.

Table 4. Analysis of Covariance (ANCOVA) on the mean learning anxiety scores of Business Education students taught using PBL and those taught using the conventional lecture method

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Decision
Corrected Model	21.92a	2	10.96	291.91	.000	
Intercept	0.10	1	0.10	2.53	.115	
Pretest	14.05	1	14.05	374.12	.000	
Group	9.77	1	9.77	260.32	.000	Sig.
Error	3.38	90	0.04			
Total	485.06	93				
Corrected Total	25.30	92				

Significant at 0.05 level of significance

The results in Table 4 showed that a significant probability (p)-value of .000 was obtained for the Group factor, which is less than the 0.05 alpha level. This implies that the null hypothesis of no significant difference was rejected. Therefore, there was a significant difference between the mean

learning anxiety scores of Business Education students taught using PBL and those taught using the conventional lecture method, after controlling for pretest scores, in favour of the experimental group. PBL significantly reduced learning anxiety among students in the experimental group.

Discussion of Findings

The results of this study provide valuable insights into the effectiveness of problem-based learning as an instructional approach for building entrepreneurial skill and easing learning anxiety among Business Education students in federal polytechnics in South-East Nigeria. The study's findings are crucial, especially when comparing the outcomes of the PBL group with those achieved through the conventional lecture method.

The study's results clearly demonstrated that PBL significantly improved entrepreneurial skill acquisition among the experimental group students, with the experimental group recording a markedly higher mean gain of 27.12 against the control group's 12.97. This finding is particularly important because it underscores the potential of PBL to address the persistent challenge of weak entrepreneurial competence among Business Education graduates in Nigerian polytechnics, where conventional lecture approaches have yielded limited practical results. The problem-first structure of PBL is requiring students to define, research, and propose solutions to authentic business problems such as planning a small enterprise or managing working capital that appears to have given students repeated, low-stakes practice at the very skills the ESAT was designed to measure, in a way that a lecture on the same topics cannot. This finding is consistent with Koçoğlu and Kanadlı (2025), who reported a consistently positive effect of PBL on learning outcomes across disciplines compared with conventional instruction, and with Ogbeba (2019), who similarly reported significantly higher achievement among students taught with PBL compared to those taught with the conventional method.

The finding also resonates with the concern raised in the entrepreneurship literature that weak practical entrepreneurial competence among Nigerian polytechnic and Business Education students is linked to instructional approaches that emphasise theory over authentic application (Alabi, 2025; Tong & Musa, 2023). The modest gain recorded by the control group (mean gain = 12.97) further affirms that the observed improvement in the experimental group was attributable to the PBL intervention rather than extraneous factors such as maturation, since both groups covered identical content over the same six-week period.

Another key finding of the study was that PBL significantly reduced learning anxiety among the experimental group students, who recorded a mean reduction of 0.90 compared with 0.25 for the control group. This finding extends the literature on subject-specific learning anxiety among Nigerian students, which has generally examined anxiety as an outcome linked to student characteristics or to an existing instructional context rather than as an outcome responsive to a change in teaching method (Oribhabor, 2020). It also lends empirical weight to the concern that a performance-driven, largely evaluative classroom culture feeds a quiet but consequential anxiety among Nigerian students (Edugist, 2026); the present finding suggests that this anxiety is not fixed, and that an instructional approach which distributes ownership of the learning process to students in small groups, rather than concentrating pressure on individual performance in front of a lecturer, can measurably reduce it.

The findings of this study have both theoretical and practical implications for teaching and learning. From a theoretical standpoint, the study lends support to Constructivist Learning Theory as an appropriate framework for entrepreneurship-related instruction in Business Education. By demonstrating that students who actively constructed solutions to authentic business problems in small groups outperformed and reported less anxiety than students who received the same content through direct transmission, the study affirms the constructivist premise that meaningful learning happens through engagement with realistic problems and social interaction rather than through passive reception of content (Mir, Alam & Modi, 2025). The findings also extend the constructivist theoretical synthesis for vocational and industry-bound learners, which argued that a properly designed problem-centred learning environment builds both practical competence and the ability to handle ill-structured real-world problems (Savaengkan & Chaijaroen, 2022): the present study shows that such an environment can also carry an affective benefit, easing anxiety alongside building skill, at least within the Business Education context studied.

From a practical standpoint, the study demonstrates that PBL is a feasible instructional strategy that Business Education lecturers in South-East Nigerian polytechnics can implement using locally relevant business problems and case scenarios, without requiring specialised equipment beyond what a typical entrepreneurship classroom already has. For teaching and learning, the significant improvement in entrepreneurial skill acquisition observed among the experimental group means that lecturers can rely less on theory-heavy lecturing and more on guided, problem-centred practice to build the competencies ND graduates need for self-employment, a direct practical benefit for the quality of

entrepreneurship instruction. As learning anxiety declines, students are also more likely to participate actively in class, take the risks that entrepreneurial thinking requires, and approach real business decisions after graduation with greater confidence.

For polytechnic management and curriculum planners, this study establishes PBL as an evidence-based instructional strategy validated for the Nigerian polytechnic Business Education context. The National Board for Technical Education and polytechnic management should incorporate structured PBL training into the continuing professional development curriculum for Business Education lecturers, particularly for entrepreneurship-related courses. Furthermore, assessment of entrepreneurship-related courses should include problem-solving and case-based tasks, in addition to conventional theory-based testing, so that assessment reinforces rather than undermines the competencies PBL is shown here to build.

Conclusion

In conclusion, the results of this study underscore the importance of problem-based learning in building entrepreneurial skill and reducing learning anxiety among Business Education students in federal polytechnics in South-East Nigeria. PBL not only produced a statistically significant improvement in entrepreneurial skill acquisition among the experimental group students but also produced a statistically significant reduction in their learning anxiety, affirming its utility as a strategy that addresses both the cognitive and affective dimensions of entrepreneurship-related learning. By incorporating PBL into the teaching of entrepreneurship-related courses, Business Education lecturers can better prepare ND graduates for self-employment, helping them overcome the practical skill gaps and business-related anxieties that a purely theoretical, lecture-based approach leaves unaddressed. Furthermore, the study's findings highlight the value of moving away from purely lecture-based instruction in favour of more student-centred, problem-driven approaches, which have been shown to be more effective in building the practical competence and confidence that self-reliant entrepreneurship demands.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. Business Education lecturers in federal polytechnics in South-East Nigeria should be trained in the design and facilitation of problem-based learning as a core instructional strategy for entrepreneurship-related courses.
2. The National Board for Technical Education and polytechnic management should develop and disseminate guidelines that encourage the integration of PBL into the ND Business Education curriculum, with priority given to entrepreneurship-related courses.
3. Polytechnic management should ensure that Business Education departments are adequately equipped with the small-group learning spaces, time allocation, and instructional materials that effective PBL delivery requires.
4. Assessment of entrepreneurship-related courses should include problem-solving and case-based tasks, in addition to conventional theory-based testing, so that assessment reinforces the competencies PBL is designed to build.

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INFLUENCE OF FAMILY, SCHOOL AND ENVIRONMENT ON STUDENT ENTREPRENEURSHIP DEVELOPMENT AMONG BUSINESS EDUCATION STUDENTS IN UNIVERSITIES IN DELTA STATE

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Abstract

This study examined the influence of family, school, and environmental factors on student entrepreneurship development among Business Education students in universities in Delta State. The study was guided by four research questions and four hypotheses. A descriptive survey research design was adopted for the study. The population of the study consisted of 217 Business Education students, from which a sample size of 141 students was selected. Data were collected using a structured questionnaire titled Questionnaire on the Influence of Family, School and Environmental Factors on Student Entrepreneurship Development among Business Education Students in Universities in Delta State. The questionnaire consisted of 36 items covering family, school, and environmental factors and was structured on a five-point extent scale ranging from Very High Extent to Very Low Extent. Mean and standard deviation were used to answer the research questions, while Pearson Product Moment Correlation was used to test the hypotheses at the 0.05 level of significance. The findings revealed that family factors influence student entrepreneurship development to a high extent, with a grand mean of 3.49. School factors also influenced student entrepreneurship development to a high extent, with a grand mean of 3.47, while environmental factors recorded a high extent of influence with a grand mean of 3.46. The overall result indicated a high extent of combined influence of family, school, and environmental factors on student entrepreneurship development, with an overall grand mean of 3.56. The hypotheses tested showed significant relationships between family factors, school factors, environmental factors, their combined influence, and student entrepreneurship development. The study therefore concluded that family support, effective school-based entrepreneurship education, and a favourable entrepreneurial environment are important in promoting entrepreneurship development among Business Education students. It was recommended that families should provide encouragement and support for students' entrepreneurial interests, universities should strengthen practical entrepreneurship training and mentorship opportunities, and government and relevant stakeholders should create a supportive environment through improved access to finance, markets, technology, and entrepreneurship programmes.

Introduction

Entrepreneurship has emerged as a vital instrument for promoting economic growth, innovation, employment generation, and national development across the world. In Nigeria, the increasing rate of graduate unemployment has made entrepreneurship education an essential component of university education. Universities are therefore expected to equip students with the entrepreneurial knowledge, skills, attitudes, and competencies required for self-employment and wealth creation. However, the extent to which students develop entrepreneurial intentions is influenced by several factors, particularly their family background, school environment, and the broader socio-economic environment. This seminar examines these factors among Business Education students in universities in Delta State. The section presents the background to the study, statement of the problem, purpose of the study, research questions, research hypotheses, significance of the study, and scope of the study. Entrepreneurship has become one of the most important drivers of economic growth, innovation, and employment creation in both developed and developing economies. It refers to the process through which individuals identify opportunities, mobilize resources, and create value by establishing and managing new ventures. According to Shane and Venkataraman (2000), entrepreneurship is centered on the discovery and exploitation of opportunities to introduce new goods, services, or processes. In contemporary society, entrepreneurship is no longer viewed solely as business ownership but as a mindset characterized by creativity, innovation, risk-taking, and problem-solving abilities.

Globally, entrepreneurship has been recognized as a key strategy for addressing unemployment, especially among young people. Governments and educational institutions may have increasingly emphasized entrepreneurship development as a means of promoting self-reliance and reducing dependence on white-collar jobs. In this context, student entrepreneurship has gained significant attention. Student entrepreneurship refers to the involvement of students in entrepreneurial activities either during their academic studies or shortly after graduation. It reflects students' intention and ability to identify business opportunities and create ventures while still in school or after completing their studies.

Recent research shows that universities play a critical role in shaping students' entrepreneurial intentions through entrepreneurship education and supportive learning environments (Fayolle & Gailly, 2015). Entrepreneurship education is designed to equip students with the knowledge, skills, and attitudes required to recognize opportunities, develop business ideas, and manage ventures successfully. Nabi et al. (2017) emphasize that entrepreneurship education contributes significantly to enhancing students' entrepreneurial competencies, confidence, and intention to start businesses. As a result, higher institutions are increasingly being seen not just as centres of academic learning but also as incubators of entrepreneurial development. Business Education is a programme designed to prepare students for careers in business, teaching, administration, and self-employment. It integrates knowledge from accounting, marketing, office technology, management, and entrepreneurship. Through this combination, students are exposed to both theoretical and practical aspects of business operations. In Nigerian universities, Business Education is aimed at producing graduates who are not only employable but also capable of creating employment opportunities for themselves and others.

However, despite the inclusion of entrepreneurship-related courses in the curriculum, there remains a concern about the extent to which students translate this knowledge into actual entrepreneurial practice. The development of entrepreneurial attitudes among students is influenced by several interrelated factors, among which family, school, and environment are particularly significant. The family serves as the first social institution where individuals develop values, beliefs, and attitudes toward work and career choices. Parents who are entrepreneurs or engaged in business activities often serve as role models, influencing their children's perception of entrepreneurship as a viable career path. According to Carr and Sequeira (2007), family support, exposure to business activities, and parental encouragement significantly influence entrepreneurial intention among young people. Financial support from family members can also reduce the perceived risk associated with starting a business, thereby encouraging entrepreneurial engagement.

The school ecosystem, especially at the university level, is another major determinant of student entrepreneurship. Universities provide structured learning experiences through entrepreneurship courses, seminars, workshops, industrial training, and mentorship programmes. Entrepreneurshipeducation has been widely acknowledged as a key factor in shaping students' entrepreneurial intentions by enhancing their skills, knowledge, and self-confidence (Bae et al., 2014). A supportive academic environment that encourages innovation, creativity, and experiential learning significantly increases the likelihood of students developing entrepreneurial intentions. In addition, university-based entrepreneurship support systems such as business incubators, innovation hubs, and internship programmes expose students to real-life business experiences. Autio et al. (2014) note that perceived institutional support within universities positively influences students' entrepreneurial intentions and behavior.

Therefore, the effectiveness of entrepreneurship education depends not only on curriculum content but also on the learning environment and institutional support systems available to students. Beyond family and school, the broader environment also plays a crucial role in shaping student entrepreneurship. Environmental factors include peer influence, socio-economic conditions, availability of resources, access to funding, and exposure to entrepreneurial role models. Students who are exposed to entrepreneurial ecosystems are more likely to develop positive attitudes toward entrepreneurship. Conversely, environments characterized by unemployment, lack of support systems, and limited access to capital may discourage entrepreneurial intentions. Social networks and peer groups also influence students' perception of entrepreneurship, as individuals are often encouraged or discouraged based on the experiences of those around them. In the Nigerian context, especially in Delta State, unemployment among graduates has increased the urgency for entrepreneurship development in higher institutions.

Universities in Delta State have introduced Business Education and entrepreneurship-related programmes to equip students with entrepreneurial competencies. These programmes are intended to bridge the gap between academic knowledge and practical business skills. However,

evidence suggests that many graduates still struggle to translate entrepreneurial knowledge into successful ventures due to inadequate practical exposure, limited funding opportunities, and weak entrepreneurial ecosystems. Business Education as a discipline remains a strategic programme for fostering entrepreneurship among students. It prepares learners with competencies in teaching, business management, office administration, accounting, and marketing.

In addition, it exposes students to entrepreneurial thinking and innovation, which are essential for self-employment. Despite these advantages, the effectiveness of Business Education in producing active entrepreneurs is still debated, as many graduates prefer wage employment over entrepreneurship. Universities as institutions of learning are expected to serve as catalysts for entrepreneurship development. They are responsible for shaping students' intellectual abilities, professional skills, and entrepreneurial mindset. A university that integrates entrepreneurship into its teaching, research, and community engagement activities provides students with greater opportunities to develop entrepreneurial competencies. According to recent studies, universities that actively promote entrepreneurship through practical training, mentorship, and innovation support systems tend to produce graduates with stronger entrepreneurial intentions (Nabi et al., 2017). Entrepreneurship development among students is a multidimensional phenomenon influenced by family background, school environment, and broader environmental conditions.

Business Education programmes in universities, particularly in Delta State, play a vital role in preparing students for entrepreneurial careers. However, the extent to which these factors effectively shape students' entrepreneurial attitudes and intentions remains a critical issue that requires further investigation. Understanding these influences is essential for improving student entrepreneurship and promoting self-reliance among university graduates in Nigeria.

Statement of the Problem

Despite the growing emphasis on entrepreneurship education in Nigerian tertiary institutions, many graduates continue to show a strong preference for white-collar jobs rather than self-employment. This persistent orientation toward paid employment has contributed significantly to the rising rate of graduate unemployment in the country. In response to this challenge, entrepreneurship education has been introduced and integrated into the curricula of many higher institutions, including Business Education programmes in universities in Delta State. The intention is to equip students with the knowledge, skills, and mindset required to become self-reliant and job creators rather than job seekers. However, despite the implementation of entrepreneurship education programmes, the expected level of entrepreneurial engagement among students remains relatively low. Empirical observations and informal evidence suggest that many students complete entrepreneurship-related courses without translating the knowledge acquired into practical business ventures.

This situation raises serious concerns about the effectiveness of entrepreneurship education in achieving its intended objectives and suggests that other underlying factors may be influencing students' entrepreneurial intentions and behaviours. One of the key issues may be the influence of family background on students' entrepreneurial development. Family plays a crucial role in shaping an individual's career aspirations, values, and attitudes toward work. Factors such as parental occupation, level of education, financial status, and attitudes toward self-employment can either encourage or discourage entrepreneurial intentions. In many cases, students from families with little or no business experience may have limited exposure to entrepreneurial activities, mentorship, and financial support, thereby reducing their likelihood of engaging in entrepreneurship.

In addition, the school environment may not be sufficiently structured to promote strong entrepreneurial engagement among students. Although entrepreneurship is taught as an academic subject, the extent to which students are exposed to practical entrepreneurial experiences remains questionable. Challenges such as inadequate practical training, limited access to modern entrepreneurship facilities, lack of effective mentorship programmes, and insufficient collaboration with industry stakeholders may hinder students from fully developing entrepreneurial competencies and confidence. Furthermore, environmental factors outside the school system also play a significant role in shaping students' entrepreneurial intentions. The broader socio-economic environment, including issues such as economic instability, unemployment, limited access to start-up capital, inadequate infrastructure, and inconsistent government policies, may discourage students from considering entrepreneurship as a viable career option. These environmental constraints often make entrepreneurship appear risky and less attractive compared to conventional employment. McClelland's Achievement Motivation Theory (1961) emphasizes that individuals with a strong need for achievement are more likely to engage in entrepreneurial activities.

However, such motivation can be weakened or suppressed when individuals are exposed to unfavourableenvironmental conditions and lack adequate support systems. It is against this background that this study seeks to examine the factors influencing student entrepreneurship, with particular emphasis on the roles of family, school, and environmental factors among Business Education students in universities in Delta State. The study aims to provide a clearer understanding of how these factors interact to shape students' entrepreneurial intentions and behaviours, with a view to improving entrepreneurship education outcomes in the study area.

Purpose of the Study

The main purpose of this study is to examine the factors influencing student entrepreneurship, with particular emphasis on the roles of family, school, and environment among Business Education students in universities in Delta State.

Specifically, the study seeks to:

1. Determine the extent to which family background influences student entrepreneurship development among Business Education students in universities in Delta State.
2. Determine the extent to which the school ecosystem influences entrepreneurship development among Business Education students in universities in Delta State.
3. Determine the extent to which environmental factors influence student entrepreneurship development among Business Education students in universities in Delta State.
4. Determine the extent to which family background, school ecosystem, and environmental factors jointly influence student entrepreneurship development among Business Education students in universities in Delta State.

Research Questions

The following research questions guided the study:

1. To what extent does family background influence entrepreneurship development among Business Education students in universities in Delta State?
2. To what extent does school ecosystem influence entrepreneurship development among Business Education students in universities in Delta State?
3. To what extent does environment influence entrepreneurship development among Business Education students in universities in Delta State?
4. What is the combined effect of family, school, and environmental factors on student entrepreneurship development among Business Education students in universities in Delta State?

Hypotheses

The following null hypotheses were formulated to guide the study:

H_{01}: There is no significant relationship between family background and student entrepreneurship development among Business Education students in universities in Delta State.

H_{02}: The school ecosystem has no significant influence on student entrepreneurship development among Business Education students in universities in Delta State.

H_{03}: Environmental factors do not significantly affect student entrepreneurship development among Business Education students in universities in Delta State.

H_{04}: There is no significant combined effect of family, school, and environmental factors on student entrepreneurship development among Business Education students in universities in Delta State.

LITERATURE REVIEW

This section reviews related literature relevant to the study on Factors Influencing Student Entrepreneurship: The Role of Family, School, and Environment among Business Education Students in Universities in Delta State. The review is organized under the conceptual framework, theoretical framework, empirical review, and summary of the literature. It examines existing concepts, theories, and previous studies relating to entrepreneurship and the factors that influence entrepreneurial development among university students. The review is important because it provides a theoretical and empirical foundation for the study. It also helps to identify existing knowledge, establish gaps in previous studies, and justify the need for the present research. Entrepreneurship has become an important instrument for employment generation, poverty reduction, innovation, and national development. In Nigeria, the increasing rate of graduate unemployment has made entrepreneurship education a major strategy for promoting self-employment and economic self-reliance among university students (Adebayo, 2019). Consequently, universities are expected to equip students with entrepreneurial

knowledge, skills, attitudes, and competencies necessary for business creation and management. Student entrepreneurship has also attracted considerable attention among researchers and policymakers because students are regarded as future drivers of economic development and innovation. According to Nwafor and Ohaka (2021), entrepreneurial engagement among university students is influenced by several factors within and outside the educational environment. These factors may either encourage or discourage students from developing entrepreneurial intentions and participating in entrepreneurial activities.

Family factors have equally been identified as important determinants of entrepreneurial behaviour among students. Family background, parental occupation, financial support, and entrepreneurial exposure often shape students' perception and interest in entrepreneurship (Olowe, 2020). Students raised in entrepreneurial families are more likely to develop positive attitudes toward self-employment because of their early exposure to business activities and encouragement from parents or guardians. Similarly, school factors play significant roles in influencing entrepreneurship among students. Entrepreneurship education, quality of teaching, mentorship programmes, institutional support, and the availability of entrepreneurial facilities contribute to students' entrepreneurial development (Ezeani, 2022). Universities that provide practical entrepreneurial training and supportive learning environments are more likely to produce students with strong entrepreneurial intentions and capabilities. Environmental factors also influence student entrepreneurship. These include government policies, economic conditions, access to finance, technological advancement, societal values, and business opportunities within the environment. According to Ibrahim and Mohammed (2020), a favourable business environment motivates students to engage in entrepreneurial activities, whereas an unstable economic and social environment may discourage entrepreneurial participation.

Conceptual Framework

The conceptual framework explains the relationship between the independent variables and the dependent variable in the study. It provides a clear understanding of how family factors, school factors, and environmental factors are expected to influence student entrepreneurship among Business Education students in universities in Delta State. The independent variables in this study are family factors, school factors, and environmental factors, while the dependent variable is student entrepreneurship. It is assumed that when these factors are favourable, students are more likely to develop positive entrepreneurial intentions, attitudes, and behaviours. Conversely, when these factors are weak or unfavourable, entrepreneurial development among students may be negatively affected.

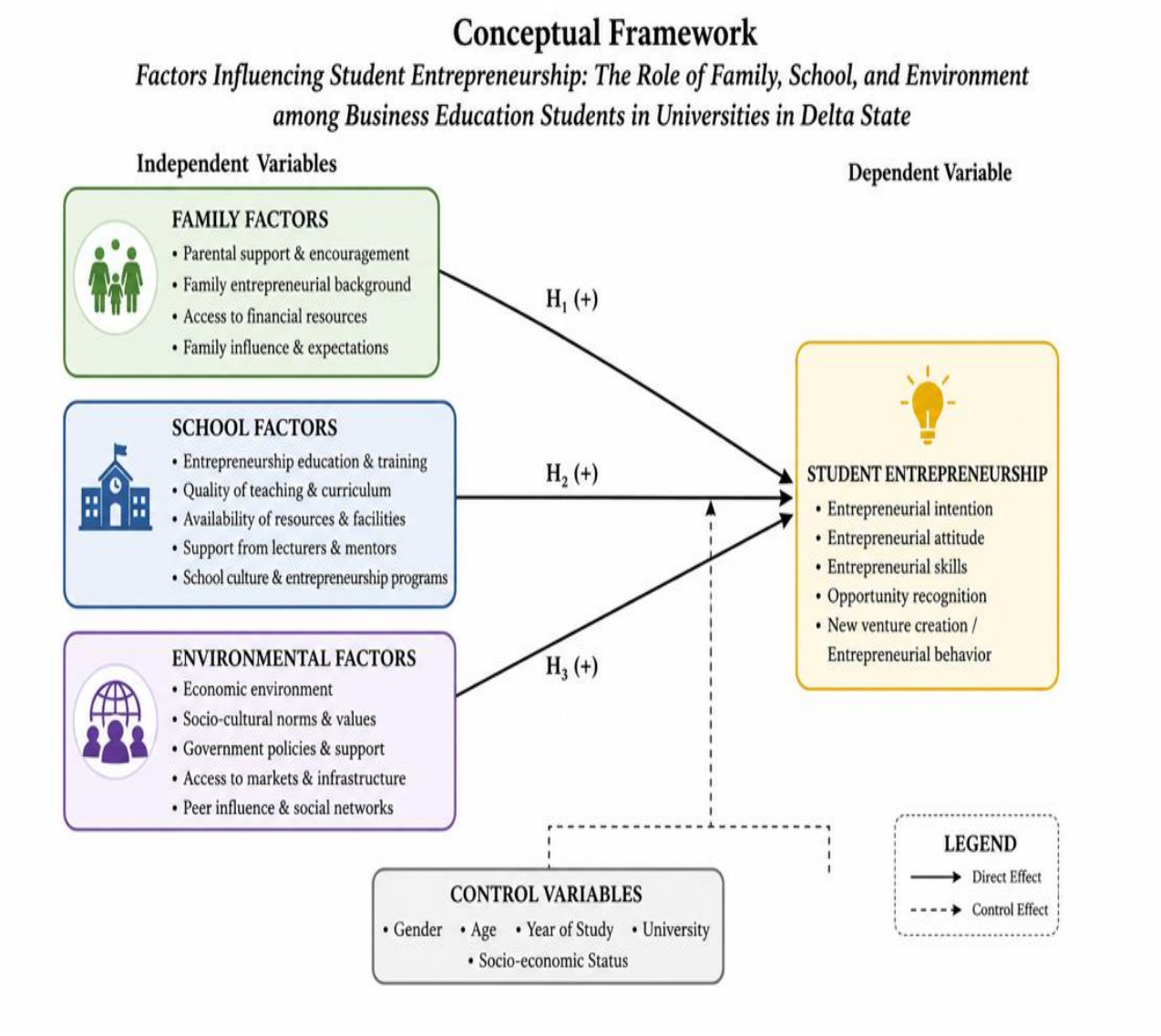


Fig. 1: Conceptual Model

The conceptual framework illustrates the presumed relationship between the independent variables (family factors, school factors, and environmental factors) and the dependent variable (student entrepreneurship) among Business Education students in universities in Delta State. The framework is based on the assumption that students' entrepreneurial development is shaped by influences from their family background, educational institutions, and the wider environment. It further recognizes that certain demographic characteristics may influence these relationships and therefore includes control variables to enhance the validity of the study.

The first independent variable is family factors, which comprise parental support and encouragement, family entrepreneurial background, access to financial resources, and family influence and expectations. The framework assumes that students who receive adequate emotional, financial, and motivational support from their families are more likely to develop favourable entrepreneurial intentions and behaviours. Likewise, students from entrepreneurial families are expected to acquire entrepreneurial knowledge, values, and experiences through observation and interaction, thereby increasing their willingness to engage in entrepreneurial activities. The arrow labelled H_1 (+) represents the hypothesized positive relationship between family factors and student entrepreneurship.

The second independent variable is school factors, which include entrepreneurship education and training, quality of teaching and curriculum, availability of learning resources and facilities, support from lecturers and mentors, and the existence of entrepreneurship programmes within the university. The framework posits that an enabling educational environment equips students with the knowledge, practical skills, confidence, and innovative mindset required to identify business opportunities and establish entrepreneurial ventures. Effective entrepreneurship education and institutional support are

therefore expected to positively influence entrepreneurial intentions, attitudes, and competencies among Business Education students. This relationship is represented by the arrow labelled H_2 (+).

The third independent variable is environmental factors, comprising the economic environment, socio-cultural norms and values, government policies and support, access to markets and infrastructure, as well as peer influence and social networks. The framework suggests that a supportive external environment provides students with favourable conditions for entrepreneurial development. Government incentives, access to finance and markets, technological advancement, and positive societal attitudes towards entrepreneurship encourage students to explore business opportunities and participate in entrepreneurial activities. Similarly, supportive peer networks and social interactions promote the exchange of entrepreneurial ideas and experiences. The arrow labelled H_3 (+) indicates the hypothesized positive influence of environmental factors on student entrepreneurship.

The dependent variable in the framework is student entrepreneurship, which is measured through entrepreneurial intention, entrepreneurial attitude, entrepreneurial skills, opportunity recognition, and new venture creation or entrepreneurial behaviour. These dimensions collectively represent the entrepreneurial outcomes that the study seeks to examine. Entrepreneurial intention reflects students' willingness to establish businesses, while entrepreneurial attitude refers to their perceptions and disposition towards entrepreneurship. Entrepreneurial skills encompass the competencies required to initiate and manage business ventures, whereas opportunity recognition involves the ability to identify viable business prospects. New venture creation or entrepreneurial behaviour represents the practical application of entrepreneurial knowledge through business start-up activities.

The framework also incorporates control variables, namely gender, age, year of study, university, and socio-economic status. These variables are included because they may influence students' entrepreneurial development independently of the main variables under investigation. Controlling for these demographic characteristics enables the study to isolate and accurately determine the effects of family, school, and environmental factors on student entrepreneurship. Overall, the conceptual framework proposes that family factors, school factors, and environmental factors exert direct and positive influences on student entrepreneurship among Business Education students in universities in Delta State. It further assumes that these relationships remain significant even after controlling for relevant demographic characteristics. Consequently, the framework provides the foundation for the formulation of the research questions and hypotheses, as well as the empirical investigation of the relationships among the study variables.

Student Entrepreneurship

Student entrepreneurship refers to the involvement of students in entrepreneurial activities while pursuing their academic programmes. It includes developing business ideas, identifying opportunities, and establishing small-scale ventures capable of generating income and creating value.According to Nabi et al. (2018), student entrepreneurship is the process through which students develop entrepreneurial intentions and engage in venture creation as a result of entrepreneurship education, personal motivation, and environmental influences.

Similarly, Nabi, Walmsley, and Holden (2020) explained that student entrepreneurship has become one of the major outcomes of higher education because universities increasingly integrate entrepreneurship into their academic programmes through training, mentorship, and practical learning. Shah and Soomro (2017) described student entrepreneurship as a mechanism that enables students to become job creators instead of job seekers. It allows students to apply classroom knowledge to real-life business situations while developing practical business skills. In Nigeria, student entrepreneurship has become increasingly important because of the high level of graduate unemployment. Ojeifo (2019) observed that entrepreneurship education provides students with self-employment skills capable of reducing dependence on scarce white-collar jobs. Student entrepreneurship also promotes innovation, creativity, resilience, and problem-solving abilities. Students who actively participate in entrepreneurial activities develop confidence, leadership skills, and business management competencies that prepare them for future careers.

Family Factors and Student Entrepreneurship

Family factors refer to the various influences within the home environment that shape students' attitudes, behaviours, and decisions toward entrepreneurship. These include parental occupation, family income, parental education, entrepreneurial exposure, family values, and emotional support. Bandura's (1986) Social Learning Theory explains that individuals learn behaviours by observing people around them. Students who grow up in entrepreneurial families often imitate their parents' business practices and develop stronger entrepreneurial interests. Fatoki (2010) found that students from business-oriented families usually possess stronger entrepreneurial intentions because they

receive mentorship, encouragement, and practical exposure from an early age. Carr and Sequeira (2007) further observed that parental role models significantly influence entrepreneurial self-confidence and students' willingness to establish businesses. Family financial support also contributes to entrepreneurship development. Students from financially stable families often have greater opportunities to invest in business ideas and participate in entrepreneurial activities. However, families that place greater value on white-collar employment than entrepreneurship may discourage students from considering self-employment as a career option. Therefore, family background remains one of the strongest determinants of entrepreneurial development among Business Education students.

School Factors and Student Entrepreneurship

School factors refer to the academic and institutional conditions within the university environment that influence students' entrepreneurial development. These factors include the quality of entrepreneurship education, teaching methods, availability of instructional resources, access to mentorship, institutional support systems, curriculum content, and exposure to practical business experiences. In the context of student entrepreneurship, the school environment plays a critical role in shaping students' knowledge, skills, attitudes, and intentions toward entrepreneurship.

According to Fayolle and Gailly (2015), entrepreneurship education within academic institutions significantly influences students' entrepreneurial intentions by increasing their awareness of business opportunities and improving their confidence in starting ventures. This implies that when entrepreneurship is properly integrated into the curriculum, students are more likely to develop positive attitudes toward self-employment. Similarly, Nabi et al. (2017) argued that entrepreneurship education is most effective when it combines theoretical instruction with experiential learning such as internships, business simulations, and practical projects. Such approaches enable students to acquire real-life business skills and better understand the challenges involved in entrepreneurship. Ezeugo and Ugwu (2020) observed that inadequate teaching facilities, lack of qualified entrepreneurship lecturers, and insufficient practical exposure negatively affect students' entrepreneurial development. According to the authors, students may graduate with theoretical knowledge but lack the practical competence required to establish successful businesses. Furthermore, institutional support within universities plays an important role in promoting entrepreneurship among students. Guerrero, Urbano and Fayolle (2016) explained that universities with entrepreneurship centres, business incubators, innovation hubs, and mentorship programmes produce graduates with stronger entrepreneurial intentions and greater confidence in business creation. In Nigeria, entrepreneurship education was introduced into university curricula to address graduate unemployment and promote self-reliance. According to Iwu et al. (2019), although the policy has recorded some achievements, its effectiveness differs across institutions due to variations in teaching quality, learning facilities, and implementation strategies. Therefore, school factors remain one of the major determinants of student entrepreneurship. Business Education students who receive quality entrepreneurship education, practical training, mentorship, and institutional support are more likely to develop entrepreneurial competencies and establish successful business ventures.

Environmental Factors and Student Entrepreneurship

Environmental factors refer to the external social, economic, cultural, technological, and political conditions that influence entrepreneurial intentions and activities among students. These factors include government policies, access to finance, business opportunities, infrastructural development, cultural values, peer influence, and economic stability. According to Krueger (2000), entrepreneurial intentions are largely influenced by individuals' perception of environmental opportunities. Students who believe that the environment supports entrepreneurship are more likely to consider self-employment as a viable career option. Autio, Keeley, Klofsten, and Ulfstedt (2014) also observed that supportive entrepreneurial ecosystems characterized by access to finance, mentorship, favourable government policies, and business infrastructure significantly increase entrepreneurial participation among young people. Government policies constitute another important environmental factor. Urbano and Alvarez (2016) noted that policies promoting entrepreneurship through grants, soft loans, business registration support, tax incentives, and youth empowerment programmes encourage entrepreneurial development among university graduates. Economic conditions equally influence entrepreneurial decisions. Akinwale and Okoye (2021) argued that high unemployment often motivates students to consider entrepreneurship as an alternative source of livelihood. However, poor economic conditions, inflation, and inadequate access to capital may discourage business start-ups. Technological advancement has further expanded entrepreneurial opportunities for students. Through digital technology, social media, and e-commerce platforms, students can establish and manage businesses with relatively low start-up costs. Iwu et al. (2019) maintained that technology has transformed entrepreneurship by creating new opportunities for

innovation and business expansion. Socio-cultural values also influence entrepreneurial behaviour. Shane (2003) explained that societies that encourage innovation, creativity, and business ownership tend to produce individuals with stronger entrepreneurial intentions than societies that emphasize paid employment.

Consequently, environmental factors significantly influence the entrepreneurial development of Business Education students. A supportive business environment increases students' confidence in entrepreneurship, while an unfavourable environment discourages entrepreneurial participation.

Theoretical Framework

This study is anchored on two theories that explain the development of entrepreneurial behaviour among students. These are:

Social Learning Theory by Albert Bandura (1977) and Entrepreneurial Intention Theory by Ajzen (1991) and Krueger (2000). The theories provide a framework for explaining how family background, school environment, and environmental conditions influence students' entrepreneurial intentions and behaviours.

Social Learning Theory (Bandura, 1977)

Social Learning Theory was developed by Albert Bandura in 1977. The theory explains that individuals acquire behaviours, attitudes, values, and skills through observation, imitation, and interaction with people within their environment. According to the theory, learning occurs not only through direct experience but also through observing the behaviour of others and the consequences of such behaviour. Bandura identified four major processes involved in observational learning: attention, retention, reproduction, and motivation. Individuals first observe a particular behaviour, retain the information in memory, reproduce the behaviour when necessary, and remain motivated if the observed behaviour produces positive outcomes. The theory is highly relevant to this study because students often develop entrepreneurial interests by observing entrepreneurs within their families, schools, and communities. Students whose parents or close relatives own businesses are more likely to develop entrepreneurial aspirations through continuous observation and participation in business activities. Similarly, lecturers, mentors, successful entrepreneurs, and entrepreneurship clubs within universities also serve as role models whose experiences encourage students to embrace entrepreneurship. Therefore, Social Learning Theory explains how family and school environments influence entrepreneurial behaviour among Business Education students in universities in Delta State through observation, imitation, and continuous interaction with entrepreneurial role models.

Entrepreneurial Intention Theory (Ajzen, 1991; Krueger, 2000)

Entrepreneurial Intention Theory is based on the assumption that entrepreneurship begins with intention before actual entrepreneurial behaviour occurs. The theory is closely linked to Ajzen's Theory of Planned Behaviour (1991) and was further applied to entrepreneurship by Krueger, Reilly, and Carsrud (2000). According to the theory, entrepreneurial intention is the strongest predictor of entrepreneurial behaviour. Before an individual starts a business, he or she must first develop the intention or willingness to become an entrepreneur. The theory explains that entrepreneurial intention is influenced by three major factors: Personal attitude toward entrepreneurship; Subjective norms (social influence from family, friends, and society); Perceived behavioural control (belief in one's ability to start and manage a business). Students who possess positive attitudes toward entrepreneurship, receive encouragement from significant people around them, and believe they have the required entrepreneurial skills are more likely to develop strong entrepreneurial intentions. School-related factors such as entrepreneurship education, practical training, and mentorship programmes improve students' confidence and perceived behavioural control. Likewise, supportive environmental conditions such as access to finance, favourable government policies, and business opportunities strengthen entrepreneurial intention by making entrepreneurship appear more achievable.

The theory is therefore relevant to this study because it explains how family, school, and environmental factors collectively shape entrepreneurial intentions, which eventually influence entrepreneurial behaviour among Business Education students in universities in Delta State.

METHODOLOGY

The study adopted a descriptive survey research design. The descriptive survey design was considered appropriate because it enables the researcher to collect information directly from respondents concerning their opinions, perceptions, and experiences on the factors influencing entrepreneurship among Business Education students in universities in Delta State. The design is suitable because it allows the collection of data from a representative sample without manipulating any of the variables under investigation. It also provides an effective means of describing existing conditions and examining relationships among variables.

Population of the Study

The population of the study comprised all 300 and 400 Level Business Education students in Delta State University (DELSU), Abraka, and the University of Delta (UNIDEL), Agbor. The total population consisted of 217 students, based on the official departmental records of the two universities. The population was considered appropriate because these students have been exposed to entrepreneurship education and possess adequate knowledge and experience to provide relevant information regarding the influence of family, school, and environmental factors on entrepreneurship among Business Education students in Delta State.

Sample and Sampling Technique

A sample size of 141 respondents was selected from the population of 217 Business Education students in Delta State University (DELSU), Abraka, and the University of Delta (UNIDEL), Agbor. The sample size was determined using Taro Yamane's (1967) formula at a 0.05 level of significance.

Therefore, the sample size for the study was 141 respondents. A simple random sampling technique was adopted in selecting the respondents. The technique gave every member of the population an equal opportunity of being selected, thereby ensuring fairness and adequate representation of the population.

Instrument for Data Collection

The instrument used for data collection was a structured questionnaire developed by the researcher titled: Factors Influencing Student Entrepreneurship Development Questionnaire (FISEDQ) The questionnaire consisted of two sections. Section A contained items on the demographic characteristics of the respondents. Section B contained items designed to obtain information on the influence of family, school, and environmental factors on student entrepreneurship. The questionnaire adopted a four-point Likert Scale with the following response options:Very High Extent (VHE) =5; High Extent (HE) = 4; Moderate Extent (ME) = 3; Low Extent(LE) = 2; Very Low Extent (VLE) = 1. The instrument was designed to generate information capable of answering the research questions and achieving the objectives of the study.

Validation of the Instrument

The research instrument was subjected to face and content validation by experts in Business Education and Measurement and Evaluation. The experts carefully examined the questionnaire to determine whether the items were relevant, clear, adequate, and capable of measuring the variables under investigation. Based on their observations and recommendations, necessary corrections and modifications were made to improve the clarity, appropriateness, and content of the instrument before the final draft was produced. This validation process ensured that the questionnaire adequately measured the factors influencing student entrepreneurship among Business Education students in universities in Delta State.

Reliability of the Instrument

The reliability of the instrument was established through a pilot study involving 20 Business Education students from the University of Benin (UNIBEN), Edo State, which is outside the area of the study. The use of respondents outside the study area ensured that those who participated in the pilot study did not form part of the actual respondents used for the main study. The responses obtained from the pilot study were analysed using the Cronbach Alpha reliability method to determine the internal consistency of the instrument. A reliability coefficient of 0.80 was obtained, indicating that the instrument possessed a high level of reliability and was therefore considered suitable for data collection.

Administration of the Instrument

The researcher personally administered the questionnaire to the respondents with the assistance of trained research assistants where necessary. Before administering the instrument, the purpose of the study was clearly explained to the respondents to enable them provide accurate and sincere responses. Participation in the study was voluntary, and respondents were assured that all information provided would be treated with strict confidentiality and used solely for academic purposes. The completed questionnaires were collected immediately after completion to ensure a high retrieval rate and reduce the possibility of loss or non-return.

Method of Data Analysis

The data collected from the respondents were analysed using mean and standard deviation to answer the research questions. A benchmark mean score of 3.00 was used for decision-making. Any questionnaire item with a mean score of 3.00 and above was regarded as high extent, while any item with a mean score below 3.00 was regarded as low extent. In addition, the hypotheses formulated for the study were be tested using the Pearson Product Moment Correlation Coefficient (PPMC) at a 0.05 level of significance. The choice of this statistical tool was based on its suitability for determining the relationship between the independent variables (family, school, and environmental factors) and the dependent variable (student entrepreneurship).

DATA PRESENTATION

A total of 141 copies of the questionnaire were administered and returned, representing a 100% retrieval rate. The mean and standard deviation were used to answer the research questions, while Pearson Product Moment Correlation (PPMC) was used to test the hypotheses at the 0.05 level of significance. The benchmark mean was 3.00.

Research Question 1

To what extent does family background influence entrepreneurship development among Business Education students in universities in Delta State?

Table 4.1: Family Factors and Student Entrepreneurship

S/N	Items	Mean	SD	Decision
1	My parents or guardians encourage me to consider self-employment as a career.	3.61	0.72	High Extent
2	My family motivates me to develop entrepreneurial skills.	3.38	0.81	High Extent
3	My family supports my business ideas.	3.45	0.78	High Extent
4	The financial condition of my family influences my entrepreneurial development.	3.54	0.75	High Extent
5	My parents encourage me to be creative and innovative.	3.49	0.80	High Extent
6	Having entrepreneurial family members inspires me to start a business.	3.42	0.77	High Extent
7	The values I learnt from my family encourage hard work and self-reliance.	3.57	0.74	High Extent
8	My family exposes me to business-related activities.	3.36	0.82	High Extent
9	My family encourages me to identify business opportunities.	3.51	0.76	High Extent
10	My family encourages me to solve problems creatively.	3.46	0.79	High Extent
11	The guidance I receive from my family strengthens my entrepreneurial interest.	3.55	0.73	High Extent
12	My family motivates me to achieve success through entrepreneurship.	3.58	0.75	High Extent
	Grand Mean	**3.49**	**0.77**	**High Extent**

The grand mean of 3.49, which is above the benchmark mean of 3.00, indicates that family background influences student entrepreneurship development to a High Extent. The highest-rated item was parental or guardian encouragement to consider self-employment as a career (Mean = 3.61), while the lowest-rated item was exposure to business-related activities (Mean = 3.36). This shows that parental encouragement, family support, values, guidance, financial condition, and entrepreneurial exposure all contribute to the entrepreneurial development of Business Education students.

Research Question 2

To what extent does the school ecosystem influence entrepreneurship development among Business Education students in universities in Delta State?

Table 4.2: School Factors and Student Entrepreneurship

S/N	Items	Mean	SD	Decision
13	Entrepreneurship courses improve my entrepreneurial knowledge.	3.58	0.71	High Extent
14	My lecturers encourage students to become entrepreneurs.	3.47	0.76	High Extent
15	The entrepreneurship curriculum equips me with practical business skills.	3.36	0.82	High Extent
16	The university provides opportunities for practical entrepreneurship training.	3.42	0.79	High Extent
17	Business seminars and workshops organised by the university improve my entrepreneurial competence.	3.49	0.75	High Extent
18	The school environment encourages creativity and innovation.	3.52	0.74	High Extent
19	My lecturers serve as role models for entrepreneurship.	3.45	0.78	High Extent
20	The university provides access to entrepreneurial	3.34	0.83	High Extent

	mentors.			
21	Group projects improve my entrepreneurial skills.	3.41	0.80	High Extent
22	The university provides opportunities to interact with successful entrepreneurs.	3.39	0.81	High Extent
23	Entrepreneurship education has increased my confidence to start a business.	3.57	0.72	High Extent
24	The school encourages students to develop innovative business ideas.	3.52	0.74	High Extent
	Grand Mean	**3.46**	**0.77**	**High Extent**

The grand mean of 3.46, which is above the benchmark mean of 3.00, indicates that the school ecosystem influences student entrepreneurship development to a High Extent. The highest-rated item was that entrepreneurship courses improve students' entrepreneurial knowledge (Mean = 3.58), while the lowest-rated item was access to entrepreneurial mentors (Mean = 3.34). The result indicates that entrepreneurship education, practical training, lecturers' encouragement, mentorship, seminars, workshops, and a supportive school environment contribute to students' entrepreneurial development.

Research Question 3

To what extent do environmental factors influence student entrepreneurship development among Business Education students in universities in Delta State?

Table 4.3: Environmental Factors and Student Entrepreneurship

S/N	Items	Mean	SD	Decision
25	Business opportunities within my environment encourage entrepreneurship.	3.31	0.84	High Extent
26	Access to finance influences my entrepreneurial development.	3.55	0.73	High Extent
27	Government entrepreneurship programmes encourage students to become entrepreneurs.	3.43	0.78	High Extent
28	The economic environment affects my entrepreneurial decisions.	3.48	0.76	High Extent
29	Access to modern technology supports entrepreneurship development.	3.51	0.75	High Extent
30	Internet access enhances my entrepreneurial learning.	3.47	0.77	High Extent
31	Successful entrepreneurs in my environment motivate me.	3.44	0.79	High Extent
32	Support from my community encourages entrepreneurial development.	3.39	0.81	High Extent
33	Government policies influence entrepreneurship development among students.	3.35	0.83	High Extent
34	Business networking opportunities improve entrepreneurial development.	3.46	0.78	High Extent
35	The availability of markets encourages entrepreneurial activities.	3.53	0.74	High Extent
36	The business environment motivates me to become an entrepreneur.	3.50	0.76	High Extent
	Grand Mean	**3.45**	**0.78**	**High Extent**

The grand mean of 3.45, which is above the benchmark mean of 3.00, indicates that environmental factors influence student entrepreneurship development to a High Extent. The highest-rated item was access to finance influencing entrepreneurial development (Mean = 3.55), while the lowest-rated item was the availability of business opportunities within the environment (Mean = 3.31). This indicates that access to finance, technology, markets, government programmes and policies, community support, networking opportunities, and the wider business environment are important to students' entrepreneurial development.

Research Question 4

What is the combined effect of family, school and environmental factors on student entrepreneurship development among Business Education students in universities in Delta State?

Table 4.4: Combined Influence of Family, School and Environmental Factors on Student Entrepreneurship

S/N	Factors	Mean	SD	Decision
1	Family and Student Entrepreneurship	3.49	0.77	High Extent

2	School and Student Entrepreneurship	3.46	0.77	High Extent
3	Environment and Student Entrepreneurship	3.45	0.78	High Extent
	Grand Mean	**3.47**	**0.77**	**High Extent**

The grand mean of 3.47, which is above the benchmark mean of 3.00, indicates a High Extent of combined influence of family, school and environmental factors on student entrepreneurship development. Family factors recorded the highest mean (3.49), followed by school factors (3.46), while environmental factors recorded 3.45. The result shows that the three factors collectively provide an important context for the entrepreneurial development of Business Education students.

Test of Hypotheses

The null hypotheses were tested using Pearson Product Moment Correlation (PPMC) at the 0.05 level of significance. The decision rule was to reject the null hypothesis when the significance value is less than 0.05; otherwise, the null hypothesis is not rejected.

Hypothesis One

Restated Null Hypothesis: There is no significant relationship between family background and student entrepreneurship development among Business Education students in universities in Delta State.
Decision Rule: Reject H_0 if Sig. < 0.05.

Table 4.5: Relationship between Family Background and Student Entrepreneurship

Variables	N	r-value	Sig.
Family Background vs Student Entrepreneurship	141	0.682	0.000

The correlation coefficient of 0.682 indicates a strong positive relationship between family background and student entrepreneurship development. Since the significance value of 0.000 is less than 0.05, the relationship is statistically significant. Therefore, the null hypothesis is rejected.

Hypothesis Two

Restated Null Hypothesis: The school ecosystem has no significant influence on student entrepreneurship development among Business Education students in universities in Delta State.
Decision Rule: Reject H_0 if Sig. < 0.05.

Table 4.6: Relationship between School Ecosystem and Student Entrepreneurship

Variables	N	r-value	Sig.
School Ecosystem vs Student Entrepreneurship	141	0.714	0.000

The correlation coefficient of 0.714 indicates a strong positive relationship between the school ecosystem and student entrepreneurship development. Since the significance value of 0.000 is less than 0.05, the relationship is statistically significant. Therefore, the null hypothesis is rejected.

Hypothesis Three

Restated Null Hypothesis: Environmental factors do not significantly affect student entrepreneurship development among Business Education students in universities in Delta State.
Decision Rule: Reject H_0 if Sig. < 0.05.

Table 4.7: Relationship between Environmental Factors and Student Entrepreneurship

Variables	N	r-value	Sig.
Environmental Factors vs Student Entrepreneurship	141	0.655	0.000

The correlation coefficient of 0.655 indicates a strong positive relationship between environmental factors and student entrepreneurship development. Since the significance value of 0.000 is less than 0.05, the relationship is statistically significant. Therefore, the null hypothesis is rejected.

Hypothesis Four

Restated Null Hypothesis: There is no significant combined effect of family, school and environmental factors on student entrepreneurship development among Business Education students in universities in Delta State.
Decision Rule: Reject H_0 if Sig. < 0.05.

Table 4.8: Combined Relationship between Family, School, Environmental Factors and Student Entrepreneurship

Variables	N	r-value	Sig.
Family, School and Environmental Factors vs Student Entrepreneurship	141	0.781	0.000

The correlation coefficient of 0.781 indicates a very strong positive relationship between the combined family, school and environmental factors and student entrepreneurship development. Since the

significance value of 0.000 is less than 0.05, the relationship is statistically significant. Therefore, the null hypothesis is rejected.

DISCUSSION

The result for Research Question One showed that family factors influence student entrepreneurship development to a high extent, with a grand mean of 3.49 and a standard deviation of 0.77. This indicates that parental encouragement, family motivation, support for business ideas, family financial condition, entrepreneurial exposure, family values, guidance, and motivation for success through entrepreneurship are important to the entrepreneurial development of Business Education students. The finding agrees with Adeyemo and Olanrewaju (2021), who found that parental encouragement, financial support, and entrepreneurial exposure significantly influenced students' willingness to engage in business activities. The present finding also agrees with their conclusion that students from entrepreneurial families demonstrated stronger entrepreneurial intentions. Similarly, the finding supports Okafor and Eze (2020), who reported that family support, parental occupation, and entrepreneurial exposure positively influenced students' entrepreneurial skills and business start-up decisions. The agreement may be explained by the fact that students who receive encouragement, support, exposure, and guidance from their families are more likely to develop confidence and interest in entrepreneurial activities. The present study, however, extends the earlier studies by examining family influence alongside school and environmental factors among Business Education students in universities in Delta State.

The result for Research Question Two revealed that school factors influence student entrepreneurship development to a high extent, with a grand mean of 3.46 and a standard deviation of 0.77. The finding indicates that entrepreneurship courses, lecturers' encouragement, practical training, seminars and workshops, school environment, lecturer role models, mentorship, group projects, interaction with successful entrepreneurs, entrepreneurship education, and encouragement to develop innovative business ideas contribute to students' entrepreneurial development. This finding agrees with Ibrahim and Yusuf (2022), who found that entrepreneurship education improved students' entrepreneurial mindset, creativity, innovation, and business management skills. Their finding that access to entrepreneurship centres and mentorship programmes increased students' confidence to start businesses also supports the present result. The finding is further consistent with Adebisi and Lawal (2019), who reported that practical entrepreneurship programmes, innovation hubs, and supportive lecturers were associated with stronger entrepreneurial competencies and business orientation among tertiary institution students. The agreement suggests that the university environment can provide knowledge, practical experience, mentorship, encouragement, and opportunities that help students develop entrepreneurial competence. The present study differs in scope from the earlier studies because it examines these school factors together with family and environmental factors among Business Education students in Delta State.

The result for Research Question Three showed that environmental factors influence student entrepreneurship development to a high extent, with a grand mean of 3.45 and a standard deviation of 0.78. The result indicates that business opportunities, access to finance, government entrepreneurship programmes, economic conditions, modern technology, internet access, successful entrepreneurs, community support, government policies, networking opportunities, availability of markets, and the general business environment are relevant to students' entrepreneurial development. This finding agrees with Mohammed and Salisu (2021), who found that favourable government policies, good infrastructure, access to finance, and positive peer influence encouraged entrepreneurial activities among young people. The result also supports Ezeani and Okeke (2023), who found that students operating within supportive social environments demonstrated stronger entrepreneurial motivation and greater willingness to establish businesses. The consistency between the present finding and these studies suggests that the wider environment can either provide opportunities and support or create conditions that affect students' participation in entrepreneurship. While the previous studies considered youths generally or university students within particular environmental contexts, the present study focuses specifically on Business Education students in universities in Delta State and considers environmental factors together with family and school factors.

The result for Research Question Four showed a grand mean of 3.47 and a standard deviation of 0.77, indicating a high extent of combined influence of family, school, and environmental factors on student entrepreneurship development. This finding is consistent with the general pattern of the empirical studies reviewed. Adeyemo and Olanrewaju (2021) and Okafor and Eze (2020) established the importance of family support and entrepreneurial exposure; Ibrahim and Yusuf (2022) and Adebisi and Lawal (2019) demonstrated the contribution of entrepreneurship education and institutional support; while Mohammed and Salisu (2021) and Ezeani and Okeke (2023) emphasized the importance

of government, economic, social, and environmental conditions. Taken together, these studies support the view that student entrepreneurship is influenced by multiple interacting conditions rather than by a single factor. The present finding therefore reinforces the purpose of the study by showing that family, school, and environmental factors collectively provide an important context for the entrepreneurial development of Business Education students in universities in Delta State.

CONCLUSION

The study concludes that entrepreneurship development among Business Education students depends on supportive family background, effective university entrepreneurship programmes and favourable environmental conditions. Improving these factors will enhance entrepreneurial intentions, self-employment and economic development.

RECOMMENDATIONS

Sequel to the findings and conclusion of the study, the following recommendations are made:

1. Parents and guardians should encourage students to develop entrepreneurial interests by providing moral support, guidance, and where possible, financial assistance for viable business ideas.
2. Universities should strengthen practical entrepreneurship education by providing entrepreneurship training, workshops, seminars, and opportunities for students to acquire hands-on business skills. Universities should establish and adequately equip entrepreneurship hubs where students can receive practical training, mentorship, and support in developing and implementing business ideas.
3. Government should provide accessible grants, low-interest loans, and other financial support schemes to enable students with viable business ideas to start and sustain small businesses.
4. Lecturers should provide regular mentorship and guidance to students and encourage them to identify and develop innovative business opportunities.
5. Students should actively participate in entrepreneurship programmes, workshops, seminars, and practical business activities provided by their institutions.
6. Financial institutions should develop student-friendly funding schemes that provide accessible financial support to students who intend to establish small-scale businesses.
7. Government agencies, private organisations, and other relevant stakeholders should create a conducive entrepreneurial environment by improving access to markets, technology, infrastructure, and business-support programmes.

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EXTENT OF AUGMENTED REALITY (AR) AND INTERNET OF THINGS (IOT) TECHNOLOGY INTEGRATION IN BUSINESS EDUCATION PROGRAMME FOR STUDENTS' SKILL ACQUISITION IN UNIVERSITIES IN SOUTH-EAST, NIGERIA.

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Abstract

The study assessed the extent of Augmented Reality (AR) and Internet of Things (IoT) technology integration in Business Education programme for students' skill acquisition in universities in South-East Nigeria. Descriptive research design was adopted for the study. Two research questions and two null hypotheses guided the study. The population comprised 130 Business Education lecturers in Federal and State Universities in South-East Nigeria. A census approach was adopted because the population was small and manageable. Data were collected using a structured questionnaire titled *Extent of Augmented Reality (AR) and Internet of Things (IoT) Technology Integration Questionnaire (EAITIQ)*. The instrument consisted of 20 questionnaire items structured on a four-point rating scale of Very High Extent, High Extent, Low Extent, and Very Low Extent. The instrument was face validated by three experts, comprising two experts in Business Education and one expert in Measurement and Evaluation from Michael Okpara University of Agriculture, Umudike. The reliability of the instrument was established using the Cronbach Alpha method, which yielded an overall reliability coefficient of 0.84. Mean and standard deviation were used to answer the research questions, while the independent samples t-test was used to test the null hypotheses at the 0.05 level of significance. The findings revealed that Business Education lecturers integrated both AR and IoT technologies to a very low extent in Business Education programme for students' skill acquisition. The study also revealed no significant difference between the mean ratings of lecturers in Federal and State Universities on the extent of AR and IoT technology integration. The study concluded that the very low integration of AR and IoT technologies limits opportunities for students to acquire relevant digital and business skills. It was recommended that university management and relevant government agencies should provide adequate AR and IoT facilities and infrastructure to enhance effective technology integration and students' skill acquisition.

Keywords: Augmented Reality, Internet of Things, Business Education, Technology Integration, Skill Acquisition.

Introduction

Universities around the world play a vital role in national development by promoting research innovations, intellectual growth, and workforce development. Universities are also crucial in equipping the youths with relevant knowledge, skills, and competencies they need to succeed in the fast-paced global economy. Universities foster technological development, social and economic support, and societal change. In Nigeria, universities significantly influence the country's socio-economic and political developments. Nigerian universities contribute to employability and sustainable development by producing skilled graduates for diverse sectors of the economy. In a similar vein, Nigerian universities address regional challenges in governance, energy, education, health, and agriculture while producing new knowledge

through research and innovation. Additionally, Koko and Owen (2022) stated that through policy recommendations, technology transfer, and entrepreneurship education, universities support Nigeria's sustainable development by promoting self-reliance and reducing unemployment among youths and graduates. Universities also foster analytical and critical thinking abilities, preparing future leaders to address Nigeria's complex governance and development issues. Nigerian universities are mandated to prepare students for the Fourth Industrial Revolution.

The Federal Government of Nigeria has recognized the importance of equipping its young people with employable skills that meet the demands of the 21st-century labour market. In view of this, the Nigerian government has consistently promoted skill-oriented and entrepreneurship education in universities as part of its strategy for youth empowerment, graduate employability, and national economic development (Okolie et al., 2020). Practical applications, experiential learning, and real-world problem-solving are the main focuses of skill-oriented Business Education. As a follow-up to this policy direction, the Federal Republic of Nigeria (FRN, 2021), in the *National Policy on Education* (NPE), emphasized the provision of a practical, skill-oriented learning environment in Nigerian universities to equip graduates with relevant competencies for self-reliance, employment, and national development. In order to reduce youth unemployment and promote self-employment, the policy supports Business Education programmes that equip students with relevant skills. According to the policy, offering students high-quality Business Education training would increase their employability potential and capacity to create employment, which would support the growth of the national economy.

In Nigeria, Business Education is a crucial component of Vocational Education programme that equip young people with the knowledge and skills they need to work for themselves or for pay. As noted by Olatoye, Ojeyinka, and Ogunleke (2020), Business Education is the nation's life-supporting machine. This is because it equips students with the knowledge and abilities they need to succeed after graduation rather than roaming the streets and engaging in criminal activity out of idleness. Azubuike, Ukaiko and Oguguo (2023) described Business Education as a part of vocational education programme that equips students with the knowledge and skills necessary to think, speak, and act in ways that support the growth, effectiveness and efficiency of organizations. Ile and Edokpolor (2023) noted that Business Education is competency-based and intend to give students the skills they need to pursue entrepreneurship once they graduate. In the same vein, Emeasoba and Nwataral (2021) noted that Business Education at university level is concerned mainly with the development of relevant saleable skills and knowledge that would enable an individual to function effectively in the world of work. Business Education is a thorough skilled-based education programme that equips students with knowledge, abilities, and competencies necessary for roles as producers or consumers, thereby preparing them for a career in business.

The primary goal of Business Education programme is to prepare students for careers in business, whether as teachers, office workers, or entrepreneurs, by emphasizing the development of marketable skills. Okolie et al. (2020) observed that higher education, including Business Education programmes, should equip graduates with employability skills, critical thinking, and entrepreneurial competencies needed to contribute effectively to economic growth. This is why many specialized courses in Accounting, Entrepreneurship, Office Technology and Management (OTM), and Distributive Education are all part of the university's Business Education programme. By bridging the gap between academic learning and the demands of the real world workplace, Business Education provides a comprehensive approach to vocational preparation. Okolo (2024) opined that Business Education provides students with a theoretical framework for understanding business management and equips them with the knowledge, skills, and techniques required to become successful entrepreneurs. Business Education training goes above conventional office skills to covering entrepreneurial skills like identifying opportunities, developing business plans, managing finances, marketing products, and leading organizations effectively. It equips students with innovativeness, creativity, and self-awareness for the digital business environment.

Presently, traditional teaching methods are insufficient for developing 21st-century skills of university Business Education students. This necessitates the integration of emerging technologies. The integration of digital technologies into Business Education enables students to develop essential 21st-century competencies, including critical thinking, creativity, collaboration, communication, digital literacy, problem-solving, and lifelong learning skills required for success in modern workplaces (Anyanwu, Govender & Ngwenya, 2022). Skills are the abilities and knowledge that people gain through learning, practice and experience which allow them to perform activities efficiently (Proctor & Xiong, 2017). Skills refer to learned abilities that enable individuals to perform specific tasks effectively and can be developed and improved

through education, training, practice, and experience. Skills are the measure of effectiveness of workers' performance, an individual's ability to perform to the standards and level required by the organization. The task of Business Education lecturer is to help students acquire needed skills by integrating technology into their instructional processes.

Skill acquisition is the acquisition of knowledge and skills and having them readily available from memory to making sense of future problems and opportunities. It is the process through which individuals develop new competencies, abilities or proficiencies (Barinua & Olarewaju, 2022). Skill acquisition involves more than just learning information; it encompasses the application, refinement, and mastery of skills over time through practice, feedback, and experience. Skill acquisition is central to curricula that aim to prepare learners for real-world tasks and employment. It is both a learning process and an outcome**,** where learners progress through stages from initial understanding to proficiency and often automatic performance by engaging repeatedly with tasks and reflecting on feedback. Magill and Anderson (2023) emphasized that internal processes associated with practice or experience that lead to relatively permanent changes in an individual's capability for skilled movement. This process can be influenced by instructional support strategies, practice quality, and motivation. Contemporary frameworks highlight stages such as the cognitive (initial learning), associative (practice and refinement), and autonomous (fluent performance) phases, underscoring that skill acquisition is not instantaneous but develops through sustained engagement (International Labour Organization, (ILO), 2025).
In order to ensure that Business Education students are ready for the realities of the 21st-century labour market, universities offering Business Education programme are under pressure to adjust to technological trends. Accordingly, Business Education programmes in Nigerian universities are supposed to improve students' skill acquisition for success in the workplace by incorporating technology in addition to teaching theoretical knowledge. The reason for this is the increasing digital connectivity of the world. The widespread adoption of digital technologies has brought about a significant change in the nature of business operations and the skills that employers require. The digital transformation of business has made competencies such as digital literacy, ICT proficiency, e-commerce, digital business analysis, communication, and the use of emerging digital technologies indispensable for Business Education graduates seeking success in the modern workplace (Nwokike & Chukwuma, 2022). Technology integration into Business Education programmes is now mandatory rather than optional.

Technology is referred to as the use of conceptual knowledge to accomplish practical objectives, particularly in a repeatable manner. Technology encompasses both intangible (software) and tangible (machinery or utensils) tools. Science, engineering, and daily life all depend on technology. Egbulem et al. (2024) stated that technology is the practical application of scientific knowledge in a range of fields, including business, governance, and education. It contains tools and structures that increase output and effectiveness. Udeze and Adesola (2024) stated that technology is the use of digital tools and resources to improve student performance in learning environments. In a similar vein, Adedokun, Awung and Usadolo (2024) conceptualized technology as the digital transformation of practices and knowledge that affects the way education is given and received. Technology covers the preparedness and diffusion of digital developments in universities, highlighting its significance to preparing students for the Fourth Industrial Revolution. Coccia (2019) added that technology is the clever creation of new tools both conceptual and ideational for resolving difficult situations, and that it must be integrated into the teaching and learning of education.

The smooth integration of digital resources and technological know-how into education is known as integration. The focus is on using carefully chosen hardware and software to accomplish curriculum objectives. It connotes using technology to improve and assist the learning environment or achieve pedagogical goals. Lecturers in Business Education can integrate computers, smartphones, and virtual reality tools to help students learn. There are many opportunities for all Business Education students in classrooms with high technology integration. Ramorola (2018) asserted that the integration of technological resources, including web programs, hardware, software, and multimedia, to enhance teaching and learning is known as technology integration. It is a teaching tool used to present material from the current curriculum. Over time, the term has changed, originally emphasizing the use of different applications and the development of computer literacy. United Nations Educational, Scientific and Cultural Organization (UNESCO), 2024) stated that technology integration is now known as using technologies to learn, rather than learning to use technologies.

Technology integration is an essential teaching and learning instrument that fosters active learning and enhances students' critical thinking, creativity, and teamwork. It makes teaching and learning activities more effective by improving the skills of both lecturers and students. Since the quick development of computers and the internet has caused a paradigm shift in knowledge and pedagogy, a technology-integrated curriculum should serve as the foundation for a technology-integrated education (Ramorola, 2018). This change can be seen in interactive classrooms, where books are being replaced by mobile devices, overhead projectors are being replaced by smart boards, and conventional printers are being replaced by 3D printers. With interactive whiteboards, smart boards, and 3D printers that can not only print documents but also instruct, and produce, technological innovations are revolutionizing the classroom. In support, Edeh et al. (2020) maintained that the use of emerging technologies in education improves instructional delivery, promotes innovation and creativity, increases learners' engagement, and equips both educators and learners with digital problem-solving skills necessary for the 21st century. Social media platforms, networks, applications, the Internet, classroom procedures, and school management systems are all included in technology integration most comprehensive form. Nwokike and Chukwuma (2022) pointed out that in order to enhance teaching and learning outcomes and acquisition of 21st century skills, technology integration in Business Education makes use of resources such as artificial intelligence, mobile learning, accounting software, ERP tools, learning management systems, and computer-based simulations. In the same vein, Bond et al. (2020) reported that higher education institutions increasingly integrate digital technologies such as learning management systems (LMS), mobile learning, cloud-based platforms, and virtual learning environments to improve teaching, learning, collaboration, and student engagement. This study will focus on Augmented Reality (AR) technology and Internet of Things (IoT) technology in Business Education programme.

Augmented Reality (AR) holds great promise for creating more engaging, dynamic, and practical learning environments. By superimposing digital information onto the real world, augmented reality technology integration allows students to interact with virtual elements in their physical surroundings. Abdul-Salaam (2024) noted that augmented reality (AR) has the potential to enrich teaching and learning by creating more interactive and immersive learning experiences that can enhance students' engagement and motivation. Students can practice tasks like product design and customer service interactions by using AR visualizations in Business Education to make abstract concepts more tangible. These technologies provide personalized learning by accommodating varying learning styles and speeds. By doing away with the need for expensive equipment and real-world models, the increasing popularity of AR apps in Nigeria democratizes education and raises awareness of its potential (Amadi-Iwai & Omoni, 2024). Another powerful tool for integration in Business Education programme is the Internet of Things (IoT).

Presently, integrating the Internet of Things (IoT) into Business Education programme of Nigerian universities is another creative way to equip future business leaders (students studying Business Education) with skills they need to thrive in a world that is becoming more interconnected by the day. Internet of Things is a network of physical objects with sensors, software, and other technologies integrated to enable data collection and sharing. The IoT can be integrated into Business Education classrooms and smart campuses to enable distance learning, optimize course allocation, personalize learning, and create interactive learning environments. Similarly, security systems driven by IoT keep an eye on campuses and guarantee Business Education students' safety. Furthermore, IoT-related skills can be integrated into Business Education programmes to get students ready for the digital business world. The IoT examples include smart classrooms that use interactive whiteboards and tablets, and wearable technology to monitor students' stress levels and physical well-being.

Technology integration in Business Education programmes in Nigerian universities has become a crucial strategy for equipping students with the necessary skills for the workforce of the twenty-first century. Obviously, there are many advantages and noteworthy disadvantages to integrating technology into Business Education programmes. Even though technologies have the potential to completely transform Business Education, a number of problems seem to prevent their integration effectively. As noted by Umeano and Ifi (2019), integrating technology into Nigerian universities presents a number of difficulties including lack of staff training, insufficient funding, resistance to change, inflexible curricula, digital divide, and administrative and policy issues. Similar to this, Ezeabii, Ekoh and Okwor (2020) observed that some universities, including those in South East Nigeria, continue to employ traditional teaching methods that promote memorization despite the many advantages of integrating technologies in teaching and learning. Ezeabii et al. further noted that the instructional delivery is still teacher-centered rather than student-

centered. Following that, Ezeabii and Agomuo (2017) pointed out that it is unacceptable for some Business Education lecturers to not integrate technologies when instructing.

Universities are institutions of higher learning established to provide advanced teaching, research, and community service while producing skilled manpower for national development. They are responsible for equipping students with the knowledge, competencies, and practical skills required for professional practice, innovation, and lifelong learning. According to the National Universities Commission (NUC, 2023), universities are institutions authorized to offer undergraduate and postgraduate education, conduct research, promote innovation, and contribute to national development through teaching, research, and community service. Similarly, Alemu (2018) described universities as centres of higher learning where individuals are intellectually developed through systematic teaching and research in various disciplines.

In Nigeria, universities are broadly classified into Federal, State, and Private Universities based on ownership and administration. However, this study is limited to Federal and State Universities because they constitute the public university system, are funded by government, and operate under similar regulatory policies established by the National Universities Commission. Federal Universities are established and funded by the Federal Government of Nigeria, while State Universities are established and financed by individual state governments to meet the educational and manpower needs of their respective states. Both categories play a significant role in producing qualified graduates and implementing national educational policies, including the integration of technology into teaching and learning. Federal and State Universities are expected to provide adequate technological infrastructure, competent academic staff, and supportive learning environments that enable the effective integration of emerging technologies into Business Education programmes. Through the provision of digital learning resources, internet connectivity, virtual learning platforms, and other instructional technologies, these universities are expected to equip Business Education students with the practical and digital competencies required in the contemporary labour market.

These universities are expected to integrate emerging technologies such as Artificial Intelligence, Course Management Platforms, Mobile Learning, Virtual Reality, Augmented Reality, Internet of Things, and Adaptive Learning Technologies into instructional delivery to enhance Business Education students' acquisition of relevant employability and entrepreneurial skills. Therefore, the study focuses on determining the extent to which extent Augmented Reality (AR) and Internet of Things (IoT) technology is integrated in Business Education programme for students' skill acquisition.

Statement of the Problem

Technology is driving the modern global economy more and more, changing business operations, and the labour market's overall structure. Universities in particular are expected to provide students with industry-relevant technological skills in order to meet these changing demands. In order to improve students' employability and skill acquisition, technology integration into educational programmes particularly Business Education is essential in Nigeria. Students are better prepared for the realities of contemporary business environments through the integration of technology in Business Education programmes, which enhances critical thinking, creativity, and problem-solving abilities.

Despite the importance of technology, its integration in South-East Nigerian universities' Business Education programmes appears to be erratic and frequently insufficient. This might be because Business Education lecturers in the area have limited access to contemporary technologies and have gaps in their digital literacy. In support, Many Nigerian universities' curricula still mainly rely on conventional teaching techniques with little to no use of digital platforms, virtual simulations and industry-specific technologies. Students' capacity to learn digital skills that are necessary for succeeding in the job markets of the twenty-first century is restricted by this lack of technology integration. It appears that Business Education lecturers have limited ability to successfully integrate digital technologies into their teaching, even in cases where they are available.

As a consequence of inadequate integration of digital technologies in teaching, many graduates of Business Education are ill-equipped to meet employers' digital expectations which hinder their employability and opportunities for entrepreneurship. In a similar vein, graduates who are able to secure jobs in modern organizations are unable to carry out their office duties efficiently because they lack the necessary modern office skills. The problem of this study is on the level of technology integration in

Business Education programmes at Nigerian universities, particularly in the South East region, which if not addressed will bring the skills gap between graduates of Business Education programme and the demands of the changing digital economy. This will worsen unemployment rates in Nigeria and the South East region, and further lead to inherent youth social vices. In light of this, this study aims to investigate the extent of Augmented Reality (AR) and Internet of Things (IoT) technology integration in Business Education programme for students' skill acquisition in universities in South-East, Nigeria.

Purpose of the Study

The purpose of this study was to determine the extent of Augmented Reality (AR) and Internet of Things (IoT) technology integration in Business Education programme for students' skill acquisition in universities in South-East, Nigeria. Specifically, this study sought to determine the extent to which;

1. Augmented Reality (AR) technology is integrated into Business Education programme for students' skill acquisition in universities.
2. Internet of Things (IoT) technology is integrated into Business Education programme for students' skill acquisition in universities.

Research Questions

The following research questions guided this study;

1. To what extent is augmented reality (AR) technologies integrated in Business Education programme for students' skill acquisition in universities?
2. To what extent is internet of things (IoT) technologies integrated in Business Education programme for students' skill acquisition in universities?

Hypotheses

The following null hypotheses were formulated and be tested at 0.05 level of significance;

$H0_5$: Business Education lecturers in Federal and State Universities do not significantly differ in their mean ratings on the extent of integration of augmented reality (AR) technology in Business Education programme for students' skill acquisition in universities in South-East, Nigeria.

$H0_6$: There is no significant difference between the mean ratings of Federal and State Universities Business Education lecturers on the extent of integration of internet of things (IoT) technology in Business Education programme for students' skill acquisition in universities in South-East, Nigeria.

Methodology

A descriptive survey research design was adopted for this study. The design was considered appropriate because it enabled the researcher to collect data from Business Education lecturers on their perceived extent of Augmented Reality (AR) and Internet of Things (IoT) technology integration in Business Education programme for students' skill acquisition in universities in South-East, Nigeria. The study was conducted in Federal and State Universities in South-East Nigeria offering Business Education programmes**.** The population of the study comprised 130 Business Education lecturers, consisting **of** 88 lecturers from Federal Universities and 42 lecturers from State Universities offering Business Education programmes in South-East Nigeria. The population was obtained from the Academic Planning Units of the universities. A census sampling technique was adopted because the population was relatively small, manageable and accessible to the researcher and her research assistants. Therefore, the entire population of 130 Business Education lecturers was used for the study.The instrument for data collection was a researcher-developed structured questionnaire titled "Extent of Augmented Reality (AR) and Internet of Things (IoT) technology Integration Questionnaire (EAITIQ)." The instrument was structured into two sections, A and B. Section A elicited information on the respondents' demographic characteristics, particularly the ownership of the university, while Section B contained questionnaire items on the integration of emerging technologies in Business Education programme for students' skill acquisition. For the purpose of this study, Section B comprised 20 relevant items in two clusters**,** with 10 items measuring the extent of Augmented Reality (AR) technology integration and 10 items measuring the extent of Internet of Things (IoT) technology integration. The instrument was structured on a four-point rating scale of Very High Extent (VHE) = 4, High Extent (HE) = 3, Low Extent (LE) = 2, and Very Low Extent (VLE) = 1**.** The instrument was face validated by three experts, comprising two experts in Business Education and one expert in Measurement and Evaluation**,** all from Michael Okpara University of Agriculture, Umudike, Abia State**.** The copies of the questionnaire were accompanied by the research topic, purpose of the study, research questions and hypotheses. The experts examined the instrument in terms of the appropriateness of the language, content and coverage of the items and made necessary corrections and suggestions. Their observations and

recommendations were incorporated into the final version of the instrument to ensure that it adequately measured the constructs of the study. The reliability of the instrument was established using the Cronbach Alpha reliability method. Twenty copies of the questionnaire were administered to 20 Business Education lecturers from a university outside the study area but with similar characteristics. The reliability coefficients obtained for the different clusters ranged from 0.81 to 0.85, while an overall reliability coefficient of 0.84 was obtained. This indicated that the instrument possessed satisfactory internal consistency and was considered reliable for data collection. The researcher personally administered 130 copies of the questionnaire to the respondents with the assistance of two trained research assistants who were adequately briefed on the modalities for the administration and collection of the instrument. The questionnaires were administered directly to the respondents in their offices. On-the-spot completion was adopted, while respondents who could not complete the questionnaire immediately were revisited on an agreed date for retrieval. The exercise lasted for a period of two weeks. Out of the 130 copies administered, 127 copies representing 97% were successfully retrieved and used for data analysis**.** The data collected were analysed using mean and standard deviation to answer the research questions. The mean was used to determine the extent of technology integration, while standard deviation was used to determine the degree of homogeneity of the respondents' ratings. The decision on the questionnaire items was based on the real limits of numbers as follows**:** Very High Extent (VHE) = 3.50–4.00, High Extent (HE) = 2.50–3.49, Low Extent (LE) = 1.50–2.49, and Very Low Extent (VLE) = 1.00–1.49**.** The independent samples t-test was used to test the null hypotheses at the 0.05 level of significance. The null hypothesis was rejected where the calculated p-value was less than 0.05, indicating a statistically significant difference between the mean ratings of Business Education lecturers in Federal and State Universities. Where the p-value was greater than 0.05, the null hypothesis was not rejected.

Results

Research Question 1: To what extent are Augmented Reality (AR) technologies integrated in Business Education programme for students' skill acquisition in universities?

Table 1: Mean Analysis of ratings of Business Education lecturers in Federal and State Universities on the extent Augmented Reality technologies are integrated in Business Education programme for students' skill acquisition in universities.

		Federal (86)		Universitie	State Universities (41)		
S/N	**Augmented Reality technologies integration for students' skill acquisition in universities. I do utilize:**	**X**	**SD**	**Remark**	**X**	**SD**	**Remark**
1	AR Mobile Apps such as JigSpace/AR Busines Card to help students develop digital communication skills	1.28	0.69	VLE	1.37	0.71	VLE
2	Smart Glasses to help students acqui business presentation skills	1.29	0.60	VLE	1.30	0.68	VLE
3	Interactive 3D projection for modeling enhance students' ability to plan busines strategy	1.40	0.72	VLE	1.24	0.67	VLE
4	AR Training Simulations to enable studen acquire conflict resolution skills in busines environments	1.42	0.58	VLE	1.39	0.63	VLE
5	AR collaboration tools to teach students team collaboration skills	1.41	0.66	VLE	1.32	0.69	VLE
6	Moodle with AR plugins to develop student course content management skills	1.33	0.51	VLE	1.38	0.61	VLE
7	AR-based business simulations to teac students financial literacy skills	1.39	0.67	VLE	1.20	0.66	VLE
8	AR virtual office setups to enable studen acquire the ability to handle administrative task	1.41	0.65	VLE	1.30	0.59	VLE
9	AR-powered dashboards to help studen develop visual communication skills	1.38	0.62	VLE	1.35	0.63	VLE

10	AR-integrated e-commerce tools to he students acquire digital entrepreneurship skills	1.44	0.68	VLE	1.39	0.60	VLE
	Cluster mean	**1.38**	**0.64**	**VLE**	**1.32**	**0.65**	**VLE**

VL E= Very Low Extent

The data in Table 1 reveal that the mean ratings of Business Education lecturers in Federal and State Universities in all the items (1-10) ranged between 1.20 and 1.44 which fall within the real limit of number range of 1.00-1.49 indicating very low extent responses. The cluster mean of 1.38 and 1.32 for Business Education lecturers in Federal and State Universities respectively which equally fall within the real limit of number range of 1.00-1.49 indicated that Business Education lecturers agreed that they integrate Augmented Reality (AR) technologies to a very low extent in Business Education programme for students' skill acquisition in universities. The cluster standard deviation of 0.64 and 0.65 for Business Education lecturers in Federal and State Universities respectively showed that their mean responses were not far from the mean value.

Hypothesis 1: Business Education lecturers in Federal and State Universities do not significantly differ in their mean ratings on the extent of integration of Augmented Reality (AR) technologies in Business Education programme for students' skill acquisition in universities in South East Nigeria.

Table 2: t-test Analysis of mean ratings of Business Education lecturers in Federal and State Universities on the extent Augmented Reality technologies are integrated in Business Education programme for students' skill acquisition in universities.

University Lecturers	N	X	Sd	df	t-cal.	*p*-value	Remark
Federal	86	1.38	0.64	125	0.49	1.00	NS
State	41	1.32	0.65				

Results in Table 2 reveal a t-calculated value of 0.49 and *P*- value of 1.00 at degree of freedom (df) of 125. Since the *P*- value of 1.00 is greater than the alpha value of 0.05, the hypothesis of no significant difference was not rejected. Therefore, there is no significant difference between the mean ratings of Business Education lecturers in Federal and State universities on the extent Augmented Reality technologies are integrated in Business Education programme for students' skill acquisition in universities in South East Nigeria.

Research Question 2: To what extent are Internet of Things (IoT) technologies integrated in Business Education programme for students' skill acquisition in universities?

Table 3: Mean Analysis of ratings of Business Education lecturers in Federal and State Universities on the extent Internet of Things technologies are integrated in Business Education programme for students' skill acquisition in universities.

S/N	Internet of Things technologies integration f students' skill acquisition in universities. I do utilize:	Federal Universities (8 X	SD	Remark	State Universities (41) X	SD	Remark
11	Smart sensors to equip students with da collection skills	1.28	0.69	VLE	2.16	0.64	VLE
12	Smart boards/IoT-enabled classrooms to enable students acquire presentations skills	1.36	0.68	VLE	1.40	0.68	VLE
13	IoT-connected business simulators to equ students with ability to analyze business risk	1.34	0.70	VLE	1.39	0.69	VLE
14	Smart watches/fitness trackers to teach students task management skills	1.30	0.66	VLE	1.26	0.55	VLE
15	IoT-driven performance trackers to teac students skills in performance and se monitoring in business environment	1.21	0.61	VLE	1.28	0.58	VLE

16	IoT-powered feedback devices to help tra students on skills in feedback interpretation	1.42	0.61	VLE	1.29	0.71	VLE
17	Smart projectors/IoT-based presentation tools enable students acquire visual communicatic skills	1.34	0.72	VLE	1.36	0.54	VLE
18	IoT-Based security system such as biometr logins to teach students ethical use of technolo in business	1.42	0.65	VLE	1.35	0.63	VLE
19	IoT dashboards connected smart devices enable students acquire business intelligenc skills	1.39	0.67	VLE	1.21	0.62	VLE
20	IoT automated payments enable studen understand financial technology operations	1.32	0.58	VLE	1.30	0.57	VLE
	Mean Cluster	**1.34**	**0.66**	**VLE**	**1.31**	**0.62**	**VLE**

VLE=Very Low Extent

The result in Table 3 show that the mean ratings of Business Education lecturers in Federal and State Universities in all the items (11-0) ranged between 1.21 and 1.42 which fall within the real limit of number range of 1.00-1.49 indicating very low extent responses. The cluster mean of 1.34 and 1.31for Business Education lecturers in Federal and State Universities respectively which equally fall within the real limit of number range of 1.00-1.49 indicated that Business Education lecturers agreed that they integrate Internet of Things (IoT) technologies to a very low extent in Business Education programme for students' skill acquisition in universities. The cluster standard deviation of 0.66 and 0.62 for Business Education lecturers in Federal and State Universities respectively showed that their mean responses were not far from the mean value.

Hypothesis 6: There is no significant difference between the mean ratings of Business Education lecturers in Federal and State Universities on the extent of integration of Internet of Things (IoT) technologies in Business Education programme for students' skill acquisition in universities in South East Nigeria.

Table 4: t-test Analysis of mean ratings of Business Education lecturers in Federal and State Universities on the extent Internet of Things technologies are integrated in Business Education programme for students' skill acquisition in universities

University Lecturers	N	X	Sd	df	t-cal.	*p*-value	Remark
Federal	86	1.34	0.66	125	0.12	1.21	NS
State	41	1.31	0.62				

Data in Table 4 reveal a t-calculated value of 0.12 and *P*- value of 1.21 at degree of freedom (df) of 125. Since the *P*- value of 1.21 is greater than the alpha value of 0.05, the hypothesis of no significant difference was not rejected. Therefore, there is no significant difference between the mean ratings of Business Education lecturers in Federal and State universities on the extent Internet of Things (IoT) technologies are integrated in Business Education programme for students' skill acquisition in universities in South East Nigeria.

Discussion of Findings

It was found from the study that Business Education lecturers integrate Augmented Reality technologies to a very low extent in Business Education programme for students' skill acquisition in universities. The results in other words means that the extent Business Education lecturers integrate Augmented Reality technologies in Business Education instructions at Universities was to a very low extent. This implies that they do not use those technologies adequately in teaching Business Education that could enable them acquire some skills. The results specifically indicated that lecturers to a very low extent use Augmented technologies such as AR Mobile Apps such as JigSpace/AR Business Card to help students develop digital communication skills, to a very low extent use AR Training Simulations to enable students acquire conflict resolution skills in business environments, to a very low extent use Augmented Reality-based business simulations to teach students financial literacy skills and to a very low extent Augmented Reality-integrated e-commerce tools to help students acquire digital entrepreneurship skills among others. This implies a very low level of use of those Augmented Reality technologies which are not adequate to enable students acquire skills. It was further found from the study that there was no significant difference between the mean ratings of Business Education lecturers in Federal and State Universities on the extent Augmented Reality

(AR) technologies are integrated in Business Education programme for students' skill acquisition in universities in South East Nigeria. This implies that the extent of utilization of those technologies did not vary significantly across the university types. The results agreed with Wordu and Anim (2021) who found from a similar study that modern technologies were poorly integrated in teaching and learning Business Education programmes in tertiary institutions. The results further supported the findings from Sani, Kusada and Inde (2024) which showed among others that Augmented Reality technologies were poorly using technical subjects that have no impacts on the students. Augmented Reality technologies were integrated into Business Education programmes at a very low extent**,** with no significant difference between Federal and State Universities. This indicates the need for improved access, lecturer capacity and institutional support for effective AR integration and students' skill acquisition.

The results revealed that Business Education lecturers integrate Internet of Things (IoT) technologies to a very low extent in Business Education programme for students' skill acquisition in universities. This implies that Internet of Things (IoT) technologies are not adequately integrated in Business Education to enhance students' skill acquisitions. Specifically, Business Education lecturers agreed that they to a very low extent, integrate Internet of Things (IoT) technologies such as business simulators to equip students with ability to analyze business risk. They further agreed that they to a very low extent use Internet of Things (IoT) technologies such as IoT-driven performance trackers to teach students skills in performance and self-monitoring in business environment as well as IoT dashboards connected smart devices to enable students acquire business intelligence skills. The results also indicated that there was no significant difference between the mean ratings of Business Education lecturers in Federal and State Universities on the extent Internet of Things (IoT) technologies are integrated in Business Education programme for students' skill acquisition in universities in South East Nigeria. This implies that both lecturers of Business Education in federal and state universities were in agreement that there was a very low level of the integration of Internet of Things (IoT) technologies in Business Education programme for students' skill acquisition in universities in South East. The results aligned with Ayelaagbe (2024) who in a similar study found that the use of Internet of Things technologies in classrooms was very low with very low impacts on the undergraduate students. Similarly, the results supported Chukwu-Umahi and Okoli (2023) who reported from a similar study that the access and use of Internet of Things technologies such as Web.2.0 technologies in Business Education was very low. Internet of Things technologies were integrated into Business Education programmes at a very low extent, with no significant difference between Federal and State Universities. This suggests the need for greater provision of IoT facilities, training and support to enhance students' skill acquisition.

Conclusion

Based on the findings of the study, it was concluded that Business Education lecturers integrate Augmented Reality (AR) and Internet of Things (IoT) technologies to a very low extent in the Business Education programme for students' skill acquisition in universities in South-East Nigeria. The study established that the limited integration of these emerging technologies constrains opportunities for students to develop relevant digital, business, communication, financial literacy, performance monitoring, business intelligence and digital entrepreneurship skills required in contemporary work environments. The study further established that there was no significant difference between the mean ratings of lecturers in Federal and State Universities on the extent of integration of both AR and IoT technologies, indicating that the very low level of integration cuts across the two categories of universities. Therefore, improving the integration of AR and IoT technologies through adequate technological infrastructure, lecturer training, technical support, funding and curriculum enhancement is essential for strengthening instructional delivery and equipping Business Education students with relevant skills for the demands of the contemporary digital economy.

Recommendations

Based on the findings and conclusion, the following recommendations were made:

1. University management and relevant government agencies should provide adequate facilities, infrastructure and technical support for the integration of Augmented Reality (AR) technologies in Business Education programmes by providing appropriate AR devices, applications, reliable internet connectivity and other relevant digital resources. This will enable Business Education lecturers to effectively integrate AR technologies into teaching and provide students with

interactive learning experiences that can enhance their digital communication, conflict resolution, financial literacy and digital entrepreneurship skills.

2. University management and relevant stakeholders should provide adequate Internet of Things (IoT) facilities and organize regular capacity-building programmes for Business Education lecturers on the effective use of IoT technologies in teaching and learning **through** workshops, seminars, practical training and technical support. This will enable lecturers to effectively integrate IoT technologies such as business simulators, performance trackers and IoT dashboards into instruction and enhance students' acquisition of business risk analysis, performance monitoring, self-monitoring and business intelligence skills.

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ENTREPRENEURSHIP EDUCATION IN THE DIGITAL ERA: ISSUES, CHALLENGES, OPPORTUNITIES AND STRATEGIES FOR TECHNOLOGY-ENABLED LEARNING IN NIGERIA

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Abstract

Entrepreneurship education is increasingly expected to prepare learners not only to start and manage ventures but also to identify opportunities, create value, solve problems, and operate within rapidly changing digital environments. The expansion of artificial intelligence (AI), digital platforms, data-driven technologies, virtual and augmented reality, mobile technologies, and generative AI is consequently creating new possibilities for the content, pedagogy, assessment, and organisation of entrepreneurship education. This paper examines these developments with particular attention to Nigeria and comparable developing-country contexts. It adopts a structured conceptual literature-review approach and thematically synthesises literature on entrepreneurship education, digital entrepreneurship, educational technology, experiential learning, and artificial intelligence in education. The analysis is guided by Human Capital Theory, Experiential Learning Theory, and the Technology Acceptance Model. The synthesis identifies five interconnected challenges: inadequate digital infrastructure and access, curriculum and competency misalignment, limited educators' digital capability and institutional readiness, assessment and academic-integrity challenges, and persistent digital inequality. Digital technologies also created opportunities for virtual incubation, simulation-based learning, technology-assisted venture development and AI-supported feedback and ideation, personalised learning, and global collaboration and digital market access. The paper proposes an integrated conceptual framework in which human capital, experiential pedagogy, meaningful technology acceptance, and enabling institutional conditions shape technology-enabled entrepreneurial learning. It argues that Nigerian institutions should pursue context-sensitive and inclusive digital transformation rather than technology adoption for its own sake, combining infrastructure and access initiatives with curriculum development, educator capacity building, authentic assessment, responsible AI governance, and stronger engagement with entrepreneurial and industry ecosystems.

Keywords: *Entrepreneurship Education; Digital Era; New technologies; Artificial Intelligence*; *Generative AI; Large Language Models*

1. Introduction

Entrepreneurship education has become an important component of contemporary education because it develops knowledge, skills, attitudes and capabilities that support opportunity recognition, problem solving, innovation, employability, and entrepreneurial action. From a Human Capital Theory perspective, education and training constitute investments that build productive knowledge and skills, while entrepreneurship research indicates that task-related knowledge and skills are particularly relevant to entrepreneurial success (Becker, 1964; Unger et al., 2011). Entrepreneurship education is therefore increasingly expected to move beyond the transmission of conventional business knowledge toward the development of competencies that learners can apply in changing economic environments.

The transformation of the entrepreneurial environment is closely associated with the growth of digital technologies. Digital platforms, online marketplaces, cloud services, mobile technologies, data analytics, and artificial intelligence have altered how opportunities are identified, products and services are developed, customers are reached, and value is created.

Nambisan (2017) argues that digital technologies transform the nature of entrepreneurial processes and outcomes by making entrepreneurial processes less bounded and by changing the landscape of entrepreneurial activities and, hence altering operational patterns. These changes necessitate transformation of entrepreneurship education. Entrepreneurship educators therefore face the dual challenge of developing entrepreneurial capabilities and creating learning environments in which learners can meaningfully and confidently engage with digital technologies.

The emergence of generative artificial intelligence (GenAI) since 2022 has added a further dimension to this transformation. Generative AI tools can support activities such as idea generation, business-

model development, feedback, scenario exploration, and the design of entrepreneurship teaching exercises (Bell & Bell, 2023; Darnell & Gopalkrishnan, 2024). However, the educational value of these tools depends on how they are incorporated into pedagogy rather than on the technology alone. Bell and Bell (2023) argue that GenAI has implications for entrepreneurship pedagogy, teaching practice, curriculum design, and assessment, while emphasizing the need for managed integration and the development of students' critical and reflective thinking.

The use of GenAI raises issues of responsible and ethical educational practice. In entrepreneurship education, these concerns are dealt with by AI governance and institutional guidance and human-centred approaches to adoption of digital technologies relating to privacy, human oversight, equity, safety, transparency, and the responsible use of generative AI (Miao & Holmes, 2023).

This paper therefore examines entrepreneurship education in the digital era, using Nigeria as the principal contextual reference while drawing comparative insights from wider educational and entrepreneurship literature. The purpose is to examine the conditions under which digital technologies can strengthen entrepreneurial learning and the institutional, pedagogical, infrastructural, and ethical barriers that may constrain such benefits. To achieve that, it brings together Human Capital Theory, Experiential Learning Theory, and the Technology Acceptance Model to provide complementary explanations of technology-enabled entrepreneurship education (Becker, 1964; Davis, 1989; Kolb, 1984). It also incorporates the digital-entrepreneurship perspective advanced by Nambisan (2017) and the human-capital evidence synthesized by Unger et al. (2011).

The paper makes three main contributions. First, it integrates Human Capital Theory, Experiential Learning Theory, and the Technology Acceptance Model into a common conceptual explanation of technology-enabled entrepreneurship education, while recognizing the distinct role of digital technologies in entrepreneurial processes (Becker, 1964; Davis, 1989; Kolb, 1984; Nambisan, 2017; Unger et al., 2011). Second, it consolidates major opportunities and constraints into a coherent analytical structure, with particular attention to the Nigerian context. Third, it extends the discussion to application of generative AI, large language models, and AI-assisted entrepreneurial learning considering recent scholarship (Bell & Bell, 2023; Darnell & Gopalkrishnan, 2024; Yu et al., 2025).

The paper is presented as a conceptual exploratory review rather than a completed systematic review. It consists of eleven parts. This section forms the first part which is followed by a review of entrepreneurship education in the digital era in Nigerian context as the second part. The third section delves into theoretical framework and the fourth explained the methodology used. While section five is devoted to challenges, section six highlighted the opportunities presented by digital technologies in teaching and learning entrepreneurship. Section seven concentrates on strategies for effective entrepreneurship education in the digital era, while section eight discusses the review. Whereas, section ten presents the integrated strategic framework, the second to last section explains the policy implications and conclusion forms the last section.

2.Entrepreneurship Education in the Digital Era

Entrepreneurship education is witnessing series of changes resulting from introduction of new digital technological devices and tools. These changes have profound effects on curriculum contents and delivery, entrepreneurial practices and operational patterns. These developments necessitate acquisition of required entrepreneurial competencies.

2.1. Transformation of Entrepreneurial Competencies

Digital transformation has unleashed changes that alter the knowledge, skills, and capabilities required for contemporary entrepreneurial activity. Consequently, entrepreneurship education curricula in higher education are undergoing a transformation from the traditional business school model to an interdisciplinary technology-rich model (Kazakeviciute et al., 2016; Rafiana, 2023). While the traditional entrepreneurship curricula commonly emphasise opportunity identification, business planning, marketing, accounting, finance, management, and venture development. These foundational competencies remain important; however, the increasing use of digital technologies has expanded the range of capabilities relevant to entrepreneurial processes. Currently, there is increasing focus on technology-enhanced entrepreneurship curricula, as advancements in educational technology have brought new inspiration and tools (Secundo et al., 2020, Udekwe & Iwu, 2024). As a result, entrepreneurship education increasingly needs to incorporate competencies relating to application of digital technological devices, tools, platforms for learners to acquire relevant skills and competencies to enable the practice of e-commerce, social-media marketing, data interpretation, online customer discovery, digital payments, remote collaboration, and the appropriate use of emerging technologies.

The introduction of GenAI in 2022 has brought in additional instructional pedagogies in teaching entrepreneurship education. For example, Yu et al. (2025), in a systematic review of 50 peer-reviewed articles published between 2019 and early 2025, identified four major areas of GenAI-enabled

entrepreneurship education: personalized and adaptive instruction, simulation-based entrepreneurial training, virtual incubation, technology-assisted venture development and AI-supported feedback and ideation. The implication of the current changes is not that technology training should replace foundational entrepreneurship knowledge. Rather, entrepreneurship curricula should combine established entrepreneurial competencies with technology-related capabilities that are relevant to contemporary entrepreneurial environments. Such an approach supports a broader competence model in which entrepreneurial judgement, opportunity recognition, problem solving, and value creation are complemented by appropriate technological skills and competencies (Nambisan, 2017). Technology should therefore be integrated into established entrepreneurial learning processes rather than treated as an independent educational objective. Students can use digital tools to investigate customer needs, analyse competitors, prototype products and services, analyse market information, communicate value propositions, and test aspects of business models. When these activities are deliberately designed around action, reflection, experimentation, and revision, technology can support experiential entrepreneurial learning (s). The central learning objective should remain the development of entrepreneurial capability and value-creation capacity, with digital technology functioning as an enabling resource rather than an end in itself.

2.2 Entrepreneurship Education in the Digital Era in Nigeria

Nigeria provides an important context for examining entrepreneurship education in the digital era because of its large and youthful population, expanding digital economy, and substantial entrepreneurial activity, alongside continuing challenges in digital infrastructure and access. Nigeria's digital transformation has created opportunities for greater participation in digitally enabled economic activities, but persistent gaps in connectivity, affordability, digital skills, and supporting infrastructure continue to affect the extent to which individuals and institutions can benefit from these opportunities (World Bank, 2019). These conditions have direct implications for entrepreneurship education because access to technology is closely connected to learners' opportunities to acquire and apply digital competencies.

The challenges associated with technology-enabled entrepreneurship education should therefore not be treated as merely technical problems. Differences in connectivity, affordability, device access, electricity, digital skills, and institutional capacity can influence who participates in technology-mediated learning, how consistently digital resources can be used, and the quality of learning experiences available to students. In Nigerian tertiary education, concerns about the practical orientation and functionality of entrepreneurship education also reinforce the need to connect curriculum content with the competencies required for meaningful entrepreneurial activity (Ereh et al., 2019). The effectiveness of entrepreneurship education in digital era depends not only on the availability of technologies but also on the capacity of institutions and educators to integrate those technologies into relevant learning activities.

The Nigerian situation also illustrates an important distinction between individual digital familiarity and institutional digital readiness. Young people may use smartphones, social-media platforms, and other digital services regularly, while educational institutions may continue to face limitations in providing reliable broadband, appropriate learning platforms, digital learning resources, simulation facilities, and systematic professional development for educators. The implications to entrepreneurship education is that digital transformation may occur alongside infrastructure deficits, affordability constraints, uneven digital skills, and institutional capacity limitations. However, regular use of consumer-oriented digital technologies should therefore not automatically be interpreted as evidence of the deeper digital competencies required for productive, ethical, and innovative entrepreneurship. From this perspective, entrepreneurship-education policy should distinguish between informal digital participation, functional digital competence, and institutionally supported digital entrepreneurial capability (Nambisan, 2017; World Bank, 2019).

A technology-enabled entrepreneurship-education strategy should therefore be designed around the conditions under which learners can meaningfully access, understand, evaluate, and apply digital technologies. Such an approach shifts attention from informal digital participation toward inclusive access, educator capacity, pedagogical integration, and the development of entrepreneurial and digital human capital to ensure functional digital competence, and institutionally supported digital entrepreneurial capability (Nambisan, 2017).

2.3 Curriculum, Pedagogy and Assessment

Other aspects of concern in the discourse of entrepreneurship education in the era of technology include: curriculum, pedagogy and assessment because curriculum transformation need to be accompanied by suited pedagogical transformation and appropriate assessment tools and procedures.

Assessment presents a related challenge because entrepreneurship education seeks to develop capabilities that may not be adequately captured by conventional examinations. Opportunity recognition, entrepreneurial judgement, creativity, problem solving, collaboration, experimentation, and the ability to learn from feedback may require assessment approaches that capture processes as well as final outputs. Project-based assessment, business-model portfolios, prototypes, venture pitches, customer-discovery reports, reflective journals, digital portfolios, and appropriately designed peer assessment can provide opportunities to evaluate different dimensions of entrepreneurial learning. These approaches are consistent with the broader emphasis on experiential and action-oriented entrepreneurship education (Kolb, 1984; Pittaway & Cope, 2007).

The increasing use of generative AI adds another dimension to assessment design. AI tools can assist learners in generating ideas, structuring information, producing drafts, and exploring alternative solutions, while also creating opportunities for educators to redesign learning activities and teaching exercises (Bell & Bell, 2023; Darnell & Gopalkrishnan, 2024). Consequently, assessment should increasingly require learners to demonstrate their own reasoning, judgement, reflection, decision-making, and application of knowledge rather than relying solely on polished written outputs. This does not necessarily require the exclusion of AI from assessment; instead, educators can make the use of AI explicit, require disclosure where appropriate, and assess how learners evaluate, adapt, challenge, and apply AI-generated material. Such an approach can help preserve the development of critical and reflective capabilities while recognising the emerging role of AI in entrepreneurial learning (Darnell & Gopalkrishnan, 2024; Miao & Holmes, 2023)

3.0 Theoretical Foundation/framework

Different theoretical explanations and assumptions are used in explaining entrepreneurial education and learning. Amongst the most prominent theories that have made significant contributions in understanding entrepreneurial learning are Human Capital Theory (HCT) and Experiential Learning Theory (ELT). Since the focus of the paper pertains to use of digital technology in entrepreneurship education, Technology Acceptance Model (TAM) developed by Davis (1989) is included to lay a sound theoretical foundation and framework for the paper.

3.1 Human Capital Theory

Human Capital Theory explains education and training as investments that develop knowledge and skills that can enhance productivity and economic value. Becker (1964) provided a foundational economic treatment of human capital, conceptualising education and training as investments that can generate productive returns. In entrepreneurship education, the theory provides a useful explanation of why investment in entrepreneurial knowledge, skills and attitudes matters.

From an HCT perspective, entrepreneurship curricula should therefore develop both foundational entrepreneurial competencies and technology-related competencies that are relevant to contemporary entrepreneurial activity (Becker, 1964; Unger et al., 2011).

3.2 Experiential Learning Theory

Experiential Learning Theory provides a pedagogical foundation for learning through experience, reflection, conceptualisation, and experimentation (Kolb, 1984). Entrepreneurship education is particularly compatible with experiential learning because entrepreneurial competence involves applying knowledge to uncertain and changing situations. Learners therefore benefit from opportunities to investigate problems, develop ideas, test assumptions, receive feedback, revise decisions, and reflect on consequences. Simulations, business projects, case studies, fieldwork, competitions, and venture-development activities can provide learning experiences that connect conceptual knowledge with entrepreneurial action.

Pittaway and Cope (2007) extend this perspective to entrepreneurship education by emphasizing the importance of experiential and collaborative approaches that enable learners to engage with situations resembling entrepreneurial practice. Such approaches can provide opportunities for action, interaction, reflection, and learning from consequences. The value of experiential entrepreneurship education therefore lies not simply in exposing learners to activities but in deliberately structuring activities so that experience is followed by reflection and conceptual learning (Kolb, 1984; Pittaway & Cope, 2007).

Digital technologies can extend opportunities for experiential learning beyond the physical classroom. Simulation platforms can expose students to business decisions in relatively controlled environments, while virtual environments can facilitate collaborative problem-solving. AI systems may also support iterative feedback, idea development, and scenario generation. However, these technologies should complement rather than automatically replace authentic entrepreneurial experiences. Because a simulated customer interaction, for example, does not necessarily provide the same learning experience as interacting with actual customers, suppliers, communities, or entrepreneurs. The pedagogical value of digital technology therefore depends on how it is embedded within learning

activities involving action, reflection, conceptual understanding, and further experimentation (Kolb, 1984; Pittaway & Cope, 2007).

3.3 Technology Acceptance Model

The Technology Acceptance Model (TAM), developed by Davis (1989), explains users' acceptance of information technology primarily through perceptions of perceived usefulness and perceived ease of use. The model is relevant to entrepreneurship education because the availability of a digital platform or application does not, by itself, guarantee meaningful adoption. Students and educators may be less likely to use technology when they perceive it as difficult to use or insufficiently useful for achieving their learning or teaching objectives (Davis, 1989).

In entrepreneurship education, perceived usefulness may relate to whether a technology helps learners generate and evaluate ideas, conduct research, communicate, collaborate, receive feedback, or complete entrepreneurial tasks. Perceived ease of use concerns the extent to which learners and educators perceive that technology can be used without excessive effort (Davis, 1989). Other contextual factors, such as affordability, connectivity, digital skills, and institutional support, may also influence actual use, particularly in resource-constrained educational environments.

TAM is particularly relevant to the adoption of generative AI in entrepreneurship education. GenAI applications may be perceived as useful when they support activities such as idea generation, business-model development, feedback, scenario exploration, or teaching exercises (Bell & Bell, 2023; Darnell & Gopalkrishnan, 2024).

3.4 Integration of the Three Theories

The three theories provide complementary but distinct explanations of technology-enabled entrepreneurship education. Human Capital Theory explains why education and training can develop knowledge, skills and attitudes that are relevant to productivity and entrepreneurial performance (Becker, 1964; Unger et al., 2011). Experiential Learning Theory explains how learners can develop and transform knowledge through experience, reflection, conceptualisation, and experimentation (Kolb, 1984), while entrepreneurship-education research highlights the importance of experiential and collaborative learning approaches (Pittaway & Cope, 2007). Technology Acceptance Model explains an important dimension of technology adoption by focusing on perceived usefulness and perceived ease of use (Davis, 1989). Nambisan's (2017) digital-entrepreneurship perspective complements these theories by explaining how digital technologies reshape entrepreneurial processes and opportunities. The resulting conceptual position is that technology does not automatically improve entrepreneurship education. Rather, effective digital entrepreneurship education depends on the interaction between human capability, experiential pedagogy, technology adoption, and the changing digital entrepreneurial environment. This integrated perspective places learners, educators, pedagogy, and institutional conditions not technology alone at the centre of digital transformation (Becker, 1964; Davis, 1989; Kolb, 1984; Nambisan, 2017; Unger et al., 2011).

4. Methodology

This paper adopts a structured conceptual literature-review approach to synthesise theoretical, conceptual, and empirical insights concerning entrepreneurship education and the role of digital technologies in contemporary entrepreneurial learning. The approach is considered appropriate because the purpose of the paper is to integrate perspectives from entrepreneurship education, application of new technologies such as generative AI in teaching and learning entrepreneurship, technology acceptance and adaptive learning. Accordingly, the review is interpretive and thematic rather than a systematic review or meta-analysis.

The literature was identified and organised around five broad domains: (1) entrepreneurship education; (2) digital entrepreneurship and digital transformation; (3) educational technology and experiential learning; (4) artificial intelligence, generative AI, and large language models in education; and (5) Nigerian and other developing-country contexts. These domains were selected to ensure that the conceptual discussion addressed both the theoretical foundations of entrepreneurship education and the contemporary technological environment in which entrepreneurial learning occurs.

The literature search and selection process was guided by relevance to the central focus of the paper. Search terms and combinations included “entrepreneurship education,” “digital entrepreneurship,” “digital transformation and entrepreneurship education,” “entrepreneurship education and artificial intelligence,” “generative AI and entrepreneurship education,” “large language models and education,” “experiential learning and entrepreneurship,” “digital divide and higher education,” and “Nigeria and digital entrepreneurship education.” Relevant scholarly publications and authoritative institutional sources were considered where they directly addressed entrepreneurship education, digital entrepreneurship, technology-enabled learning, experiential learning, entrepreneurship ecosystems, technology adoption and digital inclusion. However, PRISMA systematic-review flow chart and

screening process were not used. Instead, transparency in evidence-synthesis reporting advocated by Page et al. (2021) was adopted. That guided the selection of literature with conceptual relevance and scholarly credibility.

Foundational theoretical works were retained irrespective of publication year because their historical and theoretical significance is central to the framework of the paper. These include Becker's (1964) Human Capital Theory, Kolb's (1984) Experiential Learning Theory, and Davis's (1989) Technology Acceptance Model. Later theoretical and empirical contributions were selected where they extended or applied these perspectives to entrepreneurship, digital technologies, experiential entrepreneurship education, or generative AI. Nambisan (2017) was used to establish the digital-entrepreneurship perspective, Unger et al. (2011) to support the relationship between human capital and entrepreneurial success, and Pittaway and Cope (2007) to strengthen the experiential-learning perspective in entrepreneurship education.

Contemporary literature was given particular attention in relation to digital learning, artificial intelligence, generative AI, and technology-enabled entrepreneurship education because these areas are rapidly evolving. Bell and Bell (2023) and Darnell and Gopalkrishnan (2024) were considered in relation to the emerging application of generative AI to entrepreneurship education, while Yu et al. (2025) provides recent systematic-review evidence concerning the developing research base on GenAI in entrepreneurship education. Miao & Holmes, (2023) was considered specifically in relation to responsible, ethical, human-centred, and appropriate use of generative AI in education and research. Evidence from Nigeria was reported to provide contextual information concerning digital access, infrastructure, skills, curriculum, and the implementation environment.

5.0 Issues and Challenges of Entrepreneurship in Digital Era in Developing Country Context

Entrepreneurship education in the present dispensation of new technologies is facing several challenges in Nigeria. Some of the challenges frequently brought to fore in literature include the following.

5.1 Infrastructure, Connectivity, and Electricity

Reliable electricity, broadband connectivity, affordable data, and access to suitable digital devices are important enabling conditions for technology-supported education. Where these conditions are inadequate, participation in digital learning can become inconsistent and unequal. In Nigeria, persistent gaps in digital infrastructure, internet access, affordability, and electricity supply can constrain the capacity of learners and educational institutions to participate effectively in digitally mediated learning (World Bank, 2019). These constraints are particularly significant for entrepreneurship education because activities such as online market research, digital collaboration, e-commerce training, simulation, digital prototyping, and AI-assisted learning depend on sustained access to digital resources.

The infrastructure challenge consequently requires more than the provision of digital platforms. Effective technology-enabled entrepreneurship education requires attention to electricity supply, broadband availability, affordability, device access, institutional digital infrastructure, and the capacity of educators and learners to use available technologies productively. In developing-country contexts such as Nigeria, these enabling conditions should form part of entrepreneurship-education planning rather than being treated as separate technical concerns (World Bank, 2019).

5.2 Curriculum Misalignment

The literature has unveiled the potential mismatch between the pace of technological change and the processes through which entrepreneurship curricula are reviewed and updated. Digital technologies, platforms, and business models can evolve rapidly, creating new forms of entrepreneurial activity and altering how opportunities are identified, developed, and commercialised (Nambisan, 2017). A curriculum that treats digital commerce, online platforms, data-related capabilities, or artificial intelligence as peripheral rather than as components of contemporary entrepreneurial practice may therefore provide limited preparation for technology-mediated entrepreneurial environments.

Curriculum reform should consequently focus not simply on adding individual emerging technologies to existing course content but on developing adaptable entrepreneurial and digital competencies that learners can transfer across changing technological environments. Such an approach is consistent with the human-capital perspective, which emphasises the value of knowledge and skills that are relevant to productive activity (Becker, 1964; Unger et al., 2011).

5.3 Educator Capability and Institutional Resistance

Technology adoption in entrepreneurship education requires more than the availability of digital tools. It also depends on users' perceptions of the usefulness and ease of use of those technologies, as well as on the institutional conditions that enable educators to incorporate them into teaching practice (Davis, 1989). Faculty members may possess substantial knowledge of entrepreneurship but have limited

experience with artificial intelligence, digital simulations, learning-management systems, data tools, or virtual collaboration. Conversely, technically confident educators may require further preparation in entrepreneurship pedagogy and in the instructional application of digital technologies.

5.4 Assessment, Academic Integrity and Ethics

Generative AI introduces new challenges for assessment in entrepreneurship education. Students can use AI tools to support activities such as generating business ideas, developing written reports, preparing presentations, and producing drafts of business plans. The educational challenge is therefore not simply whether AI should be prohibited, but how assessment can continue to provide credible evidence of learners' knowledge, reasoning, judgement, and entrepreneurial capabilities in an environment where AI assistance is increasingly accessible (Bell & Bell, 2023; Darnell & Gopalkrishnan, 2024).

From ethical perspective, Generative AI systems can produce fluent and plausible outputs that may nevertheless contain factual inaccuracies, unsupported claims, or inappropriate recommendations (Bell & Bell, 2023; Miao & Holmes, 2023). The challenge is especially important in entrepreneurship education because students may use AI-generated information in activities involving market analysis, customer research, financial assumptions, business planning, or strategic decision-making which can lead to taking wrong decisions based on unauthentic data.

5.5 Digital Inequality and exclusion

Digital technology can create new opportunities for educational participation while also reproducing or intensifying existing inequalities. Differences in connectivity, device ownership or availability, affordability, digital skills, and access to advanced digital services can influence learners' ability to participate consistently in technology-enabled education. These challenges are particularly relevant in developing-country contexts, where digital infrastructure and affordability remain uneven (World Bank, 2019). Digital inclusion requires attention to both access to technology and the capabilities needed to use it productively (World Bank, 2019).

6. Opportunities Presented by New Technologies

The digital era promoted by the advert new technological devices, tools and skills have presented lot of opportunities that could enhance entrepreneurial technology enabled learning. These include personalized and adaptive instruction, simulation-based entrepreneurial training, incubation, mentoring, and networking beyond the physical boundaries via virtual entrepreneurship ecosystems promoting global collaboration and access to digital market, and the use of Artificial Intelligence and Generative AI aiding AI-Assisted Venture Creation etc. These have created additional opportunities for interaction, experimentation and mentoring for enhancing entrepreneurial learning.

6.1 Digital Incubation and Virtual Entrepreneurship Ecosystems

Digital technologies can extend entrepreneurship education, incubation, mentoring, and networking beyond the physical boundaries of an institution. Digital platforms can facilitate interaction among learners, mentors, entrepreneurs, industry professionals, and other members of entrepreneurial ecosystems. They can also provide opportunities for learners to encounter entrepreneurial practices, markets, and business models beyond their immediate geographical environment. This is consistent with the broader transformation of entrepreneurship through digital technologies, which can alter how entrepreneurial actors access resources, interact with stakeholders, and pursue opportunities (Nambisan, 2017).

From an experiential-learning perspective, digitally mediated interaction can provide additional opportunities for learners to engage with entrepreneurial actors, receive feedback, reflect on experiences, and revise their ideas. Such activities are most valuable when they are deliberately integrated into learning designs that connect experience with reflection and application (Kolb, 1984; Pittaway & Cope, 2007).

6.2 Simulation, Virtual Reality, and Experiential Learning

Simulation can provide a bridge between conceptual knowledge and entrepreneurial practice by allowing learners to make decisions and observe consequences in controlled environments. Depending on the design of the learning activity, students can engage with decisions relating to pricing, marketing, investment, production, resource allocation, and venture growth without immediately bearing the consequences of actual business failure. Virtual and augmented-reality environments may similarly provide opportunities to simulate customer interaction, product demonstration, retail environments, and other entrepreneurial situations.

These approaches are consistent with Experiential Learning Theory when learners are given opportunities to act, reflect on outcomes, develop conceptual understanding, and experiment with alternative decisions (Kolb, 1984). They are also compatible with the experiential and collaborative orientation of entrepreneurship education identified by Pittaway and Cope (2007).

6.3 Artificial Intelligence and Generative AI

Artificial intelligence can potentially support entrepreneurship education across several stages of the entrepreneurial learning process. During opportunity identification, learners can use AI tools to generate alternative problem statements, explore questions for customer discovery, and consider different interpretations of a potential opportunity. During ideation, AI can generate alternative concepts that learners can compare and critically evaluate. During business-model development, AI can assist learners in organising assumptions concerning customer segments, value propositions, channels, and revenue models. AI can also support communication activities by assisting with the drafting and revision of marketing messages and other entrepreneurial communications (Bell & Bell, 2023; Darnell & Gopalkrishnan, 2024).

In entrepreneurship education, GenAI creates opportunities for idea exploration, feedback, scenario development, and learning support. It also help learners to develop the ability to cross-examine, evaluate, verify, adapt, and critically challenge AI-generated outputs while retaining responsibility for entrepreneurial judgement and decisions. Responsible use should include attention to accuracy, transparency, privacy, bias, and human oversight (Miao & Holmes, 2023).

6.4 AI-Assisted Venture Creation and enterprise development

The emergence of AI-assisted venture-creation tools creates opportunities for learners to move more efficiently from an initial problem statement toward preliminary entrepreneurial outputs. AI can assist with activities such as developing value propositions, generating customer profiles, organising competitor information, describing potential prototypes, developing marketing concepts, and structuring preliminary financial assumptions (Bell & Bell, 2023; Darnell & Gopalkrishnan, 2024).

The potential benefit is not limited to production of business documents, but aids testing assumptions, gathering field evidence, interacting with customers, and revising proposed solutions. Entrepreneurship education should therefore maintain customer discovery, field evidence, experimentation, feedback, and reflection at the centre of venture-development activities. This preserves the experiential character of entrepreneurship education while allowing AI to function as an assistive resource rather than a substitute for entrepreneurial action (Kolb, 1984; Pittaway & Cope, 2007).

6.5 Personalised and Adaptive Learning

AI-enabled educational systems can potentially provide learners with differentiated explanations, examples, exercises, and feedback according to their learning needs and levels of readiness. Such capabilities may provide additional support for learners who require further practice while enabling more advanced learners to engage with increasingly complex entrepreneurial problems (Bell & Bell, 2023; Yu et al., 2025).

6.6 Global Collaboration and Digital Market Access

Digital technologies enable learners and entrepreneurs to interact across geographical boundaries and gain exposure to entrepreneurial problems, markets, networks, and business models beyond their immediate environments. Digital platforms can facilitate international collaboration, virtual teams, online entrepreneurial events, digital market research, and engagement with entrepreneurs and other stakeholders in different locations. Digital entrepreneurship can consequently expand the geographical scope within which entrepreneurial opportunities and resources can be explored (Nambisan, 2017).

For entrepreneurship education, these capabilities create opportunities for learners to work on cross-border projects, compare entrepreneurial ecosystems, investigate different customer environments, and collaborate with participants from diverse cultural and geographical contexts. Such experiences can broaden learners' understanding of markets and entrepreneurial environments while creating opportunities to develop communication, collaboration, and cross-cultural capabilities. Digital connectivity therefore creates opportunities for market exploration and collaboration, but entrepreneurial success still depends on the quality of entrepreneurial judgement and evidence-based action.

7. Strategies for Effective Entrepreneurship Education in the Digital Era

A good number of strategies are required to guide and ensure effective entrepreneurship education delivery in the digital era. The strategies below are considered very relevant for the prevalence of sound entrepreneurship education with promising learning outcomes.

7.1 Redesign the Curriculum around Entrepreneurial and Digital Competencies

Institutions should redesign entrepreneurship curricula around enduring entrepreneurial competencies while embedding digital capabilities that are relevant to contemporary entrepreneurial activity. Curriculum review should therefore be sufficiently responsive to major technological developments while maintaining a stable foundation of entrepreneurial knowledge and transferable competencies. This balance can reduce the risk of curricula becoming obsolete while avoiding excessive emphasis on individual technologies that may quickly change.

7.2 Build Educator Digital and AI Capability

Professional development should move beyond basic ICT skills toward digital pedagogy, technology integration, and AI literacy. Educators should be supported to design AI-assisted learning activities, evaluate AI-generated outputs, develop appropriate assessment strategies, facilitate critical reflection, and understand the limitations and responsible-use requirements associated with emerging technologies.

As generative AI becomes increasingly relevant to entrepreneurship education, educators need to understand how AI can support learning without replacing learner judgement, how AI-generated information should be evaluated, and how issues of privacy, transparency, equity, and human oversight should be addressed (Bell & Bell, 2023; Darnell & Gopalkrishnan, 2024; Miao & Holmes, 2023). Institutions can reinforce this process through communities of practice in which educators share teaching materials, cases, simulations, assessment approaches, and experiences with emerging technologies.

7.3 Adopt Authentic, Process-Based Assessment

Assessment should increasingly evaluate what learners can do, explain, justify, and reflect upon, rather than relying exclusively on conventional written examinations. Suitable approaches include venture projects, prototypes, customer-interview evidence, business-model experiments, digital portfolios, reflective journals, presentations, peer evaluation, and oral defense. Such approaches are consistent with experiential approaches to entrepreneurship education, in which learners engage in action, reflection, experimentation, and application (Kolb, 1984; Pittaway & Cope, 2007).

7.4 Establish Innovation and Incubation Hubs

More entrepreneurship centres and incubation hubs should be established to help connect classroom learning with entrepreneurial practice by providing opportunities for mentoring, experimentation, networking, prototyping, and engagement with entrepreneurs and industry. Such environments can complement classroom-based learning by providing experiences through which learners can apply concepts, receive feedback, and reflect on entrepreneurial decisions (Pittaway & Cope, 2007). As established in the literature, digital technologies can extend these ecosystems beyond physical institution. Virtual mentoring, online networking, digital collaboration, and technology-enabled incubation can connect learners with entrepreneurial actors and opportunities beyond their immediate geographical environment (Nambisan, 2017). Where resources are constrained, institutions can adopt incremental approaches, including shared digital laboratories, mobile-oriented tools, partnerships with existing technology hubs, and virtual mentoring rather than making expensive physical infrastructure a prerequisite for entrepreneurial learning.

7.5 Improve Infrastructure through Context-Sensitive Solutions

Infrastructure strategies should prioritise reliability, affordability, accessibility, and educational usefulness rather than technology acquisition alone. In resource-constrained environments such as Nigeria, institutions can consider campus connectivity improvements, device-support schemes, renewable or alternative power solutions, offline digital resources, mobile-oriented learning, and partnerships with telecommunications and technology providers. Also, blended and flexible approaches may provide practical alternatives where continuous high-speed connectivity cannot be guaranteed. Such approaches should, however, be designed around the actual learning requirements of entrepreneurship courses rather than adopted simply as a lower-cost substitute for conventional teaching.

7.6 Promote Inclusive Digital Entrepreneurship Education

Institutions should identify barriers that may affect learners' participation, including limited device access, connectivity constraints, affordability, accessibility requirements, and differences in digital capability to promote inclusive technology-enabled entrepreneurial learning. Therefore, digital learning resources should be accessible, mobile-compatible, and usable under conditions of intermittent connectivity.

Inclusive design should also take account of the relevance of learning materials to learners' contexts. Entrepreneurial examples, cases, problems, and projects can incorporate local communities, industries, markets, and business environments so that digital entrepreneurship education remains connected to learners' lived economic contexts. Where generative AI is used, institutions should also consider equity in access and the need for responsible and human-centred implementation (Miao & Holmes, 2023).

7.7 Establish Responsible AI Governance

Institutions should establish clear and adaptable AI-governance frameworks covering privacy, acceptable use, academic integrity, attribution, assessment, data protection, transparency, and human oversight. Policies should distinguish between legitimate educational assistance and the inappropriate substitution of AI-generated work for learners' own intellectual contribution. Students should be taught

to evaluate and verify AI-generated information, protect personal and confidential information, recognise potential bias and inaccuracies, and disclose meaningful use of AI where institutional policy requires it. Educators should similarly understand their responsibility for determining appropriate uses of AI within learning and assessment contexts (Miao & Holmes, 2023).

8. Discussion

The synthesis suggests that the central issue is not whether entrepreneurship education should become digital, but how digital technologies can be integrated without displacing the experiential, human, and contextual character of entrepreneurial learning. The strongest rationale for technology integration is therefore not technological novelty itself, but the potential of digital tools to expand opportunities for experimentation, collaboration, feedback, networking, and engagement with entrepreneurial problems and markets. At the same time, the digital transformation of entrepreneurship should not be interpreted as inherently beneficial; its educational value depends on how technologies are embedded within entrepreneurial processes and learning environments (Nambisan, 2017; Kolb, 1984; Pittaway & Cope, 2007).

The theoretical integration reinforces this position. Human Capital Theory suggests that relevant knowledge and skills constitute capabilities that can support productive and entrepreneurial activity, making digital competencies increasingly relevant to contemporary entrepreneurial human capital development (Becker, 1964; Unger et al., 2011). Experiential Learning Theory indicates that entrepreneurial competence is developed through active engagement, reflection, conceptualisation, and experimentation rather than through passive consumption of information alone (Kolb, 1984; Pittaway & Cope, 2007). The Technology Acceptance Model adds an adoption perspective by emphasising the importance of perceived usefulness and perceived ease of use in technology acceptance (Davis, 1989). Taken together, these perspectives suggest that meaningful digital transformation requires alignment among human capability, experiential pedagogy, and technology adoption.

Generative AI makes this alignment particularly important. AI systems can aid with ideation, drafting, feedback, and other cognitive tasks, creating opportunities to support entrepreneurial learning. However, entrepreneurship educators need to design activities in which AI-generated outputs become objects of critique, comparison, verification, experimentation, and reflection. Students can be required to justify their assumptions, verify information, explain their decisions, and provide evidence obtained through engagement with real customers and other stakeholders. Such an approach preserves the learner's responsibility for entrepreneurial judgement while using AI as an assistive resource.

The Nigerian context reinforces the need for a phased, inclusive, and context-sensitive approach to digital entrepreneurial teaching and learning. Where institutions face constraints involving electricity, connectivity, affordability, and access to appropriate devices, technology-intensive models developed in high-resource environments may not be directly transferable. Digital strategies should therefore consider context-appropriate approaches such as mobile-oriented learning, blended delivery, shared digital facilities, alternative power solutions, virtual mentoring, locally relevant digital learning resources, and partnerships with technology and entrepreneurial organisations (World Bank, 2019). These approaches should be selected according to their educational value and sustainability rather than technological sophistication alone.

It is therefore suggested that digital transformation should be evaluated in terms of educational capability rather than technology acquisition. The presence of devices, platforms, or AI tools does not by itself demonstrate improved entrepreneurship education but appropriate digital technological application in teaching and learning entrepreneurship. It then requires meaningful evaluation that considers learners' ability to identify and evaluate opportunities, solve problems, experiment with ideas, use digital resources responsibly, communicate entrepreneurial value, and apply knowledge in authentic contexts.

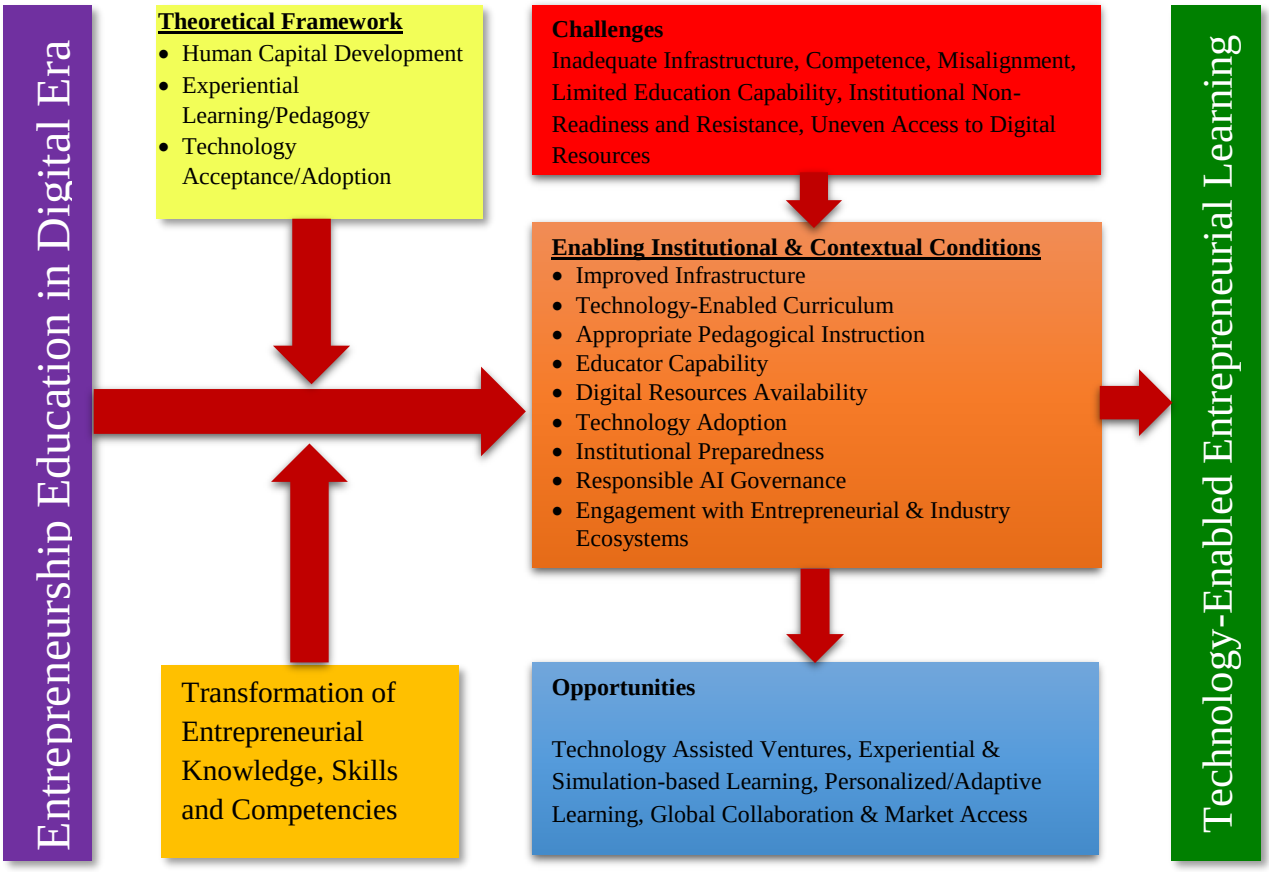
The synthesis supports a human-centred model of digital entrepreneurship education. Technology should function as an enabling resource within a broader system involving capable educators, appropriately designed curricula, experiential pedagogy, equitable access, authentic assessment, supportive institutions, and responsible governance. This position avoids both technological determinism and technological resistance: digital technologies can expand entrepreneurial learning opportunities, but their educational contribution depends on the conditions under which they are introduced and used.

9. Integrated Conceptual Framework

The integrated conceptual framework proposed in this paper positions technology-enabled entrepreneurship education at the intersection of human capability, experiential learning, technology acceptance and transformation of entrepreneurial knowledge, skills and competencies. The process

can be facilitated or challenged to ensure effective technology-enabled entrepreneurial teaching and learning. Human capital development provides the capability foundation by developing knowledge, skills and attitudes that can support productive and entrepreneurial activity via the acquisition of entrepreneurial competencies as well as relevant digital and AI-related capabilities (Becker, 1964; Unger et al., 2011). Experiential Learning as a pedagogical mechanism avails an avenue through which these capabilities can be developed and applied. Whereas, Technology Acceptance enhances technology adoption emphasising the importance of its perceived usefulness and ease of use by both entrepreneurial educators and learners (Davis, 1989).

AN EMERGING PATTERN TOWARDS TECHNOLOGY-ENABLED ENTREPRENEURIAL LEARNING



NOTE: The Strategic framework refers to a deterministic "technology better entrepreneurship education & relationship". Instead, it proposes a conditional context and human-centered relationship in which technological resources contribute to entrepreneurial learning when they are supported by appropriate competencies, experiential pedagogy, meaningful adoption and enabling institutional conditions. As such, technological availability alone does not guarantee entrepreneurial education and learning effectiveness.

The framework therefore treats technology not as an independent force that automatically improves entrepreneurship education, but as an enabling resource whose educational value depends on human capability, pedagogical design, and meaningful adoption. In the context of technology-enabled entrepreneurship education, technologies can support and provide opportunities such as technology assisted venture creation, experiential & simulation-based learning, personalized/adaptive learning, global collaboration & market access and access to entrepreneurial networks (Nambisan, 2017). However, their effectiveness depends on whether learners and educators possess the capabilities required to use them and whether technology is embedded within appropriate experiential-learning activities (Kolb, 1984; Pittaway & Cope, 2007). This interpretation is consistent with the broader transformation of entrepreneurial activity through digital technologies while recognising that technological availability alone does not guarantee educational effectiveness (Nambisan, 2017).

10. Policy Implications

The policy challenge is to create an enabling environment in which digital technologies can strengthen rather than fragment entrepreneurship education. Government and key stakeholders in education sector should therefore prioritise affordable connectivity, reliable electricity, access to appropriate devices, and sustainable digital infrastructure. These conditions influence the capacity of learners and institutions to participate meaningfully in technology-enabled education, particularly in contexts where access to digital resources remains uneven (World Bank, 2019).

National and institutional policy should also support continuous curriculum development, educator professional development, entrepreneurship incubation, and collaboration between educational institutions and industry. Partnerships among educational institutions, technology companies, entrepreneurs, telecommunications providers, financial institutions, and innovation hubs can provide learners with access to current technologies, practical expertise, mentoring, and entrepreneurial networks.

AI policy requires particular attention because generative AI introduces opportunities as well as questions concerning privacy, transparency, equity, safety, academic integrity, and human responsibility. Institutions should develop clear, adaptable, and human-centred AI governance frameworks that define acceptable use, protect personal and confidential information, establish appropriate expectations for transparency and attribution, and maintain meaningful human oversight. Miao & Holmes, (2023) emphasises the importance of policy and institutional preparedness in responding to the educational implications of generative AI. Nigerian institutions can adapt these principles to their own regulatory, infrastructural, cultural, and educational conditions while ensuring that AI adoption remains subordinate to clearly defined educational objectives.

Finally, policy evaluation should move beyond counting devices distributed, internet connections established, or training sessions conducted. More meaningful evaluation should consider whether interventions are producing improvements in learners' entrepreneurial and digital capabilities, the quality of experiential learning and venture experimentation, educator capacity, participation by underserved learners, industry engagement, and responsible use of AI. Where data permits, longer-term indicators of entrepreneurial activity and outcomes may also be considered. Such an evaluation framework would provide a stronger basis for determining whether digital transformation is contributing to meaningful improvements in entrepreneurship education rather than merely increasing the presence of technology within educational institutions (Rideout & Gray, 2013).

11. Conclusion

Entrepreneurship education is in a period of digital technological innovations that are becoming increasingly relevant to entrepreneurial learning, teaching and practice. The paper stresses that effective technology-enabled entrepreneurship education can be understood through the interaction of human capital, experiential pedagogy, technology acceptance, and enabling institutional conditions that prevail digital platforms, generative AI tools and devices, large language models, simulations, virtual learning facilities and data-driven tools to create opportunities to extend learning activities, support experimentation, facilitate collaboration, and connect learners with entrepreneurial networks and resources. It concludes that availability of these technologies does not by itself establish that entrepreneurship education will become more effective. Their educational value depends on how they are integrated into curriculum, pedagogy, assessment, and institutional practice.

Digital transformation in Nigeria also needs to be context-sensitive and inclusive. Constraints involving connectivity, affordability, electricity, device access, educator capability and institutional readiness need to be addressed effectively because they influence the extent to which learners benefit from technology-enabled education. As such, policy and institutional strategies should not simply reproduce technology-intensive models developed in high-resource environments but should prioritise sustainable and accessible approaches that respond to local infrastructure, economic, institutional, and educational

conditions. Hence, the strategic priority should therefore be a context-sensitive digital transformation that connects curriculum, pedagogy, infrastructure, educator development, industry engagement, policy, and responsible AI use.

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APPLICATION OF AI IN LEARNING ENTREPRENEURIAL SKILLS BY BUSINESS EDUCATION UNDERGRADUATES IN RIVERS STATE UNIVERSITIES

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Abstract

The need for Business Education undergraduates to increasingly apply AI in learning entrepreneurial skills for self-reliance necessitated this research. This study investigated the application of Artificial Intelligence (AI) in learning entrepreneurial skills by Business Education undergraduates in Rivers State Universities. Three research questions guided the study, while three null hypotheses were tested at the 0.05 level of significance. The study adopted a descriptive survey research design. The population comprised 544 final-year (400-level) Business Education undergraduates in the 2025/2026 academic session from Ignatius Ajuru University of Education and Rivers State University. Since the population was manageable and accessible, a census sampling method was adopted. Data were collected using a researcher-developed 27-item structured questionnaire titled: Application of AI in Learning Entrepreneurial Skills by Business Education Undergraduates (AAILESBEU). The instrument was validated by three experts in the field of education and yielded Cronbach's alpha reliability coefficients of 0.81, 0.79 and 0.87 for the three clusters, with an overall reliability coefficient of 0.83. Out of the 544 questionnaires distributed, 531, representing 98%, were correctly completed and retrieved. Data were analyzed using mean, standard deviation and independent t-test with SPSS version 26.0. The findings revealed that undergraduates applied generative AI tools to a low extent, Reinforcement Learning (RL) AI tools to a very low extent, and adaptive learning AI tools to a low extent in learning entrepreneurial skills. The findings further revealed no significant difference between male and female undergraduates in their mean ratings on the application of generative AI, RL AI and adaptive learning AI tools. The study concluded that Business Education undergraduates were not adequately applying AI tools in learning entrepreneurial skills in Rivers State Universities. It was recommended, among other measures, that university management should provide adequate AI learning infrastructure and reliable internet facilities, while Business Education departments should organize regular practical training and integrate AI tools into entrepreneurial education.

Keywords: Artificial intelligence, adaptive learning, business education, entrepreneurial skills, generative AI, reinforcement learning

Introduction

The university is recognized as a higher education institution that promotes individuals' knowledge, creativity, and professional skills. In many countries, universities play various roles, such as developing youths' skills and supporting social growth. They also generate new knowledge, support digital advancements, and contribute to sustainable economic development (World Bank, 2025). In Nigeria, the main goal of universities is to train undergraduates on relevant employability skills needed for employment or self-employment (Ogbeide-Akugbe et al., 2024). With this goal in mind, Nigerian universities offer various academic programmes, including business education.

Business education serves as a vocational training programme that fosters self-reliance and workforce readiness among youths. Defined by Abraham-Ibe (2021) as a practical skills programme,

its aim is to equip individuals with employability skills for self-reliance. Okpala and Okeke-Ezeanyanwu (2025) stated that business education trains undergraduates in business skills, attitudes, and knowledge, contributing to economic growth. This aligns with the National Universities Commission's (NUC, 2022) objective outlined in the Core Curriculum and Minimum Academic Standards, focusing on producing competent business teachers and innovative entrepreneurs (Ukata & Agburuga, 2024). The curriculum includes specialized training in accounting, marketing, office technology and management (OTM), and entrepreneurship education, preparing undergraduates for future careers as educators, accountants, business managers, IT specialists, financial analysts, and entrepreneurs (Oludare et al., 2022).

In the evolving job market, Business Education must transition from merely teaching traditional office skills to fostering entrepreneurial skills. This training should encompass financial management, marketing, accounting, business law, creativity, leadership, communication and teamwork skills. Ikeanyionwu and Nzegwu (2024) emphasized the importance of equipping undergraduates with skills to identify opportunities, manage resources, and set up small-scale businesses. Additionally, practical training in business education, as noted by Alharbi et al. (2018), is essential in equipping students with entrepreneurial skills for job creation.

Skills are abilities cultivated through education, training, and experience. Skills involve inherent and external abilities gained from various educational programmes such as workshops and seminars. Entrepreneurial skills, on the other hand, are necessary for converting ideas into effective actions, enabling opportunity identification, decision-making, and resource allocation to meet entrepreneurial aims (European Union, 2020; Jain, 2024; Ukata & Okpokwasili, 2024). They are a blend of technical and non-technical capabilities relevant across diverse occupations. Agbor and Okonkwo (2026) opined that entrepreneurial skills extend beyond starting new businesses; they involve innovation, critical thinking, risk management, and adaptability, all of which are essential for navigating dynamic business environments. Entrepreneurial skills include critical thinking, risk-taking, self-motivation, resilience, communication, networking, and financial management (Banwo, 2020). Others include teamwork, leadership, customer service, analytical skills, problem-solving, time management, business branding, and stress management (Agogbua & Mgbatogu, 2022; Herrity, 2025; Jain, 2024).

In the digital economy, Business Education must integrate training in digital skills. Exposure to these skills can equip undergraduates with digital entrepreneurship skills for business success. The application of digital tools, particularly Artificial Intelligence (AI), is transforming teaching and learning while also addressing the challenges of access to quality education for undergraduates (UNESCO, 2025). AI, initially introduced by John McCarthy in 1956, merges human intelligence with machine capabilities. Russell and Norvig (2020) defined AI as technology enabling machines to replicate complex human skills; McKinsey Global Institute (2020) stated that AI embodies the simulation of human intellectual abilities. The European Commission's High-Level Expert Group on AI (2019) noted that AI systems exhibit intelligent behavior by assessing learning environments and acting autonomously to achieve specific learning goals.

Commonly used AI tools in Nigerian higher education include ChatGPT, Grammarly, QuillBot, and Snapchat AI for assignments, studying, idea generation, and information retrieval (Ngonso et al., 2025; Orok et al., 2024). AI tools also include Waymo and generative AI tools such as ChatGPT, Gemini, Chalkie, and AI art. Odoh et al. (2018) listed AI types as Expert Systems, Neural Networks, Robotics, Genetic Algorithms, and Natural Language Processing (NLP). Benhamou and Janin (2018) highlighted Machine Learning (ML), NLP, Computer Vision, Robotics, Expert Systems, Reinforcement Learning, Generative AI, and AI Ethics and Explainability. Dong et al. (2025) highlighted various AI applications such as intelligent tutoring systems, adaptive learning systems, automated tutors, virtual simulations, and generative AI.

Ifi et al. (2026) noted that these AI applications are widely regarded as transformative tools that have impacted how teaching and learning occur. This study specifically focused on Generative AI, Reinforcement Learning (RL), and adaptive learning AI tools and their application in learning entrepreneurial skills by business education undergraduates.

Generative AI learning tools, including ChatGPT, Bard, Claude AI, DALL·E, Chatsonic, and Midjourney, can be applied by Business Education undergraduates to abilities to brainstorm business ideas, identify target customers, draft business plans, and prepare financial projections. They can also be applied to learn abilities to generate creative business ideas based on one's interests and market needs, describe products, marketing strategies, manage social media to increase sales, and campaign for business using e-mail. Additionally, generative AI tools in learning support learning skills in creating visual business materials such as advertisements and website banners (Gbogbor, 2025). Pesovski et al. (2024) and Mulyani et al. (2025) disclosed that generative AI tools provide students with access to

relevant learning materials that promote active engagement and deeper understanding of business concepts. According to Ifi et al. (2026), generative AI improves students' learning problem-solving abilities by acting as a potent cognitive amplifier that quickly deconstructs problems, retrieves pertinent information from various domains, produces dozens of different solutions, runs simulations, and finds the best routes far faster than humans. Koedinger et al. (2025) stated that through guided exploration of AI-scaffolded solution spaces, students can take on far more difficult, real-world business challenges earlier in their growth, get instantaneous explanatory feedback on each step, and progressively integrate sophisticated heuristics.

Reinforcement Learning (RL) AI tools can enhance entrepreneurial skills development among Business Education undergraduates by providing interactive, risk-free business simulations, trial-and-error learning, repeated practice, and immediate personalised feedback. These tools enable undergraduates to learn at their own pace, monitor progress, solve business problems, and apply entrepreneurial knowledge in realistic business situations (Solórzano Solórzano et al., 2024). Similarly, Park et al. (2025) found that adoption of AI-supported reinforcement learning enhances students' creativity and problem-solving skills. In addition, business simulators, pitch-training bots, and market analytics platforms are RL AI tools that can provide opportunities for business education undergraduates to practice entrepreneurial activities and refine their business ideas through personalised feedback (Pastarmadzhieva & Angelova, 2025).

Adaptive learning AI tools in learning enable undergraduates to personalize learning content, identify skill lacking, get instant feedback, and adjust learning activities when progress is made. Intelligent Tutoring Systems (ITS), AI Learning Management Systems (LMS), AI student performance analytics, AI student management systems, and AI business simulation are common Adaptive learning AI tools that help undergraduates assess learning strengths to know the areas they need improvement. They also provide relevant learning resources and challenges that promote self-directed learning, critical thinking, creativity and innovative skills (Kangiwa et al., 2024; Isaac et al., 2025).AI learning platforms including Coursera, Udacity and edX customize course contents and recommend learning materials for individual students' learning needs (Almeida, 2020; Isaac et al., 2025). Also, the Newton Adaptive Learning Platform continuously assesses students' knowledge and creates personalised learning paths. Such platforms can improve students' learning achievement and motivation to learn entrepreneurial skills (Wogboroma & Simon, 2025).

The application of AI in education has been found to enhance the development of entrepreneurial skills among undergraduates by tailoring and streamlining the teaching and learning processes (Nwile et al., 2025; Odili & Ebiye, 2025; Omeh et al., 2025). The word "application" denotes the act of employing a material or idea. It encompasses the use of a concept, principle, skill, or tool to fulfil a particular goal. Russell and Norvig (2020) characterized application as the deployment of AI tools to customize learning, whereas Luckin et al. (2018) defined AI application as the employment of AI tools to aid teaching and learning (Ukata & Nmehielle, 2025; Ukata & Worgu, 2025). According to Obomeghie (2025); Al-Mosawi (2018), and Al-Noori & Al-Mosawi (2017), AI application in Nigerian universities faces challenges such as limited access to reliable internet, insufficient AI infrastructure and digital literacy, and the high expense of digital resources. Obomeghie (2025), Dwivedi et al. (2023), and Stokel-Walter (2023) identified data privacy issues, data breaches, academic dishonesty, AI plagiarism, superficial learning, and excessive reliance on AI as challenges affecting the adoption of AI tools among students.

In Rivers State, Nigeria, the Technology Acceptance Model (TAM) explains AI adoption in learning entrepreneurial skills in universities through perceived usefulness and ease of use, which influence students' willingness to adopt AI tools (Davis, 1989). AI self-efficacy strengthens confidence, persistence, and effective application of AI for learning skills (Wang & Li, 2024; Zhao et al., 2025).
Nevertheless, the advancements in the application of AI in public higher education in Nigeria remain limited (Ikedinachi, 2019). Similarly, Nwile et al. (2025) observed that AI has been widely embraced in other sectors, but its potential in learning among business education undergraduates has yet to be fully harnessed. In addition, Akalonu (2025) and Wogboroma and Simon (2025) found that more advanced AI learning tools were less frequently used for academic learning by Business Education graduates. The need for business education undergraduates to apply AI in improving the learning of entrepreneurial skills necessitated this research. Therefore, this study investigated the level of application of artificial intelligence (AI) by business education undergraduates in learning entrepreneurial skills in Rivers State Universities.

Statement of the Problem

Business Education is expected to equip its recipients with entrepreneurial skills necessary to generate jobs, become independent, and support economic growth upon graduation. However, since some undergraduates leave the university without having acquired sufficient entrepreneurial skills, unemployment among Business Education graduates is still a worrying situation. Because many graduates rely primarily on paid employment in an environment where white-collar jobs are scarce, this situation has become concerning to the government, parents, and the graduates themselves. The fact that small-scale enterprises frequently fail after a few months of opening is another evidence of the problem. Some recent Business Education graduates who want to start their own businesses may not possess the entrepreneurial skills required to organize, run, and manage them. Consequently, graduates may remain unemployed or underemployed, while parents bear additional financial burdens and the government faces increased pressure to provide employment opportunities for the graduates.

The continued unemployment among Business Education graduates, as well as the early failure of graduate-owned small enterprises, may reflect a gap between the entrepreneurial abilities that undergraduates are expected to learn in the university Business Education programme and the skills that they actually acquired. In order to address the issue of learning gaps and lack of entrepreneurial skills among graduating business education students, educational experts have called for undergraduates to increasingly apply digital technologies in their learning. Artificial intelligence (AI) is one such technology that can allow undergraduates to develop entrepreneurial abilities. Despite these prospects, the application of AI in learning entrepreneurial skills by Business Education undergraduates in Nigeria, especially Rivers State, seems to be low. This may be attributed to inadequate ICT infrastructure, poor internet access, a lack of digital skills among undergraduates, high cost of AI tools, and poor institutional support.

Additionally, the extent to which Business Education undergraduates in Nigeria, especially Rivers State universities, apply AI tools in learning entrepreneurial skills is not well known. If this gap continues, the goals of Business Education in promoting job creation may not be fully achieved. It is against this background that this study specifically determined (1) the level of application of generative AI tools in learning entrepreneurial skills by Business Education undergraduates in Rivers State Universities, (2) the level of application of reinforcement learning (RL) AI tools in learning entrepreneurial skills by Business Education undergraduates in Rivers State universities, (3) the level of application of adaptive learning AI tools in learning entrepreneurial skills by business education undergraduates in Rivers State universities.

Research Questions

The following research questions guided this study;

1. What is the extent of application of generative AI tools in learning entrepreneurial skills by Business Education undergraduates in Rivers State Universities?
2. To what extent do Business Education undergraduates apply reinforcement learning (RL) AI tools in learning entrepreneurial skills in Rivers State universities?
3. What is the extent of application of adaptive learning AI tools in learning entrepreneurial skills by Business Education undergraduates in Rivers State universities?

Research Hypotheses

The following null hypotheses were tested at the 0.05 level of significance;

H_{01}: There is no significant difference in the mean ratings of male and female Business Education undergraduates on the extent of application of generative AI tools in learning entrepreneurial skills in Rivers State Universities.

H_{02}: There is no significant difference in the mean ratings of male and female Business Education undergraduates on the extent of application of Reinforcement Learning (RL) AI tools in learning entrepreneurial skills in Rivers State Universities.

H_{03}: Male and female Business Education undergraduates do not differ significantly in their mean ratings on the extent of application of adaptive learning AI tools in learning entrepreneurial skills in Rivers State Universities.

Methods

The study adopted a descriptive survey research design. It was carried out in Rivers State, South-South, Nigeria. The population of the study comprised 554 final-year (400 level) Business Education undergraduates in the 2025/2026 academic session from Rivers State universities in Nigeria offering a Business Education programme. According to information from the Business Education departments of various universities as of 17th August, 2026 showed that Ignatius Ajuru University of Education has 444 final-year undergraduates, and Rivers State University (RSU) has 110 final-year undergraduates. The entire population of 544 final-year Business Education undergraduates was manageable and accessible to the researcher; therefore, the census sampling method was used. The

instrument for data collection was a structured questionnaire developed by the researcher and titled "Application of AI in Learning Entrepreneurial Skills by Business Education Undergraduates (AAILESBEU)". The instrument has two sections: A and B. Section A contained demographic data of the respondents, such as gender, while Section B was divided into three clusters, B1 to B3. Section B1 contained 9 items on the application of generative AI tools in learning entrepreneurial skills, Section B2 had 9 items on the application of reinforcement learning (RL) AI tools in learning entrepreneurial skills, and Section B3 had 9 items on the application of adaptive learning AI tools in learning entrepreneurial skills. The questionnaire items were structured on five points rating scale of Very High Extent (VHE) – 5, High Extent (HE) – 4, Moderate Extent (ME) – 3, Low Extent (LE) – 2 and Very Low Extent (VLE) – 1. The face and content validity of the instrument were determined by three experts. Two experts were from Business Education and one from Measurement and Evaluation.

The reliability of the instrument was established using the pilot testing method on 20 final-year business education undergraduates at Delta State University, Abraka, who were not part of the study population. Data collected were analyzed through the Cronbach alpha formula, which yielded reliability coefficients of 0.81, 0.79 and 0.87 for clusters B1 to B3, respectively, with an overall coefficient index of 0.83 obtained. The researcher, with the help of three research assistants, distributed copies of the questionnaire to the respondents in their universities. The research assistants were adequately briefed on the modalities for administration and retrieval of the questionnaires. Out of the 544 copies distributed, 531 (98%) were correctly filled and returned, which were used for data analysis. Data were analyzed using statistical mean, standard deviation and independent t-test. The mean was used to answer the research questions, and standard deviation for determining the homogeneity of the respondents' mean responses. The null hypotheses were tested using a t-test at the 0.05 level of significance with the aid of SPSS Version 26.0. The null hypothesis was rejected where the p-value is less than or equal to 0.05; otherwise, it was not rejected

Result, Analysis and Discussion

Table 1: Respondents' Mean Ratings and Standard Deviation on the Extent of Application of Generative AI Tools in Learning Entrepreneurial Skills by Business Education Undergraduates *(N = 531)*

S/N	Application of Generative AI Tools I use…	$\bar{X}$	SD	Remarks
1	ChatGPT to learn the ability to generate new business ideas	2.57	0.69	Moderate Extent
2	ChatGPT to learn the ability to identify business opportunities in my environment	2.38	0.67	Low Extent
3	Google Gemini to learn how to study customer needs and market trends	2.16	0.65	Low Extent
4	Google Gemini to learn how to prepare a simple business plan	3.69	0.70	High Extent
5	Claude AI to learn the ability to develop and improve business products or services	1.75	0.66	Low Extent
6	Claude AI to learn skills in developing marketing strategies for a business	1.59	0.64	Low Extent
7	Chatsonic to learn he ability to communicate with customers and respond to their needs	3.45	0.70	Moderate Extent
8	Chatsonic to learn the ability to make better decisions when faced with business problems	2.10	0.67	Low Extent
9	Microsoft Copilot to learn how to prepare budgets and manage business finances	1.49	0.62	Very Low Extent
	Cluster Mean	**2.35**		**Low Extent**

Table 1 shows that, out of the AI tools listed for application in learning entrepreneurial skills, business education undergraduates rated item 4 to a high extent with a mean score of 3.69. Items 1 and 7 were rated to a moderate extent with mean scores of 2.57 and 3.45; items 2, 3, 5, 6, 7 and 8 were rated to a low extent with mean scores ranging from 1.59 to 2.38, while item 9 was rated to a very low extent with a mean score of 1.49. The cluster mean score of 2.35 indicates that, on the whole, business education undergraduates apply generative AI learning tools to a low extent in learning

entrepreneurial skills in Rivers State universities. The standard deviation values, ranging from 0.62 to 0.70, indicate that the respondents had relatively similar responses.

Table 2: Respondents' Mean Ratings and Standard Deviation on the Extent of Application of Reinforcement Learning (RL) AI Tools in Learning Entrepreneurial Skills by Business Education Undergraduates (N = 531)

S/N	Application of Reinforcement Learning (RL) AI Tools I use...	$\bar{X}$	SD	Remarks
1	Business simulation AI tools to learn skills in starting and running a small business	1.67	0.66	Low Extent
2	Business simulation AI tools to learn how to make business decisions through trial and error.	2.46	0.68	Low Extent
3	AI Sales Training Bots to learn the ability to sell products and respond to customers	1.46	0.62	Very Low Extent
4	AI Marketing Simulation Tools to learn skills in promoting products	1.51	0.65	Low extent
5	Pitch-training AI tools to learn how to present my business ideas to customers or investors	1.37	0.60	Very Low Extent
6	Pitch-training AI tools to improve skills in generating business ideas based on feedback from the AI tool	1.36	0.59	Very Low Extent
7	Market-analytics AI tools to learn the ability to identify customer needs	1.57	0.67	Low Extent
8	AI Financial Simulation Tools to learn skills in preparing business budgets	1.30	0.59	Very Low Extent
9	AI Negotiation Training Tools to learn the ability to negotiate with customers	1.40	0.62	Very Low Extent
	Cluster Mean	**1.57**		**Low Extent**

Table 2 shows that out of the nine Reinforcement Learning (RL) AI tools listed for application in learning entrepreneurial skills, item 2 was rated as low extent with a mean score of 2.46. Items 1, 4 and 7 were also rated at a low extent, with mean scores ranging from 1.51 to 1.67. Items 3, 5, 6, 8 and 9 were rated at a very low extent, with mean scores ranging from 1.30 to 1.46. The cluster mean score is 1.57**,** indicating that, on the whole, business education undergraduates apply Reinforcement Learning (RL) AI tools to a very low extent in learning entrepreneurial skills in Rivers State universities. The standard deviation values, ranging from 0.59 to 0.68**,** indicate that the respondents had relatively similar responses.

Table 3: Respondents' Mean Ratings and Standard Deviation on the Level of Application of Adaptive AI Learning Tools in Learning Entrepreneurial Skills by Business Education Undergraduates (N = 531)

S/N	Adaptive Learning AI Tool I use...	$\bar{X}$	SD	Remarks
1	Intelligent Tutoring Systems (ITS) to learn skills in identifying business opportunities	3.51	0.71	High Extent
2	Intelligent Tutoring Systems (ITS) to learn the ability to develop new business ideas	2.55	0.67	Moderate Extent
3	AI-powered Learning Management Systems (LMS) to learn the ability to prepare a simple business plan	2.50	0.68	

				Moderate Extent
4	AI-powered Learning Management Systems (LMS) to learn how to manage the resources of a business	2.61	0.70	Moderate Extent
5	AI Student Performance Analytics to identify the entrepreneurial skills I need to improve	2.19	0.65	Low Extent
6	AI Student Performance Analytics to receive feedback on my performance in entrepreneurial activities	2.41	0.65	Low Extent
7	AI-powered Personalised Learning Platforms to learn financial management skills at my own learning pace	1.58	0.63	Low Extent
8	Adaptive Business Simulation Tools to learn skills in making decisions when running a business	1.45	0.66	Low Extent
9	Adaptive Assessment Tools to test my knowledge of entrepreneurial skills and identify areas where I need improvement	1.87	0.67	Low Extent
	Cluster mean	**2.30**		**Low Extent**

Table 3 shows that out of the nine adaptive learning AI tools listed for application in learning entrepreneurial skills, item 1 was rated high extent with a mean score of 3.51. Items 2, 3 and 4 were rated at a moderate extent, with mean scores ranging from 2.50 to 2.61, while items 5, 6, 7, 8 and 9 were rated at a low extent, with mean scores ranging from 1.45 to 2.41. The cluster mean score of 2.30 indicates that, on the whole, business education undergraduates apply adaptive learning AI tools to a low extent in learning entrepreneurial skills in Rivers State universities. The standard deviation values, ranging from 0.63 to 0.71, indicate that the respondents had relatively similar responses.

Table 4: Summary of t-Test Analysis of the Significant Difference in the Mean Ratings between Male and Female Business Education Undergraduates in the Extent of Application of Generative AI Tools in Learning Entrepreneurial Skills

Gender	N	$\bar{X}$	SD	df	t-value	P-value	Decision
Male	219	2.38	0.69				
				529	0.90	0.37	Not Significant
Female	312	2 32	0.67				

Table 4 shows that the t-value of 0.90 at 529 degrees of freedom with a p-value of 0.37, which is greater than the alpha value of 0.05 (0.37 > 0.05). Since the p-value is greater than the significance level, the null hypothesis is therefore not rejected. This means that there is no significant difference in the mean ratings of male and female Business Education undergraduates on the extent of application of generative AI tools in learning entrepreneurial skills in Rivers State Universities.

Table 5: Summary of t-Test Analysis of the Significant Difference in the Mean Ratings between Male and Female Business Education Undergraduates in the Extent of Application of Reinforcement Learning (RL) AI tools in Learning Entrepreneurial Skills

Gender	N	$\bar{X}$	SD	df	t-value	P-value	Decision
Male	219	1.60	0.67				
				529	1.10	0.27	Not Significant
Female	312	1 53	0.65				

Table 5 shows that the t-value of 1.10 at 529 degrees of freedom with a p-value of 0.27, which is greater than the alpha value of 0.05 (0.27 > 0.05). Since the p-value is greater than the significance level, the null hypothesis is therefore not rejected. This means that there is no significant difference in the mean ratings of male and female Business Education undergraduates on the level of application of Reinforcement Learning (RL) AI tools in learning entrepreneurial skills in Rivers State Universities.

Table 6: Summary of t-Test Analysis of the Significant Difference in the Mean Ratings between Male and Female Business Education Undergraduates in the Extent of Application of Adaptive Learning) AI Tools in Learning Entrepreneurial Skills

Gender	N	X̄	SD	df	t-value	P-value	Decision
Male	219	2.32	0.68				
				529	0.62	0.54	Not Significant
Female	312	2 28	0.66				

Table 6 shows that the t-value of 0.62 at 529 degrees of freedom with a p-value of 0.54, which is greater than the alpha value of 0.05 (0.54 > 0.05). Since the p-value is greater than the significance level, the null hypothesis is therefore not rejected. This means that male and female Business Education undergraduates do not differ significantly in their mean ratings on the extent of application of adaptive learning AI tools in learning entrepreneurial skills in Rivers State Universities.

Discussion of Findings

Findings of the study revealed that Business Education undergraduates apply generative AI learning tools to a low extent in learning entrepreneurial skills in Rivers State universities. This finding agrees with that of Obomeghie (2025), which reported that the use of AI tools in enhancing learning by higher education students was low. Similarly, Ikedinachi (2019) earlier found that the extent of application of AI in Nigerian public universities was low. In addition, Nwile et al. (2025) observed that AI has been widely embraced in other sectors, but its potential in learning among Business Education undergraduates has yet to be fully harnessed. Obomeghie (2025) attributed the low application of AI in learning employability skills (entrepreneurial skills inclusive) to challenges facing university education in Nigeria such as limited technological access and reliable internet, insufficient AI infrastructure and digital literacy, and the high cost of digital resources (Ukata & Amadi, 2025). Findings of the study also revealed that there was no significant difference in the mean ratings of male and female Business Education undergraduates on the extent of application of generative AI tools in learning entrepreneurial skills in Rivers State Universities. In support, Ifi et al. (2026) found no significant gender differences in perceptions of AI's application and influence on business education skill acquisition.

Findings of the study also revealed that Business Education undergraduates apply Reinforcement Learning (RL) AI tools to a very low extent in learning entrepreneurial skills in Rivers State universities. The findings of this study are in line with those of Akalonu (2025), which found that more advanced AI learning tools were less frequently used for academic learning by business education students. Okonkwo et al. (2025) reported that AI learning tools were very lowly integrated into the teaching and learning of Business Education courses. It was also found that there was no significant difference in the mean ratings of male and female Business Education undergraduates on the extent of application of Reinforcement Learning (RL) AI tools in learning entrepreneurial skills in Rivers State Universities. This finding implies that the usage of AI in Business Education is becoming more technology-driven than gender-dependent, with students of both genders having equal access to and application of AI learning tools. This finding aligns with that of Eze-Desy and Emeasoba (2025), which reported no gender differences in the extent of integration of AI tools in teaching and learning of OTM courses.

Findings of the study revealed that Business Education undergraduates apply adaptive learning AI tools to a low extent in learning entrepreneurial skills in Rivers State universities. This finding concurs with that of Wogboroma and Simon (2025), which found that AI learning tools were applied to a low extent by undergraduates in learning business education skills. Okah (2025) reported low application of AI tools in teaching and learning of business education courses. Atah et al. (2-25) likewise observed a low level of application of adaptive learning tools in teaching and learning of Business Education content. Dwivedi et al. (2023) and Stokel-Walter (2024) attributed this low level of application to data privacy issues, academic dishonesty, AI plagiarism, and excessive reliance on AI among undergraduates. The finding also revealed that male and female Business Education undergraduates do not differ significantly in their mean ratings on the level of application of adaptive learning AI tools in learning entrepreneurial skills in Rivers State Universities. In agreement, Atah et al. (2025) found that gender was a significant factor in the extent of application of AI adaptive learning tools in business education programmes.

Conclusion

The need for Business Education undergraduates to apply artificial intelligence (AI) in learning entrepreneurial skills has become necessary because of the changing nature of the business environment driven by digital technologies. The findings of this study revealed that Business Education undergraduates either lowly or very lowly apply generative AI, Reinforcement Learning (RL) AI, or adaptive learning AI tools in learning entrepreneurial skills in Rivers State universities.

Based on these findings, the research concludes that Business Education undergraduates are not adequately applying AI in learning entrepreneurial skills in Rivers State Universities.

Recommendations

Based on the findings and conclusion of this study, the following recommendations are made:

1. Management of Rivers State universities should provide adequate AI learning infrastructure and reliable internet facilities for Business Education departments. This will encourage undergraduates in the programme to move from the low application of generative AI tools to more regular and purposeful use in learning entrepreneurial skills.
2. The Heads of Department (HoDs) of Business Education in Rivers State universities should organize regular practical training on AI tools for undergraduates**.** Such training should focus on how students can apply generative AI tools responsibly to improve the learning of entrepreneurial skills rather than using AI merely to obtain ready-made answers.
3. The HoDs of business education in Rivers State universities should incorporate Reinforcement Learning (RL) AI tools into entrepreneurial education**.** This will enable business Educators to use RL AI tools in teaching entrepreneurship-related courses to expose undergraduates to more advanced RL AI tools and address the very low level of RL AI application identified in the study.
4. The HoDs of Business Education departments in Rivers State universities should introduce structured adaptive learning activities into entrepreneurial skills courses. This will enable business education lecturers to use adaptive AI tools to provide undergraduates with personalized business learning tasks based on their individual learning needs and performance. This could improve the low application of adaptive learning AI tools reported by the study.
5. Administrators of Rivers State Universities should establish clear guidelines for the responsible and gender inclusive application of AI in the Business Education programme. The guidelines should also address AI plagiarism, academic dishonesty, data privacy and excessive dependence on AI while encouraging undergraduates to apply adaptive learning AI platforms as learning support tools rather than a replacement for creative thinking.

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INFLUENCE OF DIGITALIZATION OF INFORMATION IN THE PROMOTION OF ENTREPRENEURSHIP COMPETENCIES AMONG GRADUATES IN ENUGU STATE.

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Abstract

This study is on influence of digitalization of information in the promotion of entrepreneurship competencies among graduates in Enugu State. Three purposes of study and three corresponding research questions were used for the study. The study was carried out using a descriptive survey design. The population of the study comprised of one thousand, four hundred (1,400) students during 2025/2026 academic session. Eighty (380) students from ESCET and one thousand twenty (10,20) students from FCOEE. Simple random sampling procedure was adopted for the study. A sample of 200 Business Education students was used for the study. This constitutes twenty-five per cent of the entire population of Business Education graduates. The instrument for data collection was a researcher developed structured questionnaire titled "entrepreneurship competencies of graduates of business education from Colleges of Education in Enugu State Questionnaire (ECGBECEESQ). Data revealed that there are positive influence information and communication Technology competencies, digitalized human resources management competencies and digitalized opportunity recognition competencies in the promotion of entrepreneurship competencies in Enugu State. From the findings, it was recommended that school authorities should create a forum/platform for students to be engaged practically on entrepreneurship in order to boost their creativity and innovation abilities and that business education graduates with entrepreneurship competencies should be financed and adequately supported by the government in order to establish them and make them more beneficial to the society.

Keywords: Digitalization of Information, Entrepreneurship competencies, Graduates

Introduction

Digitalization of information refers to the process of converting analog or physical information into digital formats, making it easily accessible, stored, processed, and transmitted electronically. Digitalization of information can boost internet access for timely decision-making for information availability. Digitally literate collaborators are more efficient because they easily identify essential data/information/patterns and use them effectively. In a world where new information is constantly being published and consumed, having this capability is vital. Workers with digitalization of information skills can also connect and collaborate more effectively. These skills can also prevent generation gaps in a diverse workforce with up to five generations working together (Drew, 2022).

Due to SMEs' significant influence on a nation's economy, it is necessary to increase their performance. The first thing to understand is the factors that can hinder the performance of SMEs. A number of digital competence frameworks have been developed by both international agencies and companies as it is increasingly recognized as a central element of the skills organizations required for growth and productivity. Heitin, (2016) established that the extant literature on digitalization of information , skills and competencies is rich in definitions and classifications, but there is still no consensus on the larger themes and subsumed themes categories. (Entrepreneurship Study/Development Centers, ESCs, 2016).

An entrepreneur is defined as a person who has an. inclination to foresee uncertain events in pursuit of profit rather than bringing about a change in the economy. The Government through the compulsory regulatory bodies (Industrial training Fund (ITF), Tertiary Education Trust Fund (TETFund) has made it compulsory on every undergraduate student to offer entrepreneurial course as a step towards stimulating active and productive activities in the country. Akpotowoh, Watchman and Ogeibiri (2016) contended that the entrepreneur is believed to possess some traits which includes; boldness, confidence, personal leadership and force. The Federal Government of Nigeria recently directed all Federal and State Universities to establish Entrepreneurship Study/Development Centers (ESCs, 2016) at each of the institutions. This centre is to be funded by Tertiary Educational Trust Fund (TETFUND). Entrepreneurship is a creative process of organizing, managing an enterprise and assuming the risk

involved in the enterprise. However, both the societies at large as well as researchers have attempted to create the true conditions for the existence of entrepreneur. Entrepreneurs have taken advantage of the available competencies in the society or their environmental domain in other to create or develop new products or services, thus adding value to society while equally maximizing profits.

Casson (2021) defined entrepreneurship competencies as situations in which new goods, services, raw materials, markets and organizing methods can be introduced through the formation of new means, ends, or means-ends relationships. These situations do not need to change the terms of economic exchange to be entrepreneurial competencies, but only need to have the potential to alter the terms of economic exchange. In addition, unlike optimizing or satisfying decisions, in which the ends that the decision maker is trying to achieve and the means that the decision maker will employ are given, entrepreneurial decisions are creative decisions. That is, the entrepreneur constructs the means, the ends, or both. The creation of new means-ends frameworks in entrepreneurial decision making is a crucial part of the difference between entrepreneurial competencies and situations in which profit can be generated by optimizing within previously established means-ends frameworks (Kirzner, 2017). Thus, while non-entrepreneurial decisions maximize scarce resources across previously developed means and ends, entrepreneurial decisions involve the creation or identification of new ends and means (Gaglio & Katz, 2018) previously undetected or unutilized by market participants.

The global technological advancement and the Nigeria current economic trends have called for proper acquisition of ICT skills for entrepreneurship development among graduates. The federal government has mandated all training institutions of higher learning to integrate into the programmes of study, entrepreneurship education that will equip students Olorunmolu (2018) with appropriate entrepreneurial skills. Proper acquisition of these skills by the students will enable them establish their own businesses, become self-reliant and excel in the modern business world after graduation.

Prospective entrepreneurs should be well exposed and adequately equipped with ICT entrepreneurial skills to be successful, since information and communication technology is now revolutionalizing the business world. According to the Federal Republic of Nigeria in the National Policy on Information Technology (2017), ICT include any equipment or interconnected system or subsystem or equipment that is used in automatic acquisition, storage, manipulation, management, control and reception/ communication of data or information.

The past few decades, significance of entrepreneurial competencies has been amplified due to the strategic role played by the entrepreneur of a business enterprise. Entrepreneurial competencies are the individual characteristics including attitude and behaviour, which allows the entrepreneur to achieve business performance (Endi, Surachman, Armanu and Djumilah, 2016). In particular entrepreneurial competencies include entrepreneurial traits, motives, self-image, attitude, behaviour, skills, and knowledge (Boyatzis, 2016). Shane, Locke and Collins, (2016) posited that Competencies can be learned from the input (antecedent of competence), processes (task or behaviour that lead to competence), or result (achieving a standard of competence in the field of functional) .

In Nigeria, different fields of study at the tertiary institutions such as Business Education programme strives to improve and motivate individual skills and orientations with the primary aim of achieving standard skills that will help to improve general well-being in the workforce or labour market (Boyatzis, 2016). Human resource professionals are one-of-a-kind. They have a certain set of skills that only Human Resources (HR) professionals have, which is what makes them so special. Okechukwu (2019), Opined that human resource or sees the following areas: Organization: One of the most important human resource management skills you must have to successfully work in HR is organization. Everyone who works in HR must be well-organized, must have strong time management and be personally efficient in order to succeed. Singh (2018) defines opportunity recognition as perceiving the possibility for new profit potential through founding and forming of new venture and significant improvement of an existing venture. This definition emphasizes that the act of opportunity recognition is not a one-time activity of an entrepreneur; instead, it is a perpetual process that encompasses perception, discovery and creation (Singh 2017). De Koning (2016) defines opportunity recognition as the specific eureka experience when suddenly an idea crystallizes and as an evolution of initial idea into full blown business concepts. The difference between the two definitions is that the former emphasizes on opportunity recognition as the activity in the originating phase of the venture, where as the later definition calls it as ongoing activity of the entrepreneur. Eckhardt and Shane (2016) define opportunity recognition as situations in which new goods, services, raw materials, markets and organizing methods can be introduced through the formation of new means, ends or means-ends relationship. From the above definitions, it is clear that there is an interrelationship between innovation and opportunity recognition.

The issue of unemployment has become a common issue among graduates. This is because, many graduates no longer believe that they have the ability to create job for themselves before getting paid jobs. This has a correlation with entrepreneurship education given to them while in school. From outset, Nigeria before the advent of colonial rule, unemployment was a rare phenomenon because the people were highly entrepreneurial and productively engaged. This entrepreneurial engagement is prevalent in Yoruba land of Western Nigeria , Hausa land of the Northern Nigeria , and among Igbo people of Eastern. Nigeria. This was achieved through encouragement of communal wealth creation and productive use of human resources, thus forestalling unemployment. However, the emergence of formal administration in Nigeria introduced formal education which enabled people to have the opportunity of being employed in the civil service after graduation. As such, the system destroyed self-reliance and entrepreneurial skills of Nigerian graduates as they became permanently dependent on the colonial masters. This has led to massive unemployment and craze in the contemporary times for ready-made Jobs . In the circumstances therefore, this study evaluated the influence of digitalization of information in the promotion of entrepreneurship competencies among graduates in Enugu State

The main objective of this study was to determine the influence of digitalization of information in the promotion of entrepreneurship competencies among graduates in Enugu State.

Specifically, the study sought to determine the;

1. Influence of Information and communication Technology competencies in the promotion of entrepreneurship competencies among Graduates in Enugu State.
2. Influence of digitalized human resources management in the promotion of entrepreneurship competencies among Graduates in Enugu State.
3. Digitalized opportunity recognition in the promotion of entrepreneurship competencies among Graduates in Enugu State.

Research Questions

The following research questions will guide the study;

1. What are the influence of Information and communication Technology in the promotion of entrepreneurship competencies among Graduates in Enugu State?
2. What is the influence of digitalized human resources management in the promotion of entrepreneurship competencies among Graduates in Enugu State?
3. What is the influence of digitalized opportunity recognition in the promotion of entrepreneurship competencies among Graduates in Enugu State?

Method

This study adopted a descriptive survey research design. According to Nworgu (2015), a descriptive survey research design is an effective means of collecting data from a large number of sources and takes a short time. It has been discovered that data collected from such source is to a very large extent accurate and precise. This study was conducted in public Colleges of Education in Enugu State . It is imperative to stress that all the students in Federal College of Education Eha-Amufu (FCOEE) and Enugu State College of Education (Technical), Enugu (ESCET) were studied. The reason for choosing FCOEE and ESCET was because the Colleges were the only public owned Colleges of Education in the state. The population of this study consisted of one thousand, four hundred (1,400) students during 2023/2024 academic session . Eighty (380) students from ESCET and one thousand twenty (10,20) students from FCOEE. A sample of 200 Business Education students was used for the study. This constitutes twenty-five per cent of the entire population of Business Education students. This sample was adjudged representative of the population based on the suggestions by Nwana in Ejifugha (2018), which stipulated that if the population is a few hundreds, the sample size should be forty (40%) – fifty (50%), if the population comprises many hundreds, twenty (20%) of the population should be considered appropriate for the sample and if the population runs into thousands, two to five (2-5%) of the population should be deemed appropriate for the study.

The instrument used for the collection of data was a structured questionnaire developed by the researcher. The title of the questionnaire was entrepreneurship competencies of graduates of business education from Colleges of Education in Enugu State Questionnaire (ECGBECEESQ). It has two sections contained information of the demographic data of the respondents while section “B” contained items on entrepreneurship competencies of graduates of business education from Colleges of Education in Enugu State. The instrument has 15 items. Four point rating scale viz strongly Agree (4)points, Agree (3 points), Disagree (2 points), Strongly Disagree (1 point) were used by determine the level of agreement of the respondents on the questionnaire items.

The research instrument received face validity through the judgment of three experts, one from measurement and evaluation Department, ESCET, two from Department of Educational Management, faculty of Education, Enugu State University of Science and Technology, Enugu. The experts were given copies of the drafted. The experts' inputs, corrections and suggestions along side with the supervisor's comments were used to design the final drafts of the questionnaire.

The researcher administered the instrument to the respondents with the help of three (3) research assistants whom assisted in the administration of the instrument or research assistants in the sampled schools. Two hundred copies of the questionnaire were administered and all the 200 copies of questionnaire were collected back through the help of research assistants (students) in the Colleges. Meanwhile, 100% of the questionnaire was returned and used for the study. Mean statistics was used for data analysis.

Results

Research Question 1: What are the influence of Information and communication Technology in the promotion of entrepreneurship competencies among Graduates in Enugu State?

Table 1:

Mean Response on ICT Competencies Acquired by Business Education Graduates.

S/n	Items: the following were the ICT competencies in promotion of entrepreneurship competencies .	SA	A	D	SD	N	∑fx	X Mean	Decision
1	It promotes using word processing software	110	60	20	10	200	670	3.30	Agreed
2	It promotes using excel/spread sheet	100	70	20	10	200	660	3.30	Agreed
3	It promotes using database system	10	20	70	100	200	340	1.70	Disagreed
4	It promotes application of graphic information	5	10	65	120	200	300	1.50	Disagreed
5	It helps in organizing of digital information	90	80	16	14	200	646	3.20	Agreed
	Grand Mean							2.60	Agreed

From the computed mean in table 1: was found that the of items 1,2 and 5 were above the bench mark of 2.50 hence respondents agreed that ICT competence helps in promotion of entrepreneurship competencies. It was found that the mean of item the above bench mark of 2.50 hence respondents agreed ICT competence promotes the use of modern gadgets, items 3 and 4 recorded mean rating below the bench mark of 2.50 hence respondent disagreed that competencies sought by the two items on Business Education graduates were not okay. The grand mean of the table made a mean rating above the bench mark the interpretation of this was that the competencies sought by the five items from the graduates of Business Education graduates were posed by them, the decision of the grand mean.

Research Question 2: What is the influence of digitalized human resources management in the promotion of entrepreneurship competencies among Graduates in Enugu State?

Table 2: Mean response score on digitalized human resources competencies acquired by Business Education Graduates.

S/n	Items: the following are the influence of digitalized human resources management in the promotion of entrepreneurship competencies	SA	A	D	SD	N	EFX	X Mean	Remark
6	Using digital facilities promotes planning of Business ventures	120	55	20	5	200	690	3.50	Agreed
7	Using digital facilities promotes organization of physical and material resources	100	60	30	10	200	650	3.30	Agreed
8	Using digital facilities promotes effective control of both human	40	40	50	70	200	450	2.20	Disagreed

	material and financial resources in the enterprise								
9	Using digital facilities increases credibility in supervising the operation in the business	20	10	70	100	200	350	1.80	Disagreed
10	Using digital facilities improves evaluating capacity and decision making in a business ventures	130	40	20	10	200	690	3.50	Agreed
	Grand Mean							2.86	Agreed

From the computed mean in table 2: was found that the of items 6,7, and 10 were above the bench mark of 2.50 hence respondents agreed that using digital facilities promotes human resources competencies by Business Education graduates it was found that the mean of item the above bench mark of 2.50 hence respondents agreed that using digital facilities in human resources competencies by Business Education graduated on the other hand, items 8 and 9 recorded mean rating below the bench mark of 2.50 hence respondent disagreed that human resources competencies does not promote entrepreneurship competencies . The grand mean of the table made a mean rating above the bench mark the interpretation of this was that the competencies sought by the five items from the graduates of Business Education graduates were posed by them, the decision of the grand mean.

Research Question 3: What is the influence of digitalized opportunity recognition in the promotion of entrepreneurship competencies among Graduates in Enugu State? .

S/n	Items	SA	A	D	SD	N	EFX	X mean	Remark
11	It facilitates using digital facilities in organize and carry out projects, keeping an eye on time, personnel and financial resources	100	75	20	5	200	670	3.40	Agreed
12	It promotes being Goal-oriented	120	60	15	5	200	695	3.50	Agreed
13	It promotes eloquence to speak the language of the various departments and of the customers, suppliers and partners	110	75	10	5	200	680	3.40	Agreed
14	Multilanguage: Ideas richness, creativity and innovation are not familiar with any linguistic boundaries using digitalized technology	20	15	55	110	200	345	1.70	Disagreed
15	It promotes Learning: The professionalism of an innovation manager consists of dealing with something new	90	70	30	10	200	640	3.20	Agreed
	Grand Mean							3.04	

From the computed mean in table 2: was found that the of items 11,12, 13 and 15 were above the bench mark of 2.50 hence respondents agreed that opportunity recognition competencies acquired by business education graduates it was found that the mean of item the above bench mark of 2.50 hence respondents agreed that opportunity recognition competencies acquired by business education graduates, on the other hand, items 14 recorded mean rating below the bench mark of 2.50 hence respondent disagreed that opportunity recognition competencies acquired by business education graduates were not okay. The grand mean of the table made a mean rating above the bench mark the interpretation of this was that the competencies sought by the five items from the graduates of Business Education graduates were posed by them, the decision of the grand mean.

Discussion of Findings

The data analyzed in table 1 on the ICT competencies acquired by Business Education Graduates from Colleges of Education shows that use word processing software, use excel/spread sheet, the finding is expected and not surprising because Tangri (2019) asserted that ICT facilities improves business education graduates competencies. Okechukwu (2018) had earlier opined that

resource professionals in organizations should posses a set of skills, this agreement can be attributed to the fact Oppong's (2015) study was conducted in an academic setting among students of higher institutions which had similar features with the settings of this study, though the educational levels differed. Thus, the consonance was valid.

The researcher through the data obtained, in table 2 on digitalized human resources competencies acquired by Business Education Graduates from Colleges of Education in Enugu State. The study revealed that Plan Business ventures, organize physical and material resources and plan business Ventures are human resources competencies required by business education graduates. This is in line with the work of Dahintein (2019), Grover and Mangle (2016) reported that human resources competencies are very important in the development of every young business education graduate for self development and actualization.

The researcher through the data obtained, in table 3, on opportunity recognition competencies acquired by business education graduates. Organize and carry out projects, be goal-oriented, ideas richness, creativity and innovation and the professionalism of an innovation manager consists of dealing with something. However, the finding was in consonance with that of Timmerman (2016) who stated that business education graduates are likely to survive when they have valuable opportunity recognition competencies in the labour market.

This chapter consists of the following: Summary, Conclusion and Recommendation for improvements.

Conclusion

Entrepreneurship competencies are basic necessities of starting new organizations or revitalizing mature organizations, particularly new businesses generally in response to\ identified competencies. The issue of ICT development as one of the frontline of modern businesses in the world is highly required so as to boost graduates understanding in the business world. Moreover, the study laid emphasis on resource management skills of staying organized, skill of emotional intelligence, negotiation and others. Opportunity recognition aimed to review the perceived competencies , recognize competencies and innovation in the business world. The study also stressed on the issue of innovational competencies such as organizing and carrying out projects, .Multilanguage deals richness, creative and innovation are not familiar. All these are competencies required by business education graduates in colleges of Education. All stake holders regulatory body lecturers and students should therefore be guided accordingly.

Recommendations

In View of the results gathered from this study, the following are the recommendations given which will be useful in understanding the influence of digitalized information in the promotion of entrepreneurship competencies of graduates of business education in Enugu State.

1. School authorities should create a forum/platform for students to be engaged practically on entrepreneurship in order to boost their creativity and innovation abilities.
2. Business education graduates with entrepreneurship competencies should be financed and adequately supported by the government in order to establish them and make them more beneficial to the society.
3. Government should provide more digitalized opportunities for youths in order to pave way for international competition among young graduates in Nigeria.

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BUSINESS EDUCATORS' PERCEPTIONS ON THE ADOPTION OF SMART PEDAGOGY IN TEACHING BUSINESS EDUCATION COURSES IN UNIVERSITIES IN CROSS RIVER STATE

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Abstract

The study evaluated business educators' perceptions on the adoption of smart pedagogy in teaching Business Education Courses in universities in Cross River State. Two specific purpose, research questions and hypotheses respectively guided the study. Descriptive survey research design was adopted for the study. The population comprised sixty-six (66) business educators. Census sampling technique was adopted since the population size was manageable. The instrument used for data collection was a structured questionnaire titled "Business Educators' Perceptions on Smart Pedagogy Questionnaire (BEPSPQ)". The instrument was subjected to face and content validation by three experts: two from the Department of Business Education and one from Measurement and Evaluation. The instrument was further tested for reliability using Cronbach Alpha coefficient. The reliability coefficients obtained were 0.86 for PU and 0.84 for PEOU, with an overall reliability of 0.85. Mean and Standard Deviation were used to answer the research questions. Independent samples t-test was used to test for significant differences at 0.05 level of significance. Findings indicated that business educators to a very high extent recognize the usefulness of smart pedagogy in teaching Business Education courses but their perceived easy to use smart pedagogy was very low. Gender was not a barrier to recognizing the usefulness of smart pedagogy. Also, there was no significant difference in business educators in federal and state owned universities on the perceived ease of use of smart pedagogy for teaching Business Education courses. The absence of significant differences by gender and ownership implies that the problem is systemic. Both male/female and Federal/State lecturers face the same barriers, so interventions must be uniform across all groups. It was recommended among others that Government, NUC, and TETFund should prioritize stable power supply, high-speed internet, smart classrooms, and on-campus ICT support in both Federal and State Universities to reduce difficulty in using smart pedagogy.

Introduction

Business Education is a vocational programme saddled with the responsibility of producing graduates at various levels who can manage modern offices, run digital enterprises, and perform effectively in the digital economy. Adie et al. (2026) conceived Business Education as an academic programme concerned with the teaching and learning of the fundamentals, theories and processes of business to help recipients at all levels acquire requisite vocational knowledge, skills, experiences, ethics and attitudes needed to be successful in teaching, business, office and life generally. Business Education courses are designed to equip students with skills for office administration, entrepreneurship, and business operations. Business Educators are lecturers and teachers in Colleges of Education, Polytechnics, and Universities who teach Business Education courses such as Office Practice,

Entrepreneurship, Accounting, Marketing, and ICT in Business. These courses now require delivery methods that mirror real business environments. This makes the adoption of smart pedagogy critical for Business Education.

The word "smart" refers to intelligence in decisions, penalization (in learning and teaching), transparency, and adaptivity in smart education Badshah et al. (2023). Smart education in this context provides a digital environment to facilitate learners, parents, teachers, and administrators to enhance learner engagement and motivation (Zhi-Ting et al. in Badshah et al., 2023). The 21st Century has witness an increased emergence in technology-rich learning environments. Peng et al. (2019) elucidated that a smart learning environment adopt smart devices and intelligent technologies to effectively promote the development of personalized learning and adaptive learning. Lee and Lee (2024) argued that smart teachers are supposed to be 'adaptive' to survive by proving themselves as 'compatible', especially in a smart learning environment where smart pedagogy is imperative.

The 21st century workplace is defined by rapid technological change, Artificial Intelligence (AI), cloud computing, and data-driven decision making. In line with this, the education sector globally is shifting from traditional teacher-centred methods to Smart Pedagogy (SP). Li and Tak-Ming Wong (2021) confirmed the increased global attention given to SP from diverse disciplines and contexts of application. SP is an intelligent, technology-enhanced teaching approach that uses AI, Internet of Things (IoT), big data analytics, mobile learning, gamification, and adaptive learning platforms to deliver personalized and interactive instruction (Zhu et al., 2023). SP is a method of teaching in a smart learning environment. It involves the use of smart classrooms, AI-driven feedback, virtual business simulations, LMS with learning analytics, chatbots for student support, and collaborative cloud platforms (Hwang & Chien, 2022). In Business Education, smart pedagogy can be applied through: Virtual Business Simulations for entrepreneurship and marketing courses; AI Chatbots and LMS Analytics for office practice and record management; Cloud-based Collaborative Tools like Google Workspace and Microsoft 365 for team projects and Gamified Learning Platforms for accounting and taxation drills (Hwang & Chien, 2022).

The success of any educational innovation depends largely on the perceptions of the teachers who are to implement it. Reyes et al. (2021) averred that teachers' perceptions are beliefs which are self-generating and often unchallenged. Perceptions here means the opinions, beliefs, attitudes, and understanding that business educators have toward a new teaching approach heavily driven by technology. Theoretically, the perceptions of business educators in this study is anchored on Davis (1989) Technology Acceptance Model (TAM), which presented two key factors that determine whether educators will adopt a new technology: Perceived Usefulness [PU] and Perceived Ease of Use [PEOU].

From TAM perspective, Perceived Usefulness is how useful a technology is to the users or potential users (Davis, 1989). Contextually, it is the degree to which a business educator believes that using smart pedagogy will enhance students' learning outcomes, engagement, and job readiness. When educators view smart pedagogy as useful, they are more likely to integrate it into teaching. Recent studies show growing recognition of PU. Onyemaechi and Adeyemi (2024) found that 78% of business educators in Southeast Nigeria agreed that smart pedagogy makes Business Education courses more practical and industry-relevant. Students taught with simulations and LMS were rated as having better digital communication and problem-solving skills. Similarly, Eze and Obi (2022) reported that business educators perceived smart classroom tools as useful for teaching entrepreneurship because they allow students to test business ideas virtually without financial risk. This suggest that smart pedagogy bridges the gap between school and workplace.

There are empirical evidences that educators' willingness to adopt smart technology for teaching depends on its usefulness. Onyemaechi and Adeyemi (2024) surveyed 210 business educators in Southeast Nigeria. Using a 4-point scale, they found a grand mean of 3.12, indicating high perceived usefulness. Respondents agreed that smart pedagogy improves student engagement, assessment, and preparation for digital offices. The study recommended TETFund training for all business educators. In Ghana, Mensah and Boateng (2023) studied 180 vocational educators. They found that PU was the strongest predictor of intention to use smart tools in teaching. Educators who saw smart pedagogy as useful for improving employability were 2.4 times more likely to adopt it. Zhu et al. (2023) in a meta-analysis of 45 studies across Asia concluded that teachers' PU of smart education was consistently high when it was linked to measurable student outcomes. However, PU alone does not guarantee adoption. Some educators may see the value but still not use it because of their Perceived Ease of Use.

Perceived Ease of Use refers to the degree to which a business educator believes that using smart pedagogy will be free from mental and technical effort (Al-Emran et al., 2023). This suggest that if a tool is perceived as complicated, time-consuming, or requiring too much training, adoption will be low even if it is useful. Bello and Suleiman (2023) found that PEOU was a major barrier among NCE business educators in North-Central Nigeria. 63% of respondents cited poor internet, epileptic power supply, and lack of technical support as reasons they found smart pedagogy difficult to use. Adamu and Yusuf (2024) also reported that senior business educators with over 15 years of experience had significantly lower PEOU than younger lecturers. The authors concluded that digital literacy training is needed to improve confidence. Ibrahim and Musa (2023) added that even when colleges have smart boards and LMS, lack of institutional support makes PEOU low. A situation were lecturers spend personal money on data and repairs, makes the adoption process stressful. Therefore, for smart pedagogy to be adopted, both PU and PEOU must be high.

In Nigeria, the National Commission for Colleges of Education (NCCE, 2022) and National Universities Commission (NUC, 2020) have revised the Business Education curriculum to include digital and entrepreneurial skills. TETFund has also invested in ICT infrastructure in many tertiary institutions. Despite this, classroom observation and literature show that many Business Educators still rely on lecture method and chalkboard (Omeje & Ugwuanyi, 2023). Several studies suggest that this low adoption may be linked to educators' perceptions. In a study, Onyemaechi and Adeyemi (2024) found that many business educators in South-East Nigeria have positive perceptions of the usefulness of smart pedagogy but doubt their ability to use it due to poor training. Perceived ease of use can also be low among business educators because of unstable power, internet and unavailability of modern instructional facilities. Educators cannot teach with facilities that are not available.

Empirical studies also provided evidences to show that lecturers' gender and type of the institution ownership can influence their perceived use and ease of technology. Dai et al. (2023) revealed that teachers and students had a positive attitude towards the smart learning environment, and gender, age, grade, subject category and other variables had limited impact on spatial preference. Specifically, in terms of teachers' gender variables, the study found no significant difference between male and female teachers in the satisfaction of smart learning environment. The finding was consistent with Omeje and Ugwuanyi (2023) who found no significant gender difference in perceptions of digital teaching tools among business educators. Both male and female lecturers had similar PU but females reported slightly lower PEOU due to less access to tech training. Contrarily, Danko et al. (2020) found that gender positively correlates with ICT use and that particular ICT tools and their pedagogical uses are more frequent among female teachers whereas males scored higher for certain ICT-related attitudes. This implies that gender may be viewed as a predictor of certain types of and attitudes to ICT use in tertiary instructions. This was amplified by Guillén-Gámez and Rodríguez-Fernández (2022) that female teachers have a more positive attitude towards the educational use of ICT than male teachers.

On the aspect of institution ownership, Nwachukwu and Ezeani (2022) compared Federal and State college business educators in South-East Nigeria. They found no significant difference in PU but a significant difference in PEOU. Federal college lecturers reported higher PEOU due to better ICT facilities. Without understanding how Business Education lecturers perceive smart pedagogy in terms of usefulness and ease of use, efforts by government to digitize teaching may be unproductive. It is against this background that this study sought to evaluate Business Educators' Perceptions on the Adoption of Smart Pedagogy in Teaching Business Education Courses, with specific focus on Perceived Usefulness and Perceived Ease of Use based on gender and ownership.

Statement of the Problem

The digital economy demands that Business Education graduates possess skills in virtual collaboration, e-commerce, data analytics, and digital marketing (World Economic Forum, 2024). To produce Business Education graduates to meet the demands of digital workplace, teaching of Business Education courses must also become digital, intelligent, and adaptive. Smart pedagogy offers this possibility. Without understanding how business educators perceive smart pedagogy in terms of usefulness and ease of use, efforts by government to digitize teaching may be unproductive. Many classrooms still lack interactive tools, and teaching is still largely theoretical. This creates a mismatch between what is taught and what industry requires, leading to graduate unemployment and poor job performance. This problem may not be only about infrastructure. Teacher perception is a critical factor.

TAM postulated by Davis (1989) confirmed that even when technology is available, educators may not adopt it if they do not perceive it as useful or easy to use.

Recent studies in Nigeria present mixed findings. Eze and Obi (2022) found that business educators perceived smart pedagogy as useful for improving students' entrepreneurial skills. In contrast, Adamu and Yusuf (2024) reported that many lecturers in State colleges perceived it as too difficult and time-consuming to implement. This inconsistency creates a research gap. No recent study has specifically examined Business Educators' Perceptions of Smart Pedagogy sufficiently using the TAM framework, focusing on both Perceived Usefulness and Perceived Ease of Use across tertiary institutions in Cross River State. Therefore, this study seeks to answer: What are Business Educators' perceptions on the adoption of smart pedagogy in teaching Business Education courses in terms of Perceived Usefulness and Perceived Ease of Use? Addressing this will provide data for policy makers and management of the tertiary institutions in the state to design appropriate training and support.

Purpose of the Study

The main purpose of this study was to evaluate Business Educators' Perceptions on the Adoption of Smart Pedagogy in Teaching Business Education Courses universities in Cross River State. Specifically, the study sought to:

1. Assess business educators' Perceived Usefulness of smart pedagogy for improving teaching Business Education courses.
2. Ascertain business educators' Perceived Ease of Use of smart pedagogy in teaching Business Education courses.

Research Questions

The following research questions guided the study:

1. To what extent do business educators perceive smart pedagogy as useful for teaching Business Education courses?
2. To what extent do business educators perceive smart pedagogy as easy to use in teaching Business Education courses?

Research Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

Ho1: There is no significant difference in male and female business educators on the perceived usefulness of smart pedagogy for teaching Business Education courses.

Ho2: There is no significant difference in business educators in federal and state owned universities on the perceived ease of use of smart pedagogy for teaching Business Education courses.

Methodology

Descriptive survey research design was adopted for the study. The population comprised sixty-six (66) business educators (males 38 and females 28) in three universities offering Business Education programme in Cross River State: University of Calabar (Unical), University of Cross River State (Uncross) and University of Education and Entrepreneurship (EEU). Census sampling technique was adopted since the population size was manageable. The instrument used for data collection was a structured questionnaire titled "Business Educators' Perceptions on Smart Pedagogy Questionnaire (BEPSPQ)". The questionnaire was developed by the researcher based on TAM constructs and reviewed literature. The questionnaire had two sections: Section A: Demographic data of respondents such as Gender and Institution ownership. Section B: consisted of 20 items on a 4-point Likert scale measuring: Perceived Usefulness (PU) - 10 items. Perceived Ease of Use (PEOU) - 10 items. The rating was as follows: Very High Extent (SA) = 4, High Extent (A) = 3, Low Extent e (D) = 2 and Very Low Extent (SD) = 1. The benchmark mean for acceptance was 2.50. The instrument was subjected to face and content validation by three experts: two from the Department of Business Education and one from Measurement and Evaluation. The experts assessed the relevance, clarity, and adequacy of the

items in measuring the constructs. Their corrections and suggestions were incorporated to produce the final draft. To determine the reliability of BEPSPQ, a pilot test was conducted on 20 Business Educators in two universities in Ebonyi State which is outside the study area. Data collected were tested for reliability using Cronbach Alpha coefficient. The reliability coefficients obtained were 0.86 for PU and 0.84 for PEOU, with an overall reliability of 0.85. This shows that the instrument is reliable. 66 copies of the instrument were administered to the respondents with the help of three research assistants. 58 copies out of the 66 were successfully retrieved. Data collected were analysed using both descriptive and inferential statistics. Mean and Standard Deviation were used to answer the research questions. Independent samples t-test was used to test for significant differences at 0.05 level of significance. All analyses were done using SPSS Version 25.0. The decision rule was based on p-value < 0.05 to reject the null hypothesis.

Results

Research Question One

To what extent do business educators perceived smart pedagogy as useful for teaching Business Education courses?

The descriptive analysis summary on the perceived smart pedagogy as useful in teaching business education courses is presented in table 1.

Table 1: ***Descriptive Analysis Summary on the Perceived Smart Pedagogy as Useful in Teaching Business Education Courses***

S/N	Perceived Usefulness of Smart Pedagogy	Mean	SD	DECISION
1	Smart pedagogy makes Business Education courses more practical	3.59	0.49	Very High Ext
2	The use of smart pedagogy improves students' understanding of complex business concepts	3.58	0.49	Very High Ext
3	Smart pedagogy tools enhance students' digital skills for the workplace relevant	3.55	0.50	Very High Ext
4	Smart pedagogy increases students' engagement in Business Education classes	3.52	0.57	Very High Ext
5	Using smart pedagogy enables educators to provide more personalized feedback to students	3.57	0.50	Very High Ext
6	Smart pedagogy helps students develop problem-solving skills needed in the digital economy	3.62	0.49	Very High Ext
7	Smart pedagogy makes assessment in Business Education more efficient	3.52	0.50	Very High Ext
8	Smart pedagogy prepares Business Education graduates to meet the demands of Industry 4.0	3.64	0.48	Very High Ext
9	Smart pedagogy improves collaboration among students through virtual tools	3.47	0.50	High Extent
10	Smart pedagogy will improve the quality of teaching and learning in Business Education	3.71	0.46	Very High Ext
	Grand Mean	**3.56**		**Very High Ext**

Table 1 shows that in response to research question one, all the related items except item 9 responses indicated very high extent of pedagogy usefulness. The grand mean value of 3.56 reveals that business educators, to a very high extent, perceived smart pedagogy as useful for the teaching of Business Education courses in universities in Cross River State.

Research Question Two

To what extent do business educators perceived smart pedagogy as easy to use in teaching Business Education courses?

The descriptive analysis summary on the perceived smart pedagogy as easy to use in teaching business education courses is presented in Table 2

Table 2: ***Descriptive Analysis Summary on the Perceived Smart Pedagogy as Easy to Use in Teaching Business Education Courses***

S/N	Perceived Ease of Use of Smart Pedagogy	Mean	SD	DECISION
11	I find it easy to learn how to use smart pedagogy tools for teaching	2.62	0.85	High Extent
12	I find it easy to integrate smart pedagogy tools into my Business Education lessons	2.17	0.76	Very low Extent
13	Using smart pedagogy tools does not require too much mental effort from me	2.24	0.73	Very low Extent
14	I have the technical skills needed to use smart pedagogy tools effectively	2.17	0.63	Very low Extent
15	My college provides adequate technical support when I have problems with smart pedagogy tools	2.40	0.67	Very low Extent
16	Internet connectivity and power supply in my college make it easy to use smart pedagogy	2.29	0.68	Very low Extent
17	I can easily access training materials to improve my smart pedagogy skills	2.72	0.72	High Extent
18	Smart pedagogy tools are user-friendly and do not require complex procedures	2.38	0.59	Very low Extent
19	I can easily adapt smart pedagogy to different Business Education courses like Accounting, Marketing and Office Practice	2.36	0.67	Very low Extent
20	I find smart pedagogy easy to use in my daily teaching activities	2.47	0.75	Very low Extent
	Grand Mean	**2.38**		**Very low Extent**

Table 2 shows that in response to research question two, all the related items except items 11 and 17 indicates very low extent because the respective mean scores which are between 2.17 and 2.47 are less than the midpoint value of 2.50. Items 11 and 17 with mean scores 2.62 and 2.72 are of high extent because they are greater than the midpoint value. The grand mean score of 2.38 is also less than the midpoint. This indicates that business educators, to a very low extent perceived smart pedagogy as easy to use in teaching Business Education courses

Hypothesis One

There is no significant difference in male and female business educators on the perceived usefulness of smart pedagogy for teaching Business Education courses.

The t-test analysis on male and female business educators' Perceived Usefulness of smart pedagogy is presented in Table 3.

Table 3: ***t-test Analysis on male and female business educators' Perceived Usefulness of smart pedagogy for teaching Business Education courses***

Item	Gender	N=58	Mean	Std.	t-value	P-value	Decision
1	Male	35	3.57	0.50	0.28	0.78	Not sig
	Female	23	3.61	0.50			
2	Male	35	3.57	0.50	0.27	0.78	Not sig
	Female	23	3.61	0.50			
3	Male	35	3.60	0.50	0.93	0.37	Not sig
	Female	23	3.47	0.51			
4	Male	35	3.63	0.55	1.88	0.07	Not sig
	Female	23	3.35	0.57			
5	Male	35	3.57	0.50	0.05	0.96	Not sig
	Female	23	3.57	0.51			
6	Male	35	3.71	0.46	1.83	0.07	Not sig
	Female	23	3.48	0.51			
7	Male	35	3.57	0.50	1.01	0.32	Not sig
	Female	23	3.43	0.51			
8	Male	35	3.69	0.47	0.93	0.36	Not sig

	Female	23	3.57	0.51			
9	Male	35	3.51	0.51	0.91	0.38	Not sig
	Female	23	3.39	0.50			
10	Male	35	3.71	0.45	0.15	0.88	Not sig
	Female	23	3.70	0.47			

Table 3 reveals that in regard to hypothesis one, all the related items are not significant because their respective calculated t-values are less than the critical t-value of 2.00 at a degree of freedom (DF) of 56. More so, all the p-values are greater than the alpha significant value of 0.05. Based on this, null hypothesis one is accepted. Therefore, there is no significant difference in male and female business educators on the perceived usefulness of smart pedagogy for teaching Business Education courses.

Hypothesis Two

There is no significant difference in business educators in federal and state owned universities on the perceived ease of use of smart pedagogy for teaching Business Education courses.

Table 4: *t-test Analysis on Business Educators' Perceived Ease of Use of Smart Pedagogy for Teaching Business Education Courses*

Item	Ownership	N=58	Mean	Std.	t-value	P-value	Decision
11	Federal	28	2.61	0.88	0.12	0.91	Not Sig
	State	30	2.63	0.85			
12	Federal	28	2.29	0.81	1.08	0.29	Not Sig
	State	30	2.07	0.74			
13	Federal	28	2.32	0.61	0.80	0.43	Not Sig
	State	30	2.17	0.83			
14	Federal	28	2.21	0.57	0.49	0.63	Not Sig
	State	30	2.13	0.68			
15	Federal	28	2.43	0.63	0.35	0.73	Not Sig
	State	30	2.37	0.72			
16	Federal	28	2.29	0.66	0.08	0.94	Not Sig
	State	30	2.30	0.70			
17	Federal	28	2.79	0.74	0.63	0.53	Not Sig
	State	30	2.67	0.71			
18	Federal	28	2.32	0.61	0.72	0.47	Not Sig
	State	30	2.43	0.56			
19	Federal	28	2.32	0.61	0.45	0.66	Not Sig
	State	30	2.40	0.72			
20	Federal	28	2.57	0.74	1.03	0.31	Not Sig
	State	30	2.37	0.76			

Table 4 indicates that in regard to hypothesis two, all the related items are not significant because their respective calculated t-values are less than the critical t-value of 2.00 at a degree of freedom (DF) of 56. Furthermore, all the p-values are greater than the alpha significant value of 0.05. Based on this, null hypothesis two is accepted. Therefore, there is no significant difference in business educators in federal and state owned universities on the perceived ease of use of smart pedagogy for teaching Business Education courses.

DISCUSSION

Finding revealed that business educators, to a very high extent, perceived smart pedagogy as useful for the teaching of Business Education courses in universities in Cross River State (mean = 3.56). This means that business educators believes that using smart pedagogy will enhance students' learning outcomes, engagement, and job readiness. Smart pedagogy make teaching more engaging, data-informed, and aligned with workplace skills required in digital-driven economy. Unlike traditional pedagogy, smart pedagogy adapts to students' learning pace, provides real-time feedback, and simulates real-world business environments. The finding is consistent with Zhu et al. (2023) that teachers' PU of smart education was consistently high when it was linked to measurable students' outcomes. When educators view smart pedagogy as useful, they are more likely to integrate it into teaching. In Nigeria context, the finding is in line with Onyemaechi and Adeyemi (2024) that 78% of business educators in South-East Nigeria agreed that smart pedagogy makes Business Education courses more practical and industry-relevant.

Finding further revealed that there is no significant difference in male and female business educators on the perceived usefulness of smart pedagogy for teaching Business Education courses. This finding implies that gender does not influence how business educators view the value of smart pedagogy in teaching Business Education courses. Both male and female lecturers agree that smart pedagogy tools such as LMS, AI-driven business simulations, learning analytics, and cloud collaboration platforms are useful for making instruction practical, improving students' digital skills, and aligning teaching in line with industry demands. The finding further suggest a positive development for gender equity in Cross River State Universities. It means that advocacy for smart pedagogy adoption does not need to be gender-segregated. TETFund, NUC and University management can organize one capacity-building program for all business educators because both groups already recognize the usefulness.

The finding aligns with Onyemaechi and Adeyemi (2024) who found no significant gender difference in perceived usefulness of smart pedagogy among business educators in South-East Nigeria. They attributed this to equal exposure to professional development and the fact that digital competence is now a requirement for promotion for both sexes. The finding also agrees with Mensah and Boateng (2023) in Ghana who reported that gender did not predict vocational educators' perceived usefulness of smart learning tools. The authors stated that usefulness is judged by impact on students' employability, and both male and female educators share this goal. From TAM perspective (Davis, 1989), Perceived Usefulness is driven more by job relevance than by personal characteristics. Since both male and female business educators teach the same NUC approved courses and are evaluated by the same standards, they are likely to have similar beliefs about what improves teaching effectiveness.

Finding indicated that business educators, to a very low extent perceived smart pedagogy as easy to use in teaching Business Education courses (mean = 2.38). In simple terms the easy of business educators to use smart pedagogy is very low. The finding suggest that if a tool is perceived as complicated, time-consuming, or requiring too much training, adoption will be low even if it is useful. The finding is in line with Bello and Suleiman (2023) who found that PEOU was a major barrier among NCE business educators in North-Central Nigeria. As 63% of the respondents cited poor internet, epileptic power supply, and lack of technical support as reasons they found smart pedagogy difficult to use.

Finding further indicated that there is no significant difference in business educators in federal and state owned universities on the perceived ease of use of smart pedagogy for teaching Business Education courses. The finding implies that both Federal and State University business educators in Cross River State have similar very low extent of perceptions regarding the use of smart pedagogy tools in teaching Business Education courses.

This finding aligns with Onyemaechi and Adeyemi (2024) who reported no significant difference in perceived ease of use of smart pedagogy between Federal and State tertiary institutions in South-East Nigeria. They attributed this to nationwide ICT training programmes that cut across institutional ownership. It is also supported by Nwachukwu and Ezeani (2022) who found that Federal and State college business educators in Southeast Nigeria had similar levels of ease in using digital tools. Institutional support from TETFund and the curriculum demand to prepare students for digital workplace may have helped to level the playing field. Furthermore, the finding aligns with Al-Emran et al. (2023) that when facilitating conditions such as training and basic infrastructure are provided, institutional ownership becomes a weak predictor of PEOU.

The finding however, contradicts Adamu and Yusuf (2024) and Bello and Suleiman (2023) who reported a significant difference in PEOU between Federal and State institutions in North-Central Nigeria. They linked the difference to poor funding in State institutions. The difference may be due to location and timing. The present study in Cross River State was conducted in 2026, a period when State Universities have received increased attention through state government and TETFund matching grants. From TAM viewpoint, Perceived Ease of Use is influenced by external variables known as "facilitating conditions" such as availability of infrastructure, training, and technical support. The non-significant result suggests that both Federal and State Universities in Cross River State experience similar facilitating conditions, hence similar PEOU.

Conclusion

Business educators in universities in Cross River State recognize the value of smart pedagogy in making Business Education teaching more practical, engaging, and aligned with digital workplace requirements. Both male and female educators share this positive perception, indicating that gender is not a barrier to recognizing the benefits of smart pedagogy. However, their perceived easy to use smart pedagogy was very low. This perceptions was common to business educators in both Federal and State Universities in Cross River State. This implies that while educators recognize the value of smart pedagogy, they do not feel confident or supported enough to use it easily, irrespective of gender or institutional ownership. This could be linked institutional support factors such as infrastructure, power, internet, and continuous training rather than personal or ownership characteristics. Therefore, efforts to promote smart pedagogy should continue to be implemented uniformly across both Federal and State Universities. The focus should now shift to sustaining infrastructure, regular training, and technical support to maintain this equity and improve overall PEOU for all business educators in the state.

Recommendations

Based on the findings and conclusion of this study, the following recommendations are made:

1. Promotion and appraisal criteria should include evidence of smart pedagogy integration to motivate educators to move from high usefulness perception to actual classroom use.
2. University management should provide licensed software, LMS access, AI tools, and business simulation platforms so lecturers can practice and integrate smart pedagogy without personal cost burden. They should also organize regular hands-on training, workshops, and micro-credential programmes on smart pedagogy tools for all business educators to improve technical competence and ease of use.
3. Government, NUC, and TETFund should prioritize stable power supply, high-speed internet, smart classrooms, and on-campus ICT support in both Federal and State Universities to reduce difficulty in using smart pedagogy.

Implication of the Findings

The high perceived usefulness shows educators are willing to adopt smart pedagogy. The low perceived ease of use shows they lack the enabling environment, which may lead to frustration and abandonment of the innovation. If ease of use remains very low, actual adoption will be poor. This will produce Business Education graduates without required digital and 21st-century skills, defeating the purpose of the National Digital Economy Policy. Furthermore, the absence of significant differences by gender and ownership implies that the problem is systemic. Both male/female and Federal/State lecturers face the same barriers, so interventions must be uniform across all groups. In general, the findings implies that business educators value smart pedagogy but find it too difficult to use. In other words, they expressed willingness to use without ability. This can be fixed through infrastructure and training, and adoption will follow.

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INNOVATIVE PEDAGOGIES AND ENTREPRENEURIAL BEHAVIOUR OF BUSINESS EDUCATION STUDENTS IN COLLEGES OF EDUCATION IN BENUE STATE

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Abstract

The increasing complexity of the global economy, digital transformation, unemployment challenges, and the growth of innovation-driven enterprises have necessitated a rethinking of entrepreneurship education in Nigeria. This study explores the effect of innovative pedagogies on entrepreneurial behaviour of Business Education students in Colleges of Education in Benue State. It specifically examines the effect of experiential learning pedagogy, project-based learning, and technology-enhanced learning on entrepreneurial behaviour among Business Education students. The study adopted a descriptive survey design. The population of the study comprised two hundred and twenty-eight (228) final-year students and twenty-three (23) lecturers at College of Education, Oju and College of Education, Katsina-Ala. The study employed a census sampling approach, and the entire population was sampled. A structured questionnaire was used to collect data from the respondents and findings indicated that experiential learning pedagogy, project-based learning, and technology-enhanced learning significantly affect the entrepreneurial behaviour of Business Education students. The study concluded that integrating innovative pedagogies into entrepreneurship education can significantly contribute to youth empowerment, digital transformation, employment generation, and sustainable economic development. The study recommended amongst others the need for regular training programmes to be organized for Business Education lecturers to improve their capacity to implement innovative pedagogies effectively and to keep pace with emerging technological trends in entrepreneurship education.

Keywords: *Innovative Pedagogies, Entrepreneurship Education, Experiential Learning, Technology-enhanced learning, Entrepreneurial Behaviour, Project-Based Learning.*

Introduction

Entrepreneurship education has been recognized globally to equip students with innovative competencies to identify and act on new business opportunities for personal and national development. The growing complexity of the global economy, digital transformation, unemployment challenges, and the rise of innovation-driven enterprises have necessitated a rethinking of entrepreneurship education amongst nations (World Economic Forum (2023). The primary objective of entrepreneurship education is to equip learners with knowledge, skills, attitudes, and competencies required for successful entrepreneurial activities. In Nigeria, the rising unemployment, technological disruption, economic instability, and growing demand for entrepreneurial competencies have intensified the need for effective entrepreneurship education. Universities, colleges of education, polytechnics, and vocational institutions are expected not only to produce job seekers but also entrepreneurs who can identify opportunities and create value in dynamic economic environments (Alao & Alao, 2022).

The dynamic nature of today's business environment demands a shift from conventional teaching methods to more innovative pedagogical approaches in entrepreneurship education. Traditional lectures and theoretical coursework are increasingly being supplemented by methods that emphasize hands-on experience, creative problem-solving, and collaborative learning (Amesi & Ademiluyi, 2024). Traditional teacher-centered pedagogies are increasingly unable to produce graduates with the entrepreneurial competencies required for the Fourth Industrial Revolution. Innovative pedagogies are experiential approaches to imparting knowledge, skills, attitudes, and values in learners. These instructional strategies expose and engage students in active learning for all-round development in the three domains of learning, cognitive, affective, and psychomotor. The features of innovative pedagogies

include systematic learning process, handling real-life situation, display of skills, self-monitoring assessment, and learners-centred instructional approaches (Spilbergs, Mavlutova & Lesinskis, 2026).

The contemporary digital economy demands educational practices that foster active learning, creativity, collaboration, adaptability, and innovation. Innovative pedagogies have consequently gained prominence as transformative approaches capable of enhancing entrepreneurship education outcomes. These pedagogies emphasize learner-centeredness, experiential engagement, practical application of knowledge, and real-world problem-solving. Innovative pedagogical approaches in entrepreneurship education are transforming how students learn and develop entrepreneurial skills (Boubker, Arroud & Ouajdouni, 2021). By incorporating experiential learning, design thinking, collaborative models, and technology integration, educators can provide a more effective and engaging learning experience. This study examines innovative pedagogies and entrepreneurship education in Nigeria with particular emphasis on the various dimensions of innovative pedagogies and their implications for entrepreneurial behaviour amongst business education students in Benue State, Nigeria.

Statement of the Problem

Entrepreneurs cannot succeed without the requisite skill and knowledge on how to start and manage entrepreneurial activities. The growing rate of unemployment among the youth in African countries, despite the presence of entrepreneurial opportunities to exploit, points towards inadequacy of skill and knowledge in starting and managing entrepreneurial activities in African countries. In Nigeria, there is increase in number of unemployed graduates, and in addressing the problem, the government through the Ministry of Education has put effort of changing the graduates' behaviour to venture into entrepreneurship as opposed to seeking formal employment. However, most graduates are desperately moving from one office to another seeking for job opportunities hence end up joining the growing numbers of unemployed, frustrated and discouraged graduates (Nwosu, 2021). Also, many educational institutions continue to rely heavily on conventional pedagogical approaches characterized by lecture-dominated instruction, rote memorization, and examination-focused learning in teaching entrepreneurship. Such approaches often fail to develop enterprise skills, innovation capacity, problem-solving abilities, and entrepreneurial mindsets. This study is carried out to investigate the effect of innovative pedagogies on entrepreneurial behaviour amongst Business Education students in Benue State, Nigeria. To achieve this objective, the study examines the effect of experiential learning pedagogy, project-based learning, and technology-enhanced learning on entrepreneurial behaviour among Business Education students.

Research Hypotheses

The study is guided by the following hypotheses:

1. There is no significant effect of experiential learning pedagogy on entrepreneurial behaviour among Business Education students
2. There is no significant effect of problem-based learning on entrepreneurial behaviour among Business Education students
3. There is no significant effect of technology-enhanced learning on entrepreneurial behaviour among Business Education students

Literature Review

Entrepreneurship Education

Entrepreneurship education refers to the process of developing learners' entrepreneurial knowledge, skills, competencies, attitudes, and behaviors necessary for identifying opportunities, taking calculated risks, creating business ventures, and generating sustainable value (Bell, 2021). Entrepreneurship education extends beyond teaching students how to start businesses. It encompasses the cultivation of creativity, innovation, resilience, leadership, opportunity recognition, resource mobilization, and strategic thinking. The goal is to enable learners to become productive contributors to economic development (Neck, Greene & Brush, 2018).

In Nigeria, entrepreneurship education has become a compulsory component of higher education curricula due to concerns about graduate unemployment and the need for economic diversification. Entrepreneurship education is offered to students to boost their entrepreneurial spirit and behaviour through effective training. Learners are therefore equipped with the knowledge and skills required for setting up and running a business (Alao & Alao, 2022). Entrepreneurship education inculcates entrepreneurial behaviour in learners that enables them to confront situations in creative and innovative

ways. The ultimate aims of entrepreneurship programs are to produce graduates with entrepreneurial behaviour who are self-employed, catalysts for economic growth, create employment opportunities, be able to identify and exploit opportunities, and inculcate the spirit of resilience through the curriculum (Boubker, Arroud, & Ouajdouni, 2021).

Innovative Pedagogies

Innovative pedagogies refer to contemporary teaching and learning approaches that move beyond traditional teacher-centered instruction to promote active participation, critical inquiry, collaboration, creativity, and practical application of knowledge (Yusuf & Dansu, 2022). These pedagogies leverage technology, experiential activities, problem-solving exercises, and real-world experiences to enhance learning outcomes. They place learners at the center of the educational process while educators function as facilitators, mentors, coaches, and guides (Chhabra et al., 2021). Within entrepreneurship education, innovative pedagogies seek to cultivate entrepreneurial competencies through authentic experiences that mirror real business environments and entrepreneurial challenges (Añonuevo, 2024). Entrepreneurial pedagogy in higher education institutions in the world emphasizes the realization of students' cognitive, affective and psychomotor skills. Such skills when fully realized are likely to enhance the student's innovative capability and creative thinking (Carpenter & Wilson, 2022). Therefore, entrepreneurial pedagogy is paramount because it promotes creativity and enhances learners' innovative capacity.

Entrepreneurial Behaviour

Entrepreneurial behaviour is a set of key behaviours individuals exhibit that help them navigate the business world and achieve success based on business performance (Bell, 2021). Entrepreneurial behaviour refers to the attitudes, actions, decisions, and competencies that enable individuals to identify opportunities, create value, assume risks, and organize resources to establish or grow a business venture. Entrepreneurial behaviour is also defined as the process through which individuals recognize opportunities, mobilize resources, and undertake innovative activities to create economic and social value (Amesi & Ademiluyi, 2024). These behaviours include Such behaviours include creativity, proactiveness, opportunity recognition, self-confidence, risk-taking propensity, problem-solving ability, innovativeness, and persistence.

Theoretical Framework

This study is anchored on the Experiential Learning Theory developed by Kolb (1984). The theory posits that learning occurs through experience, reflection, conceptualization, and experimentation. It explains that learning is a continuous process whereby knowledge is created through the transformation of experience. According to Kolb, effective learning occurs when learners actively engage in experiences, reflect on those experiences, conceptualize new ideas, and apply those ideas in real-life situations. The theory emphasizes "learning by doing" rather than passive acquisition of knowledge through traditional lecture-based instruction. The theory provides a strong theoretical basis for innovative pedagogies, which emphasize learner-centered, interactive, and practice-oriented approaches to teaching and learning. It supports entrepreneurship education by emphasizing hands-on experiences that allow learners to develop entrepreneurial competencies through practice.

The theory explains how innovative pedagogies can transform entrepreneurship education from a predominantly theoretical exercise into a practical and engaging process that develops entrepreneurial competencies. By creating opportunities for hands-on learning, innovative pedagogies enhance entrepreneurship education and promote entrepreneurial behaviour among students, enabling them to become innovative, opportunity-driven, and self-reliant contributors to economic development. This approach helps bridge the gap between classroom learning and entrepreneurial practice, making entrepreneurship education more effective in preparing students for self-employment and enterprise development.

Effect of Experiential Learning Pedagogy on Entrepreneurial Behaviour

Experiential learning focuses on learning by doing. Experiential Learning Pedagogy is based on the principle that students learn most effectively through direct experience, reflection, and application of knowledge. In entrepreneurship education, experiential learning involves activities such as business simulations, internships, industrial attachments, fieldwork, mentoring programs, business plan competitions, and venture creation exercises. Students gain firsthand exposure to business realities and learn how to apply theoretical concepts in practical situations (Yusuf & Dansu, 2022). Empirical evidence suggests that experiential learning pedagogy significantly enhances entrepreneurial

behaviour among students by promoting practical engagement, entrepreneurial self-efficacy, opportunity recognition, and innovation.

A study by Motta and Galina (2023) showed that experiential learning approaches have a positive influence on students' entrepreneurial intentions, skills development, and entrepreneurial competencies. Also, Taneja, Kiran, and Bose (2024) examined 669 students enrolled in entrepreneurship programmes and found that experiential learning positively influenced entrepreneurial intention both directly and indirectly through entrepreneurial self-efficacy. Their findings revealed that students who actively participated in experiential entrepreneurship activities demonstrated higher confidence in their entrepreneurial capabilities and a stronger inclination toward entrepreneurial action. A study by Añonuevo (2024) on entrepreneurship students found a significant relationship between experiential learning approaches and entrepreneurial competencies. The research established that experiential learning significantly improved students' practical entrepreneurial performance and competency development, indicating that experiential activities are instrumental in cultivating entrepreneurial behaviours such as initiative, creativity, and problem-solving.

Effect of Project-Based Learning on Entrepreneurial Behaviour

Project-Based Learning (PBL) is an instructional approach in which students acquire knowledge and skills by working on authentic projects designed to solve real-world problems. In entrepreneurship education, students may be required to design products, develop business plans, conduct market research, establish mini-enterprises, or create innovative solutions to community challenges. Project-Based Learning (PBL) has been widely recognized as an effective pedagogical approach for developing entrepreneurial behaviour among students. Through project execution, students engage in real-world problem-solving, collaborative learning, innovation, and venture creation activities that mirror entrepreneurial practice (Taneja, Kiran & Bose, 2024).

A study by Jaenudin (2024) investigated the effectiveness of project-based learning in entrepreneurship education among university students and found a statistically significant improvement in entrepreneurial intentions among students exposed to PBL compared to those taught using conventional methods. The experimental group achieved substantially higher entrepreneurial intention scores, demonstrating that project-based activities stimulate entrepreneurial thinking and action. Similarly, Yulastri et al. (2023) in their research reported that project-based entrepreneurial learning contributed positively to entrepreneurship readiness by enhancing entrepreneurial literacy, self-efficacy, and entrepreneurial passion. A recent study by Suharto et al. (2025), found that project-based learning significantly improved entrepreneurial involvement and entrepreneurial competencies among economics education students. The researchers concluded that active engagement in project development encourages entrepreneurial awareness, innovation, and independent decision-making, all of which are critical dimensions of entrepreneurial behaviour.

Effect of Technology-Enhanced Learning on Entrepreneurial Behaviour

Technology-Enhanced Learning (TEL) refers to the integration of digital technologies into teaching and learning processes to improve learning outcomes. It includes e-learning platforms, virtual simulations, online collaboration tools, artificial intelligence applications, digital entrepreneurship platforms, mobile learning applications, and social media-based learning environments. Technology-enhanced learning positively affects entrepreneurial behaviour by providing students with access to vast sources of information, emerging business opportunities, and global entrepreneurial networks. Digital platforms expose Business Education students to innovative business models and contemporary entrepreneurial practices.

A study by Hammoda (2024) revealed that educational technologies positively influenced entrepreneurial competencies, particularly initiative-taking, motivation and perseverance, financial literacy, and entrepreneurial thinking. The study reported that digital simulations, games, and technology-supported learning environments effectively strengthen entrepreneurial skills and behaviours among students. A recent quasi-experimental study involving 819 students conducted by Spilbergs, Mavlutova, and Lesinskis (2026) reported that the use of AI-based digital entrepreneurship tools significantly increased students' entrepreneurial intentions compared to traditional instructional methods. These studies clearly demonstrated that technology-supported learning environments improve students' entrepreneurial motivation, creativity, entrepreneurial attitudes, and willingness to start businesses.

Methodology

The study adopted a descriptive survey design. The population of the study comprised two hundred and fifty-one (251) final-year students and lecturers in the Department of Business Education in the College of Education, Oju, Benue State, and the College of Education, Katsina-Ala, Benue State. The population includes two hundred and twenty-eight (228) final-year students and twenty-three (23) lecturers of the institutions. A census sampling approach was adopted, and the entire population of 251 was used for the study as the sample size. A structured questionnaire was used as the instrument of data collection. The internal consistency of the instrument was determined using Cronbach's alpha correlation coefficient, and it yielded an average index of 0.90. The statistical tools used to analyse the research questions data were the mean, percentages, and standard deviation, while regression was used to test the research hypotheses.

Results and Discussion

4.1 Descriptive Analysis of Variables

The study examined the influence of experiential learning pedagogy, problem-based learning, and technology-enhanced learning on entrepreneurial behaviour among Business Education students. Responses were measured on a 5-point Likert scale where 1 = Strongly Disagree and 5 = Strongly Agree.

Table 1: Mean and Standard Deviation of Study Variables (N = 251)

Variable	Mean	Standard Deviation	Interpretation
Experiential Learning Pedagogy	4.18	0.67	High
Problem-Based Learning	4.05	0.71	High
Technology-Enhanced Learning	4.12	0.69	High
Entrepreneurial Behaviour	4.23	0.63	High

Source: Field Survey, 2026.

The results in Table 1 indicate that Business Education students reported a high level of exposure to innovative pedagogies. Experiential Learning Pedagogy recorded the highest mean score (M = 4.18, SD = 0.67), suggesting that students frequently engage in hands-on activities, simulations, practical exercises, and real-world entrepreneurial experiences.

Technology-Enhanced Learning also recorded a high mean score (M = 4.12, SD = 0.69), indicating that digital tools, online learning platforms, and technological resources are considerably integrated into entrepreneurship instruction. Also, Problem-Based Learning obtained a mean score of 4.05 (SD = 0.71), suggesting that students are regularly exposed to learning tasks that require problem identification, critical thinking, and solution development.

Entrepreneurial Behaviour recorded the highest overall mean score (M = 4.23, SD = 0.63), indicating that students generally exhibit entrepreneurial characteristics such as creativity, opportunity recognition, innovation, initiative, and risk-taking tendencies.

Multiple Regression Analysis

To determine the effects of Experiential Learning Pedagogy, Problem-Based Learning, and Technology-Enhanced Learning on Entrepreneurial Behaviour among Business Education students, multiple regression analysis was conducted.

Model Summary

Table 2: Regression Model Summary

Statistic	Value
R	0.789
R^2	0.623
Adjusted R^2	0.618
Standard Error of Estimate	0.391

Source: Field Survey, 2026.

The regression model yielded a multiple correlation coefficient (R) of 0.789, indicating a strong positive relationship between the three predictor variables and entrepreneurial behaviour. The coefficient of determination (R^2 = 0.623) shows that approximately 62.3% of the variation in entrepreneurial behaviour among Business Education students is jointly explained by experiential learning pedagogy, problem-based learning, and technology-enhanced learning. The remaining 37.7% may be attributed to other factors not included in the model such as personality traits, socio-economic background, entrepreneurial mindset, institutional support, and environmental influences. The adjusted R^2 value of 0.618 confirms that the model has good explanatory power and can be generalized to the wider population.

Table 3: Analysis of Variance (ANOVA)

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	61.842	3	20.614	134.85	.000
Residual	37.742	247	0.153		
Total	99.584	250			

Source: Field Survey, 2026.

The ANOVA result produced an F-value of 134.85 with a significance value of $p < 0.001$. Since the p-value is less than 0.05, the regression model is statistically significant. This indicates that the independent variables collectively exert a significant influence on entrepreneurial behaviour among Business Education students. This implies that, the overall regression model is suitable for predicting entrepreneurial behaviour.

Table 4: Multiple Regression Coefficients

Variables	B	Std. Error	Beta (β)	t-value	Sig.	Decision
Constant	0.782	0.184	-	4.251	.000	
Experiential Learning Pedagogy	0.342	0.051	0.361	6.710	.000	**Rejected**
Problem-Based Learning	0.268	0.047	0.283	5.702	.000	**Rejected**
Technology-Enhanced Learning	0.311	0.049	0.327	6.352	.000	**Rejected**

Source: Field Survey, 2026.

Regression Equation

$$EB = 0.782 + 0.342(ELP) + 0.268(PBL) + 0.311(TEL)$$

Where:

EB = Entrepreneurial Behaviour

ELP = Experiential Learning Pedagogy

PBL = Problem-Based Learning

TEL = Technology-Enhanced Learning

The result shows that a one-unit increase in experiential learning pedagogy will lead to approximately 0.342 unit increase in entrepreneurial behaviour. This suggests that students exposed to practical entrepreneurial activities, simulations, internships, and experiential exercises tend to demonstrate higher entrepreneurial behaviour. Also, the positive beta coefficient indicates that increased participation in problem-solving activities significantly enhances entrepreneurial behaviour. Students become more innovative, proactive, analytical, and capable of identifying business opportunities when exposed to problem-based learning environments. In addition, technology-enhanced learning significantly predicts entrepreneurial behaviour. Increased use of digital tools, online platforms, business simulations, artificial intelligence applications, and virtual entrepreneurial activities improves students' creativity, innovation, opportunity recognition, and entrepreneurial competence.

Hypothesis Testing

Hypothesis One

There is no significant effect of experiential learning pedagogy on entrepreneurial behaviour among Business Education students.

The regression result shows that β = 0.361, t = 6.71 and p = 0.000. Since p < 0.05, the null hypothesis is rejected. This implies that there is a significant positive effect of experiential learning pedagogy on entrepreneurial behaviour among Business Education students. This finding suggests that students who participate in practical entrepreneurial activities such as business simulations, internships, industrial attachments, mentorship programmes, and venture creation exercises are more likely to develop entrepreneurial characteristics including creativity, opportunity recognition, self-confidence, innovation, and risk-taking ability.

The finding supports the principles of Kolb's Experiential Learning Theory, which posits that knowledge is acquired through concrete experiences, reflection, conceptualization, and experimentation. The finding is consistent with the study by Motta and Galina (2023), which found that experiential learning approaches positively influence entrepreneurial intentions, entrepreneurial competencies, and skills development among students. It also corroborates the findings of Taneja, Kiran, and Bose (2024), who reported that experiential learning significantly enhances entrepreneurial intention through entrepreneurial self-efficacy. ne of the most effective approaches for fostering entrepreneurial behaviour among students.

Hypothesis Two

There is no significant effect of problem-based learning on entrepreneurial behaviour among Business Education students.

The regression result shows β = 0.283, t = 5.70, and p = 0.000. Since p < 0.05, the null hypothesis is rejected. The result indicates that there is a significant positive effect of problem-based learning on entrepreneurial behaviour among Business Education students. This finding implies that students who engage in authentic projects involving product design, business plan preparation, market research, enterprise creation, and community problem-solving are more likely to develop entrepreneurial capabilities. The result agrees with Jaenudin (2024), who found that students exposed to project-based

learning demonstrated significantly higher entrepreneurial intentions than those taught through conventional instructional methods. The finding is also supported by Yulastri et al. (2023), who reported that project-based entrepreneurial learning enhances entrepreneurial literacy, entrepreneurial passion, self-efficacy, and entrepreneurship readiness among university students. Similarly, Suharto et al. (2025) found that project-based learning significantly improves entrepreneurial involvement and entrepreneurial competencies among economics education students.

Hypothesis Three

There is no significant effect of technology-enhanced learning on entrepreneurial behaviour among Business Education students.

The regression result shows that $\beta = 0.327$, $t = 6.35$, and $p = 0.000$. Since $p < 0.05$, the null hypothesis is rejected, implying that there is a significant positive effect of technology-enhanced learning on entrepreneurial behaviour among Business Education students. This indicates that the integration of digital technologies such as online learning platforms, virtual business simulations, social media tools, digital entrepreneurship applications, artificial intelligence platforms, and collaborative learning technologies contributes significantly to the development of entrepreneurial competencies. This finding aligns with Hammoda (2024), who found that educational technologies positively influence entrepreneurial competencies, particularly initiative-taking, perseverance, entrepreneurial thinking, and financial literacy. The result is further supported by Spilbergs, Mavlutova, and Lesinskis (2026), who reported that AI-based digital entrepreneurship tools significantly increase students' entrepreneurial intentions and entrepreneurial readiness.

Conclusion and Recommendations

The study investigated how innovative pedagogical approaches significantly contribute to the development of entrepreneurial behaviour among Business Education students. The study concludes that experiential learning pedagogy promotes entrepreneurial behaviour by providing students with practical experiences that enhance entrepreneurial competencies, self-confidence, creativity, problem-solving abilities, and opportunity recognition. Project-based learning develops entrepreneurial behaviour by engaging students in real-life projects that encourage innovation, initiative, collaboration, leadership, and business decision-making. Technology-enhanced learning facilitates entrepreneurial behaviour by exposing students to digital tools, entrepreneurial networks, virtual business environments, and innovative learning opportunities.

Recommendations

Based on the findings and conclusions of the study, the following recommendations are made:

1. Business Education lecturers should adopt experiential learning strategies such as internships, business simulations, mentorship programmes, industrial attachments, field visits, and venture creation activities to provide students with practical entrepreneurial experiences.
2. Higher institutions should integrate project-based learning into entrepreneurship courses by encouraging students to develop business plans, conduct market research, establish mini-enterprises, and solve real-world business problems as part of their academic requirements.
3. Higher institutions should invest in technology-enhanced learning resources including virtual business simulations, e-learning platforms, entrepreneurship software, artificial intelligence tools, and digital collaboration platforms to improve entrepreneurial learning outcomes.
4. Curriculum developers should redesign Business Education curricula to incorporate innovative pedagogical approaches that emphasize practical engagement, creativity, innovation, and entrepreneurial problem-solving rather than excessive reliance on theoretical instruction.
5. Regular training programmes should be organized for Business Education lecturers to improve their capacity to implement innovative pedagogies effectively and to keep pace with emerging technological trends in entrepreneurship education.

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PERCIEVED ENTREPRENEURIAL SKILL NEEDED BY BUSINESS EDUCATORS FOR IMPARTATION OF BUSINESS SKILLS IN STUDENTS IN EBONYI STATE

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Abstract

The study examined perceived entrepreneurial skill needed by business educators for impartation of business skills in students in Ebonyi State. Three research questions were raised to guide the study and three research hypotheses were formulated for the study. The study adopted descriptive survey research design. The population of the study comprised 50 business education lecturers in all tertiary institutions in Ebonyi State The whole population was used because it was not too large for the researcher to handle. The instrument used was a structured questionnaire which was validated by two experts from Business Education and one expert in measurement and evaluation from Kwara State University, Molete. Reliability of the study was determined using Crombach Alpha which yielded a co-efficient value of 0.88. Data collected were analyzed using mean and standard deviation and the *null hypotheses were tested with t-test at 0.05 level of significance. Findings of the study revealed that inadequate funding, laboratories, computer, limited access to internet facilities and a host of others are the challenges to business education. It was also revealed that business education has a lot of skills for sustainable development. The study therefore recommended among others that, the government at both federal and state levels should ensure adequate release of funds for the procurement of training facilities for practical teaching of business education courses in tertiary institutions and that the curriculum planners should review business education curriculum to enable the students acquire the required skills for the world of work and to establish their own businesses.*

Keywords: Business Education, Sustainable Development, Business Education Skills.

Introduction

Business education is a branch of vocational education that involves teaching the skills and operations of the business industry. This field of education occurs at multiple levels, including secondary and higher education institutes. Education in business has many forms, mainly occurring within a classroom of a school. According to Azubuike (2025), business education is a specialized field of study which provides knowledge, skills, and training in business operations, management, finance and marketing. It also aims to prepare individuals for careers in the private and public sectors. Business education is offered at secondary and higher education levels, focusing on both theoretical foundations and practical skills like leadership and accounting. The importance of business education can never be over stressed. According to Onah (2025), business education equips individuals with foundational knowledge, technical skills, and ethical awareness in fields like accounting, marketing, and management, fostering both self-employment and workforce readiness. Its core objectives are to foster entrepreneurial acumen, enhance employability, promote economic understanding, and prepare individuals for leadership in a globalized business environment.

In line with the above, the Federal Republic of Nigeria in section 6, sub-section 49 of the National Policy on Education (2014) indicated that objectives of business education include to:

i. provide the business knowledge and vocational skills necessary for industrial, commercial and economic development.
ii. provide trained manpower in applied technology and commerce, particularly at subprofessional grades.
iii. provide people who can apply scientific knowledge to the improvement and solution of economic and environmental problems for the use and convenience of man.

iv. enable our young men and women to have an intelligent understanding of the increasing complexity of technology.

Furthermore, Aina (2024) posited that the objectives of Business Education broadly include:

i. contribute to goal attainment of the total educational programme.
ii. provide basic and business knowledge for all students
iii. develop their economic understanding, personal consumer competency and personal-use competency; and
iv. provide vocational skills for persons preparing for a business occupation, i.e. business competency.

Business education programme has many components, as there are many different areas of the business industry as a whole. An education in business varies greatly in its curriculum and popularity around the world. It can be said that business education is closely linked to entrepreneurship education. Entrepreneurship education is a structured learning process aimed at equipping individuals with the knowledge, skills, and mindset necessary to identify, evaluate, and act on business opportunities. It promotes innovation, creativity, calculated risk-taking, and the ability to turn ideas into value-creating actions, often fostering self-reliance and venture creation. According to Onyia (2022) entrepreneurship education focuses on the development of skills or attributes that enable the realization of opportunity. Entrepreneurship education provides formalized training to develop an entrepreneurial mindset, skills, and knowledge, encouraging innovation and economic self-reliance. Entrepreneurship education is aimed at transforming students into proactive, job creators by teaching business planning, creativity, and risk management from primary through higher education. It focuses on both theoretical knowledge and practical application, including experiential learning and skill acquisition for starting businesses. However, for the actualisation of the aims and objectives of entrepreneurial skills inherent in business education programme, business educators have vital roles to play.

A business educator is a qualified professional who teaches, administrates, and facilitates learning in business-related subjects, including accounting, finance, marketing, and management. Operating in secondary schools, colleges, and universities, they bridge the gap between academic theory and practical business skills, often utilizing simulation, mentorship, and computer-assisted instruction to prepare students for the workforce. Business educators play prominent role in preparing students to become responsible citizens, capable of making the astute economic decisions that will benefit their personal and professional lives. Business education teachers introduce students to the basics of personal finance, the decision-making techniques needed to be wise consumers, the economic principles of an increasingly international marketplace and the processes by which businesses operate. Hence it can be said that business educators have the responsibilities of imparting key entrepreneurial skills such as management skills, accounting skills and marketing skills for sustainable employability and job creation.

Management is an act of planning, organizing, and controlling the business activities and leading of people in order to achieve organization goals. It is the process of harnessing the diverse resources material, finance, people and time in a manner as to achieve what the organization sets to achieve. Management is a process of planning, organizing, leading and controlling all activities of the organization in pursuit of pre-determined objectives. In the view of Ogbuanya, Nweke and Ugwoke (2017), management functions include all efforts towards: planning, organizing, leading or motivating, coordinating and controlling. While management skills are soft and hard attributes including communication, decision-making, planning, and leadership which are essential for directing teams, solving problems, and achieving organizational goals. Key skills include motivating staff, delegating tasks, managing conflict, and adapting to changing environments. These abilities are categorized into technical, conceptual, and human/interpersonal skills, which are crucial for driving organizational success. Business educators have the role of impacting management skills among business education students for employability and job creation after graduation.

Apart from management skills, accounting skills is another entrepreneurial skill required to be imparted in students for employability and job creation after graduation. Accounting is the systematic recording of financial transaction. It is a service activity, the function of which is identifying, measuring, recording and communicating quantitative information, primarily financial in nature, about economic entities. While accounting skills are technical and workplace abilities used to manage financial transactions, analyze data, and produce accurate financial reports. They combine knowledge of accounting principles (e.g., GAAP), software proficiency (e.g., Excel, QuickBooks), and soft skills like attention to detail. These skills ensure compliance, tax accuracy, and financial stability. Akpotowoh, Watchman and Ogeibiri (2016) identified some of the accounting and financial skills required by entrepreneurs in business related areas for successful operation of business enterprises to include:

knowledge of accounts; knowledge of costing; ability to interpret financial statements; ability to acquire the skill of preparing financial statements; ability to understand payroll and various deductions; ability to know gross and net profits; ability to know sources of funds; ability to know how to obtain loans, a knowledge of Federal, state and local government levies, taxes and regulations and knowledge of factors involved in decision to grant loan by financial houses. Other accounting skills required by an entrepreneur are: ability to process accounts receivable and accounts payable, ability to process inventories, ability to post ledgers and extract the trial balance, ability to prepare daily cash reports, ability to keep debtors ledgers, ability to prepare bank reconciliation statements, ability to keep sales and purchases records and ability to calculate depreciation. Hence it is the role of business educators to inculcate accounting skills in students of business education for entrepreneurial development after graduation.

Furthermore, marketing skills is required business education students for employability and entrepreneurial development after graduation. Marketing is the strategic process of identifying, anticipating, and satisfying customer needs to build brand value and facilitate sales. It involves comprehensive research, promotion, pricing, and distribution, going beyond mere advertising to create lasting customer relationships and generate revenue (Nwankwo, 2022). Key activities range from digital campaigns to market analysis. Marketing skills are a blend of technical (hard) and interpersonal (soft) abilities used to promote products, build brand awareness, and engage audiences. Key skills include data analysis, SEO/SEM (Search Engine Optimization) and SEM (Search Engine Marketing), social media management, content creation, and strategic planning. These skills enable marketers to understand consumer behaviour and drive business growth. Marketing skills is required by business education students for entrepreneurial development after graduation.

From the foregoing, Business Educators have the responsibilities of inculcating management skills, accounting and marketing skills in students of business education for sustainable entrepreneurial development. Sustainable development refers to the development that meets the needs of me present without compromising the ability of future generations to meet their needs (Data Revolution World, 2020). Ekezie (2022) stated that sustainable development is a holistic approach to growth that meets present needs without compromising the ability of future generations to meet theirs. It balances environmental, social, and economic pillars often called people, planet, and prosperity to improve quality of life while maintaining natural systems. Imparting entrepreneurial skills in students of business education is curial to sustainable employability and job creation

However, despite the inherent entrepreneurial skills in business education programme in tertiary institutions, the rate of graduates' unemployment from this noble programme has become a source of worry to the graduates themselves, parents, relations and of course, the governments. This has become an economic, political and social problem in Nigeria. Unemployment of graduates (including business education) has become one of the most topical and thorny issues in contemporary Nigeria. The unemployment situation has changed from previous position marked by prolonged period of unemployment and misemployment, to one in which graduates of tertiary institutions have to normally wait for a long time before getting a first job – if at all. This case has become worse in Ebonyi state as there is scare of industries and markets for graduate employment. Based on this high rate of graduate unemployment, the zeal for tertiary education among youths is gradually being eroded because of the discouraging wave of graduate unemployment. Creating market-relevant educational training opportunities that will provide undergraduate students with the skills necessary to become more employable is crucial to increasing employment and strengthening economic growth. It based on this that the paper examines perceived entrepreneurial skill needed by business educators for impartation of business skills in students in Ebonyi State

Statement of the Problem

The general aim of business education programme in tertiary institutions in Nigeria is to enable the recipient to develop skills for business and entrepreneurial development. Business education programme has the potential of equipping its recipients with managerial, accounting and marketing skills needed for entrepreneurial development. However, it is unfortunate note that it appears that most graduates of business education have not acquired these needed skills for entrepreneurial development after graduation. Most of business education graduates do not seem to possess the required skills for self employment. If this is the cases, it means that business educators in most of the tertiary institutions do not have the needed skills for impartation. It is based on this that the study examines this that the paper examines perceived entrepreneurial skill needed by business educators for impartation of business skills in students in Ebonyi State.

Purpose of the Study

The main purpose of the study is to examine the perceived entrepreneurial skill needed by business educators for impartation of business skills in students in Ebonyi State. Specifically, the study seeks to;

1. Find out the perceived managerial skills needed by Business Education lecturers for impartation of sustainable development in in Ebonyi state
2. Examine the perceived accounting skills needed by Business Education lecturers for implantation of sustainable development in Tertiary institutions in Ebonyi State
3. Ascertain the perceived marketing skills needed by Business Education lecturers for implantation of sustainable development in Tertiary institutions in Ebonyi State

Research Questions

The following question was raised to guide the study.

1. What are the managerial skills needed by Business Education lecturers for impartation of sustainable development in Ebonyi state?
2. What are the accounting skills needed by Business Education lecturers for implantation of sustainable development in Tertiary institutions in Ebonyi State?
3. To what extent are the marketing skills needed by Business Education lecturers for implantation of sustainable development in Tertiary institutions in Ebonyi State?

Research Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

H01: There is no significant difference in the mean responses of male and female business education lecturers on the extent of managerial skills needed for impartation of sustainable development in Tertiary institutions in Ebonyi State.

H02: There is no significant difference in the mean responses of years of experience business education lecturers on the extent of accounting skills needed for impartation of sustainable development in Tertiary institutions in Ebonyi State.

H03: There is no significant difference in the mean responses of male and female lecturers of business education on the extent of marketing skills needed for impartation of sustainable development in Tertiary institutions in Ebonyi State.

Methods

The study adopted descriptive survey research design which involved gathering data through the use of questionnaire. The study adopted descriptive survey research design. The population of the study consisted of 50 business education lecturers in the public tertiary institutions in Ebonyi State. The whole population was used because it was not too large for the researchers to handle. The research instrument was titled: Entrepreneurship Education as a Tool for Sustainable Development Questionnaire (EETSDQ). The instrument was face and content validity by two experts from Business Education department in Ebonyi State University. The study utilized a validated four point scale questionnaire with a reliability of 0.78. Cronbach Alpha reliability coefficient was used to test the reliability of the instrument and a coefficient of 0.78 was obtained. The researchers with the help of two research assistants administered and collected the instrument from the respondents. The data collected for the study were analyzed using the mean and standard deviation to answer the research questions and z-test statistics to test the hypotheses at 0.05 level of significance. Any item with a mean rating of 2.50 or above was regarded as accepted while mean rating less than 2.50 was regarded as not accepted. For the hypotheses, any item with t-calculated value greater than critical value was rejected, otherwise the hypothesis of no significant difference was accepted.

Results

Research Question 1: What are the perceived managerial skills needed by Business Education lecturers for impartation of sustainable development in Tertiary institutions in Ebonyi State?

Table 1: Responses mean ratings on the perceived managerial skills needed by business education lecturers in Tertiary institutions in Ebonyi State N =50

S/N	Skills to	X	SD	Remarks
1.	Identify profitable bisiness	3.63	0.57	Agreed
2.	Undertake basic step in starting a business	3.56	0.71	Agreed
3.	Organise business plans and activities	3.51	0.61	Agreed
4.	Take appropriate decision when necessary	3.47	0.75	Agreed
5	Implement plans for good attainment towards poverty reduction	3.40	0.80	Agreed
	Cluster Mean/Standard Deviation	3.36	**0.63**	**Agreed**

Table 1 shows the mean responses of business education lecturers in colleges of education on managerial skills as a tools for sustainable development in tertiary institutions in Ebonyi State. Item by item analysis revealed that all nine items had the mean scores that ranged from 3.41 to 3.67. The mean scores are indications that these are managerial skills needed by business education lecturers for sustainable development in Ebonyi state.

Research Question 2: what are the perceived accounting skills needed by Business Education lecturers for implantation of sustainable development in Tertiary institutions in Ebonyi State?

Table 2: Responses mean ratings on the accounting skills needed by business education lecturers for sustainable development N =50

S/N	Accounting skills	$\bar{x}$	SD	Remarks
1.	Provide accounting information useful for decision making	3.67	0.67	Agreed
2.	Prepare financial statement in accordance with accounting standard	3.41	0.91	Agreed
3.	Interpret financial statement	3.54	0.61	Agreed
4.	Analyse financial data	3.47	0.75	Agreed
5.	Identify sources of capital to start business	3.44	0.80	Agreed
6.	Ability to determine the gross profit	3.40	0.66	Agreed
7.	Ability to determine net profit	3.33	0.81	Agreed
8.	Ability to know source of funds	3.26	0.76	Agreed
9	Ability to prepare Statement of owner‘s equity	3.41	0.67	Agreed
	Cluster Mean/Standard Deviation	3.46	**0.56**	**Agreed**

Table 2 shows the mean responses of business education lecturers in colleges of education on the relevance of entrepreneurship education as a tools for sustainable development in tertiary institutions in Ebonyi State. Item by item analysis revealed that all nine items had the mean scores that ranged from 3.41 to 3.67. The mean scores are indications that these are accounting skills needed by business education lecturers for sustainable development in Ebonyi state.

Research Question 3: To what extent are the perceived marketing skills needed by Business Education lecturers for implantation of sustainable development in Tertiary institutions in Ebonyi State?

Table 3: Responses mean ratings on the marketing skills needed by business education lecturers in tertiary institutions in Ebonyi State. N=50.

S/N	Items	X	SD	Remarks
15.	Knowledge of seasonal fluctuation of goods	3.87	0.24	Agreed
16.	Ability to determine the extent to which products will sell	3.74	0.16	Agreed
17.	Familiarity with various aspects of sales and salesmanship	3.53	0.31	Agreed
18.	Ability to budget	3.48	0.21	Agreed
19.	Ability to forecast	3.60	0.33	Agreed
20	Ability to determine current trends in sales of products	3.64	0.15	Agreed

Cluster Mean/Standard Deviation	3.64	0.23	Agreed

Table 3 shows the mean responses of business education lecturers on marketing skills for sustainable development in Ebonyi state. The results revealed that all the items had the mean scores that ranged from 3.48 to 3.87. The mean scores are indications that possible means of acquiring marketing skills needed by Business Education lecturers in tertiary institutions in Ebonyi State.

Hypotheses

Hypothesis 1: There is no significant difference in the mean responses of male and female business education lecturers on the extent of managerial skills needed for sustainable development in Tertiary institutions in Ebonyi State.

Table 4: Summary of z-test result analysis of male and female business education lecturers in colleges of education in Ebonyi State on accounting skills needed as a tools in a changing world.

Variable	N	X	SD	DF	t-cal	t-crit	Decision
Male	36	3.36	**0.63**				Not
				107	1.49	1.96	Rejected
Female	14	**3.63**	**0.68**				

From table 4, the calculated Z-value of 1.49 is less than the Z-critical value of 1.96 at 38 degree of freedom and at 0.05 level of significance. This indicates that the null hypothesis will not be rejected. It therefore shows that the null hypothesis which states that the mean ratings of male and female Business education lecturers in Ebonyi state colleges of education do not differ significantly on the accounting skills needed for sustainable development.

Hypothesis 2: There is no significant difference in the mean responses of years of experience business education lecturers on the extent of accounting skills needed for impartation of sustainable development in Tertiary institutions in Ebonyi State.

Table 5: Summary of z-test result analysis of business educators in tertiary institutions in Ebonyi State on accounting skills needed as a tools in a changing world.

Variable	N	X	SD	DF	Z.cal	Z.crit	Decision
1-5 yrs	36	3.42	0.63				Not
		3		38	1.29	1.96	Rejected
10-20 yrs	14	**3.53**	**0.78**				

From table 5, the calculated Z-value of 1.29 is less than the Z-critical value of 1.96 at 38 degrees of freedom and at 0.05 level of significance. This indicates that the null hypothesis will not be rejected. It therefore shows that the null hypothesis which states that the mean ratings of years of experience Business education lecturers in Ebonyi state colleges of education do not differ significantly on the accounting skills needed for sustainable development.

Hypothesis 3: There is no significant difference in the mean responses of male and female students of business education on the extent of marketing skills needed for sustainable development in Tertiary institutions in Ebonyi State.

Table 6: Summary of t-test result analysis of male and female business education lecturers in colleges of education in Ebonyi State on the use of marketing skills needed for sustainable development.

Variable	N	X	SD	DF	Z.cal	Z.crit	Decision
Male	36	4.23	0.78				Not
				38	1.60	1.96	Rejected
Female	14	3.99	0.64				

From table 6, the calculated Z-value of 1.60 at degree of freedom of 107 and at 0.05 level of significance is lower than the critical value of 1.96. This indicates that the null hypothesis will not be rejected. It therefore shows that the null hypothesis which states that the mean ratings of male and female Business educators in tertiary institutions in Ebonyi State do not differ significantly on the marketing skills needed as a tools in a changing world in colleges of education will be upheld.

Discussion of Findings

The findings in research question one showed perceived managerial skills needed by Business Education lecturers for impartation of sustainable development in in Ebonyi state. The results from the study showed that all the items had the ratings between 3.41 to 3.67 which were above 2.5 the benchmark for acceptance. This was in line with Usoro (2016) sees managerial skills as a process by which the productive potentials of the company is used to satisfy individual and social needs of all kinds. Therefore, He further concluded that present of managerial skill will enable the business education lecturers to exhibit strategies that will improve productivity of young ones in order to promote sustainable development. The result in Table 4 revealed that male business education lecturer in colleges of education did not differ significantly from female business education in colleges of education on the managerial skills needed for sustainable development. This means that the gender does not affect the entrepreneurship education as a toolfor sustainable development in Ebonyi state.

Findings of the study in the research question two agreed that there are accounting skills needed by business education lecturers in the tertiary institutions in Ebonyi State with mean ratings ranged from 2.71 to 3.73 will help in promoting sustainable development. This agreed with the views of Obunadike (2015); Ezeani, Ifeonye, Metalu and Ezemoyih (2012) that business education lecturers should have knowledge of accounts, knowledge of costing, ability to interpret financial statements, ability to acquire the skill of preparing financial statements, ability to determine net profit and ability to know source of funds are some of the basic skills in delivery of business education in tertiary institutions in Ebonyi State. Similarly, Akpotowoh, Watchman and Ogeibiri (2016) also argued that this situation would be necessary to produce competent personnel that are useful for unemployment eradication and sustainable development.

The result in Table 5 revealed that business education lecturer in rural area did not differ significantly from business educators in urban area on the accounting skills needed by Business education lecturer for sustainable development. This means that the institution type does not affect the entrepreneurship education for sustainable development in Ebonyi state. The findings of the study on research question three also agreed that there marketing skills needed by business education lecturers in tertiary institutions in Ebonyi State with mostly mean scores ranged from 3.48 to 3.87 would help in promoting sustainable development. This is in line with the findings of Idris and Mbudai (2016) who asserted that the marketing skills for the effective delivery of business education would help in promoting marketing skill for sustainable development.

Results in Table 6, revealed that male and female business education lecturers in colleges of education did not differ significantly on the process of apply marketing skills needed by business education lecturers in tertiary institutions in Ebonyi State essentials, such as Knowledge of seasonal fluctuation of goods, ability to determine current trends in sales of product, familiarity with various aspects of sales and salesmanship and many more.

Conclusion

As far as the formal sector is concerned, the average products of Nigeria educational programme are basically unemployable because they lack the skills needed by employers of labour. This situation has resulted in the ever increasing army of unemployed youths on the streets of our urban areas and villages with the consequent rise in crime waive in our society today. A situation like this does not create room for sustainable development in any society. In Ebonyi state and Nigeria in general, entrepreneurship education is a veritable tool for bridging the unemployment gap. This is because business education equips youth and adults with relevant skills and competencies that enable them contribute meaningfully to the sustainable economic development of their areas as competent employees, entrepreneurs, employers, producers and informed consumers of goods and services.

Recommendations

1. Business Educators should teach students various business managerial methods which will enable them to start profitable businesses from the scratch
2. Business educators should equipped students with modern accounting skills for preparing financial statements of accounts, this while enable them to have basic financial literacy knowledge for business development
3. Qualified and competent Business Educators should be employed to handle the teaching of marketing skills in tertiary institution.

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SUB-THEME 8
TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING (TVET) AND ENTREPRENEURSHIP EDUCATION FOR AFRICA'S ECONOMIC TRANSFORMATION

UTILIZATION OF DIGITAL MARKETING TOOLS FOR EMPLOYABILITY SKILLS AMONG BUSINESS EDUCATION UNDERGRADUATES IN PUBLIC UNIVERSITIES IN KWARA STATE, NIGERIA

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Abstract

This study examined the utilization of digital marketing tools for employability skills among business education undergraduates in public universities in Kwara State, Nigeria. The study specifically focused on the influence of content marketing tools, and paid advertisement platforms on students' employability skills. A descriptive survey research design was adopted, and data were collected from 285 business education undergraduates selected using appropriate sampling techniques. A structured questionnaire was used as the instrument for data collection, and data were analyzed using descriptive statistics, Pearson Product-Moment Correlation (r), and Analysis of Variance (ANOVA). The findings revealed a significant positive relationship between the utilization of content marketing tools and the employability skills of business education undergraduates. Results further showed that paid advertisement platforms was moderately utilized and contributed positively to employability skills, though access and formal training varied across institutions. Significant differences were found in the utilization of paid advertisement tools based on school type, while no significant difference was observed in the influence of content marketing tools on employability across institutions. Overall, the study established that digital marketing tool utilization plays a crucial role in enhancing employability-related competencies such as digital literacy, communication skills, creativity, and job readiness. The study concluded that effective integration of digital marketing tools into business education curricula is essential for improving graduate employability. It is therefore recommended that curriculum enhancement, increased practical training, improved digital infrastructure, and stronger industry academic collaboration be implemented to equip students with relevant digital marketing skills for the modern labor market.

Key Words: Digital Marketing Tools, Employability Skills, Business Education

INTRODUCTION

In the current swiftly changing digital environment, digital marketing has emerged as a crucial instrument for enterprises globally. As dependence on the internet, social media platforms, and online marketing strategies increases, digital marketing has transformed organisational interactions with customers, augmented brand visibility, and stimulated sales. In the 21st century, digital marketing has become a revolutionary influence in the business environment. The emergence of the internet and the widespread use of digital devices have profoundly transformed the methods by which firms engage with customers, enhance brand interaction, and oversee client relationships. Digital marketing is characterised as a mechanism that provides real-time personalisation, predictive analytics, and seamless cross-channel integration. Platforms like Jasper and ChatGPT have become integral to content generation, allowing marketers to provide customised communications on a large scale. Simultaneously, sophisticated analytics platforms such as Tableau and Databox enable teams to make precise, data-driven decisions. The Adroitte (2025) report states that automation and personalisation are no longer optional; they are crucial for maintaining competitiveness in a saturated digital environment.

Digital marketing tools comprise a collection of methods and technology enabling firms to promote their products and services in the digital realm (Yevseitseva et al., 2022). This assortment includes content management systems, social media platforms, search engine optimisation (SEO), email marketing, and data analytics (Chaffey & Ellis-Chadwick, 2019). Digital marketing strategies emphasise the creation, distribution, and engagement with content across various digital media to target a certain audience (Ekoh-Nweke, 2024). These digital marketing technologies facilitate firms in

efficiently reaching their customers, acquiring useful insights, and adapting to shifts in consumer behaviour.

Fundamentally, digital marketing tools in 2025 emphasise intelligence, adaptability, and customer-centricity rather than mere execution. AI-driven chatbots, dynamic email sequences, and immersive social commerce platforms empower brands to cultivate more profound connections with their audiences. The Tech Thinker (2025) emphasises that the future of digital marketing is in the integration of creativity and technology to achieve genuine, quantifiable results.

Consequently, digital marketing has become essential to every contemporary corporate strategy. Digital marketing is an endeavour by marketers and businesses to provide their products directly to consumers using various social media platforms (Adiyono, et al., 2021). Financial Times (2021) characterised digital marketing as a segment of marketing that use the internet and various online digital technologies, including desktop computers, mobile phones (SMS and MMS), and other digital media and platforms, to promote products and services.

Digital marketing encompasses any marketing and promotional endeavours executed through electronic devices or the internet. It is a comprehensive strategy aimed at promoting products, services, or brands across various digita l platforms and technology. Digital marketing utilises the internet, mobile devices, social media, search engines, emails, and other digital platforms to interact with target audiences, engage them, and stimulate desired activities, such as purchases or enquiries (Lee & Lim, 2021). It pertains to the utilisation of digital channels, platforms, and technology to market items, services, or brands to consumers. This methodology includes various online strategies designed to attract and engage prospective customers, increase website traffic, generate leads, and ultimately improve sales and revenue (Isibor et al., 2025) in the evaluation of effective content marketing tactics that elevate online engagement and sales for digital brands. A primary advantage of digital marketing is its capacity to target particular demographics or audience segments with tailored messaging (Eze et al., 2022). This is accomplished by data analytics, user behaviour monitoring, and segmentation techniques.

Digital marketing has progressed through successive changes in customer behaviour, platform functionalities, and algorithmic regulation. This document presents a synthesised review of two principal kinds of tools: content marketing tools, and paid advertisement platforms, emphasising practical implementations, and emerging research trajectories.

Content marketing has evolved into a strategic discipline that encompasses development, distribution, and analytics. A systematic analysis spanning two decades of research indicates that although content marketing has become essential, academic comprehension is still disjointed, characterised by inconsistent definitions and measuring systems (Ladha et al., 2024). Recent studies advocate for standardised evaluation methodologies and emphasise the significance of tools in coordinating editorial calendars, SEO-driven content briefs, and performance dashboards, according to APA PsycNet. Recent research indicates the integration of content marketing strategies with digital transformation objectives, wherein solutions enable personalisation, multichannel distribution, and return on investment tracking. Consequently, content marketing solutions serve as both operational instruments and facilitators of strategy alignment in the digital age.

Paid advertising systems, such as Google advertisements and Meta Ads, are essential for performance marketing, providing intent-driven targeting (search PPC) and audience-based targeting (social advertisements). A thorough analysis of advertising platforms contrasts Google Ads with Meta Ads, highlighting disparities in interest targeting, projected reach, and optimisation techniques (Ambikar et al., 2023). Systematic assessments of in-app advertising underscore the increasing significance of mobile-first ad formats and the necessity for stringent measurement frameworks (Maddodi & Upadhyaya, 2024). Research indicates that advertisement-specific attitudes, including relevance and perceived intrusiveness, directly affect purchase intention, highlighting the significance of creative quality and audience alignment. Paid platforms function as both catalysts for employable performance and experimental arenas for assessing customer reactions.

Oluwalola (2019) characterised employability as a complex concept related to an individual's capacity to secure fulfilling employment and the human resources necessary for fulfilling operational duties to function effectively in society. Alongside technical expertise, employability is essential for graduates entering the workforce. Akinbode et al. (2020) define employability as the presence of relevant knowledge, skills, and attributes by individuals that enable them to secure and retain meaningful job. Employability therefore, encompasses the personal attributes and beliefs that empower individuals to succeed in any professional environment.

Asefer and Abidin (2021) assert that employability comprises a collection of accomplishments, insights, and personal qualities that enhance graduates' likelihood of securing employment and

achieving success in their selected careers, thereby benefiting themselves, the workforce, the community, and the economy. Academic literature enhances students' employability by equipping them to adapt to the ever-evolving job environment. The distinctions in preferred work transition alternatives are founded on the requisite abilities and the development of techniques for finding opportunities (Jadim, 2021).

Business education is a skill-based discipline studied at universities. It has emerged as a fundamental vocational education course capable of imparting diverse employable and entrepreneurial skills, together with the requisite mindset and knowledge for the 21st century. Ordu and Abdulkarim (2020) assert that recipients of business education have the opportunity to acquire skills pertinent to business, including office technology and administration, marketing or distribution, accounting, and entrepreneurship, when adequately instructed. According to Umoru (2020), the acquisition of vocational business education skills and general business abilities would augment students' capacity to integrate into various jobs within the business sector. Consequently, obtaining skills through business education courses is regarded as essential for empowering recipients to achieve self-employment.

Aluko (2024) defines business education as a course of study that can offer the skills and abilities necessary for any nation's economic development and growth, which must be managed successfully to reach its goals. Abang (2020) asserts that business education programs aim to furnish students with the skills and information necessary for success in the corporate sector. Recent years have witnessed a significant transformation in the competencies anticipated from business graduates, with digital marketing technologies becoming as pivotal in the contemporary company landscape. This transition necessitates the incorporation of digital marketing instruments into business education programs. Universities in Nigeria, particularly in Kwara State, must modify their educational programs to address the increasing demand for digital marketing proficiency in the labour market.

Business education is perceived as a catalyst for enhancing job development and fostering self-employment among individuals. Thus, a gainfully employed graduate will contribute to the enhancement of a nation's Gross Domestic Product per capita, with business education facilitating employment opportunities or fostering self-employment among individuals.

By augmenting business school students' expertise in digital marketing, institutions can enable them to address the changing demands of businesses and significantly contribute to organisational development. By integrating theoretical knowledge, practical experience, and hands-on training, students can cultivate the skills and competences essential for success in various professions within the digital marketing field. The incorporation of digital marketing into the curriculum of higher education can promote creativity, entrepreneurship, and lifelong learning among students, equipping them for success in a swiftly evolving corporate environment (Strauss & Frost, 2017). Similarly, Chaffey and Ellis-Chadwick (2019) clearly illustrated how proficiency in digital marketing tools can augment the employability prospects of business education students by addressing industry demands, fostering versatility and adaptability, improving communication and branding skills, facilitating data-driven decision-making, and creating entrepreneurial opportunities, among other benefits.

There is an increasing demand for individuals adept at navigating the intricacies of digital marketing platforms, tools, and strategies, as firms dedicate a greater portion of their marketing budgets to digital channels. Students of business school equipped with digital marketing tools are more adept at fulfilling industry requirements and enhancing their organisations' success from the outset. Digital marketing comprises various disciplines, such as search engine optimisation (SEO), social media marketing, content marketing, email marketing, and data analytics. Business education students that attain expertise in these domains develop a varied skill set applicable across several industries and business sectors.

Statement of the Problem

Business Education aims to cultivate graduates equipped with the essential skills, information, and experiences necessary for effective participation in the business realm. This can be accomplished through proficient and seasoned instructors, utilisation of suitable teaching and learning resources, effective pedagogical methods, tactics, and a skill-oriented curriculum. This proficient program annually produces graduates who remain unemployed (Ofor-Douglas, 2025). This is ascribed to inadequate employability among these graduates. The employment of digital marketing tools pertains to a collection of competencies aimed at equipping students to become informed and adept as they assume their roles as consumers, employees, and responsible citizens, while also contributing to workforce development.

Consequently, many business education undergraduates, anticipated to be productive and contributive to societal economic advancement, are observed to be unemployed on the streets, while a minority who are employed demonstrate ineffectiveness and inefficiency in fulfilling their duties and responsibilities, hindering their professional advancement. Undergraduates in business education at

public universities in Kwara State, Nigeria, are anticipated to develop a variety of employability skills, particularly in digital marketing, to improve their prospects of obtaining significant job post-graduation. Despite the increasing significance of these tools, less empirical study has been undertaken to evaluate the extent of digital marketing tools usage for employability skills among these undergraduates. This study aims to address this gap by examining the utilisation of digital marketing technologies by business education undergraduates in Kwara State to enhance their employability abilities.

Purpose of the Study

The primary objective of this study investigated the use of digital marketing tools for enhancing employability skills among business education undergraduates in public universities in Kwara State. The study's explicit objectives were to:

1 Assess the degree to which business education undergraduates employ content marketing tools in public universities in Kwara State.

2. Determine the degree to which undergraduate business education programs employ sponsored advertising platforms in public universities in Kwara State.

Research Questions:

This study was guided by the following research questions:

1. What is the degree of utilisation of content marketing technologies in relation to the employability skills of business education undergraduates at public universities in Kwara State?
2. What is the impact of paid advertisement platforms on the employability of business education undergraduates in public universities in Kwara State?

Research Hypotheses

The following null hypotheses were tested at 0.05 level of significance.

$H_0$1: There is no significant difference between the responses of federal and state universities undergraduates to the extent to which basic content marketing tools utilization influence employability

$H_0$2: There is no significant difference between the responses of public and state universities undergraduates to the extent to which paid advertisement platform utilization for employability.

Methodology

A descriptive survey research design was adopted for this study. The descriptive survey design was preferred because it largely focuses on vital facts, beliefs, opinions, demographic information, attitudes, motives and behaviours of respondents giving responses to the research instrument (Cresswell & Cresswell 2023). Data were collected from 285 business education undergraduates selected using appropriate sampling techniques. A questionnaire titled “Utilization of Digital Marketing Tools for Employability Skills among Business Education Undergraduates Questionnaire (UDMTESBEUQ)” designed by the researchers was used to collect data from the respondents. To ensure the face and content validities of the questionnaire, the researcher submitted the draft of it to three (3) experts in the Departments of Business Education, Kwara State University, Malete, Business Education Units at University of Ilorin and Al-Hikmah University, Ilorin. All the validators were not less than the rank of senior lecturer. Items in the questionnaire were reviewed to ascertain that the statements in the instrument actually covered the contents that they were expected to measure. The experts’ constructive criticisms and suggestions were incorporated to improve and prepare the final version of the instrument. The Cronbach Alpha Method was used to determine the reliability of the instrument. To ascertain the internal consistency of the data instruments, a pilot test was conducted whereby copies of the instrument were administered to 20 business education students who were outside the population of the study. The Cronbach Alpha Method was used to determine the reliability of the instrument and the test yielded a correlation coefficient of 0.75. Data collected from questionnaire administered were analysed using descriptive statistics (mean and standard deviation). The decision rule for the research questions was that any question item with a mean of 2.50 and above was rated “Utilized or Agreed” while question items with a mean of 2.49 and below were rated “Not Utilized or Disagreed”. Analysis of Variance (ANOVA) was used to test the null hypotheses at 0.05 level of significance. Decision rule for analyzing hypotheses was: reject H_o when the observed P-value was less than or equal to the value of 0.05 alpha level of significance and do not reject H_o when the observed P-value was greater than the value of 0.05 alpha level of significance.

Results and Discussion

Research Question 1:

What is the extent to which content marketing tools utilization among business education undergraduates' employability skills in public universities in Kwara State?

Table 1: *Respondents mean ratings on their extent of utilisation of Content marketing tools*

S/N	Item Statements	Mean	SD	Remark
1.	I use content marketing tools such as Canva, Grammarly, and WordPress to create professional content.	2.96	0.93	HE
2.	I use content marketing tools to improve my communication and creativity skills.	2.88	1.00	HE
3.	I use content marketing tools to enhance my problem-solving abilities.	2.81	1.03	HE
4.	I use content marketing tools to increase my chances of securing employment after graduation.	3.03	0.91	VHE
5.	I use content marketing tools such as HubSpot, BuzzSumo, and Hootsuite for creating or managing digital content.	2.80	1.07	HE
6.	I use content marketing tools as part of my academic coursework and assignments.	2.90	0.99	HE
7.	I use content marketing tools to improve my understanding of digital marketing.	2.86	1.03	HE
8.	I use content marketing tools to develop skills that can improve my employability after graduation.	2.97	0.96	HE
9.	I feel confident using content marketing tools when performing tasks in a professional setting.	2.93	0.97	HE

Source: Field Work (2026)

The results presented in Table 1 indicate that students exhibit a generally positive and high level utilization of content marketing tools, with mean scores ranging from 2.80 to 3.03 on a 4-point scale. The highest mean score (M = 3.03) was recorded for the statement that knowledge of content marketing increases students' chances of securing employment, suggesting strong recognition of the employability value attached to these digital skills. Similarly, items related to the use of tools such as Canva, Grammarly, and WordPress (M = 2.96), as well as the perceived role of content marketing tools in improving communication and creativity (M = 2.88), show that many students actively engage on a high level with these platforms for academic and professional purposes. The findings indicate that students not only use content marketing tools but also believe that such tools enhance their digital competence, problem-solving skills, and employability prospects. While the utilization level is encouraging, the presence of notable percentages in the "Disagree" and "Strongly Disagree" categories across some items suggests that some students may still lack adequate exposure or confidence in using advanced tools such as HubSpot and Hootsuite (M = 2.80). Therefore, although the general trend reflects positive adoption of content marketing tools, there remains a need for strengthened instructional support and practical training to promote more comprehensive and consistent usage among all learners..

Research Question 4:

What is the extent to which paid advertisement platforms among business education undergraduates' employability in public universities in Kwara State?

Table 2: *Paid advertisement platform among business education undergraduates*

S/N	Item Statements	Mean	SD	Remark
1.	I use paid advertisement platforms such as Google Ads and Facebook Ads to improve my knowledge of online advertising.	2.84	0.94	HE
2.	I use paid advertisement platforms to promote a product, service, business idea, or personal initiative.	2.80	0.99	HE
3.	I have competence in using paid advertisement platforms to enhance my future job opportunities.	2.89	0.94	HE
4.	I use paid advertisement platforms when carrying out academic projects or personal initiatives.	2.91	0.99	HE
5.	I have received formal or informal training on the use of paid advertisement platforms.	2.89	0.97	HE
6.	I use paid advertisement platforms to develop practical skills that can be applied in the workplace.	2.80	1.01	HE

7.	I use paid advertisement platforms to improve my knowledge and contribute to my career prospects.	2.86	0.99	HE
8.	I use paid advertisement platforms to develop skills that can give me an advantage in the job market after graduation.	2.89	0.95	HE

Source: Field Work (2026)

The results in Table 2 revealed a generally moderate level of engagement with paid advertisement platforms among students, with mean scores ranging from 2.80 to 2.91. Statements relating to knowledge of platforms such as Google Ads and Facebook Ads, as well as their use in academic or personal initiatives, recorded relatively higher means (M = 2.84–2.91). This suggests that while a considerable proportion of students are familiar with paid advertisement tools and have applied them in various contexts, their usage remains somewhat limited and not fully integrated into routine academic or professional practices. The moderate percentages of respondents who either disagreed or strongly disagreed further indicate that experience and exposure vary significantly across the student population.

Hypotheses Testing

$H_0$1: There is no significant difference between the responses of federal and state universities' undergraduates on the extent to which basic content marketing tools utilization influences employability

Table 3: *Analysis of Variance (ANOVA) showing a significant difference between utilization of content marketing tools and the employability Skills of business education undergraduates based on school type.*

Variables	Source of Variation	Sum of Squares	Df	Mean Square	F	Sig.
Content Marketing Tools	Between Groups	3.753	1	3.753	0.266	0.607
	Within Groups	2,158.286	283	14.106		
	Total	2,162.039	285			
Employability Skills	Between Groups	0.035	1	0.035	0.596	0.441
	Within Groups	8.907	283	0.058		
	Total	8.942	285			

Source: Field Work (2025)

The results of the Analysis of Variance (ANOVA) in Table 3 showed no significant difference between federal and state university undergraduates in their responses on the extent to which the utilization of content marketing tools influences employability. For the first variable (Content Marketing Tools), the analysis yielded F= 0.266, with a significance value of p = 0.607, which is greater than the 0.05 alpha level. This indicates that students from both school types do not differ significantly in their perception of how content marketing tools contribute to employability development. Similarly, for the second variable (Employability Skills), the result showed F= 0.596, with a corresponding p-value of 0.441, also exceeding the 0.05 threshold. This further confirms that school type (federal vs. state university) does not significantly influence students' views regarding the role of content marketing tools in enhancing employability skills. Based on these outcomes, the null hypothesis, which states that there is no signi ficant difference between the responses of federal and state university undergraduates, is therefore accepted.

Table 4: *Analysis of Variance (ANOVA) showing a significant difference between utilization of paid advertisement platforms and the employability Skills of business education undergraduates based on school type.*

Variables	Source of Variation	Sum of Squares	Df	Mean Square	F	Sig.
Paid Advertisement Platforms	Between Groups	95.783	3	31.928	52.292	.000
	Within Groups	150.201	246	0.611		
	Total	245.984	249			
Employability Skills	Between Groups	178.276	3	59.425	—	—
	Within Groups	0.000	246	0.000		
	Total	178.276	249			

Source: Field Work (2026)

The ANOVA result for paid advertisement platforms in Table 4, showed a significant difference between public and state university undergraduates regarding the extent to which they utilize paid advertisement platforms for employability. The analysis for "Paid Advertisement Platforms" produced F(3,246) = 52.292 with a significance value of p = .000, which is far below the 0.05 level. This indicated

that the type of institution has a strong influence on how students perceive and use paid advertisement platforms in building employability skills. Based on the significant results obtained for the utilization of paid advertisement platforms, the null hypothesis, which states that *t*here is no significant difference between the responses of public and state university undergraduates, is rejected.

Discussion of Findings

The survey results on content marketing tools indicated generally favourable scores (many items = 2.8–3.0 on a 4-point scale), reflecting a high extent use for employability. This aligns with the research of Egajivwie & Uge (2024), which identifies content-creation tools (e.g., Canva, WordPress, Grammarly) as effective resources that students utilise to develop portfolios, enhance communication, and showcase applied digital competencies to prospective employers. The study revealed that students with content generation and management skills enhance their employability in both marketing and non-marketing positions.

The result of the findings of research question two, on utilisation of paid advertisement platforms showed that all the items were rated high extent. however, with a grand mean of This tendency aligns with findings from another study on DMI (2025), which emphasised that companies prioritise paid advertising skills (PPC, ad campaign setup, and analytics) but that these are frequently under-represented in university curricula compared to more accessible tools (social media or basic content generation). The literature underscores that formal education and practical experience in paid advertising platforms are essential for students to convert their consumer-level familiarity into professional proficiency.

The collective analysis of content marketing, and paid advertising indicates diverse exposure: students are acquainted with and use various tools, although the proficiency level (formal instruction, habitual application, quantifiable results) differs significantly. Numerous local studies on ICT/e-learning in Ilorin and Kwara State indicate a scarcity of resources and inconsistent support for teachers and training, which likely adds to the disparities in skill acquisition noted in this study. The contextual access issues diminish the effectiveness of tool usage in translating into employability improvements (Egajivwie & Uge, 2024). The findings indicate a necessity to incorporate applied digital marketing modules (SEO, analytics, advertising platforms, content management, social media strategy) into business education curricula. Literature indicates that practical, project-based learning, live campaigns, internships, and portfolio assessments are good methods for cultivating transferable digital skills sought by employers. Incorporating experiential learning will facilitate the connection between autonomous tool utilisation and verifiable proficiency.

The substantial correlation between tool utilisation and employability abilities highlights the necessity for institutional expenditures in infrastructure (software access, laboratory facilities), educator training, and industry collaborations. This corresponds with a comparative study by Egajivwie & Uge (2024), which posited that when universities collaborate with industry (or vendors) to offer certification opportunities (e.g., Google Ads/Analytics, HubSpot Academy), student employability outcomes enhance due to learners acquiring recognised credentials and practical experience.

Conclusion

This study has demonstrated that the use of digital technologies, such as content marketing, and paid advertising platforms, significantly enhance the employability skills of business education undergraduates in Kwara State. Students that actively utilise these technologies generally report increased proficiency in digital literacy, content creation, networking, and practical marketing abilities, all of which are essential for improving job preparedness. Although exposure and skill levels differ among tool kinds and institutions, the overall results indicate that including digital tool usage into the curriculum might significantly enhance students' employability chances. Consequently, digital literacy is a crucial factor influencing employability in contemporary corporate and educational environments.

Recommendations

This study proposed the following recommendations:

1. Incorporation of Digital Marketing Instruments into the Curriculum: Business education departments in public institutions should include practical training in digital marketing tools into their curricula to improve students' employability abilities.
2. Investment in Sufficient Digital Infrastructure: Universities must provide resources towards digital laboratories, high-speed internet, and access to advanced digital marketing software to enable business education students to proficiently practise and use tools pertinent to contemporary workplaces.

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ENHANCING EMPLOYABILITY IN THE 21st CENTURY THROUGH MODULAR DIGITAL SKILL ACQUISITION AMONG BUSINESS EDUCATION GRADUATES IN OYO STATE.

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Abstract

Problem with employability among business education graduates in Oyo state is attributed to the lack of digital skills needed for the employability in the 21st Century. The study compared the effectiveness of targeted modular digital skills training with the enhancement of the employability of Oyo State University graduates with the digital skills of the 21st century in Oyo state, Nigeria. The research was based on a descriptive design incorporating both qualitative and quantitative methodologies to measure skill gains, relevance, satisfaction, and employability benefits, and to gain contextual information regarding the participants' experiences. A total of 3,400 questionnaires were randomly distributed and of those, 3,028 unemployed and underemployed graduates (1414 males and 1614 females) were purposively selected, based on the following selection criteria: having a recognized higher education qualification; being committed to completing all modules; limited or intermediate prior proficiency. The training consisted of four practical modules: Google Workspace, LinkedIn Professional Development, Canva Creative Design and CV Writing with Digital Tools. Results showed statistically significant improvement in all modules ($p < .001$) and large effect sizes (Cohen's $d = 2.88$-4.91) of the results indicated that the improvements were also statistically significant and practically important. Google Workspace and CV Writing had the top post training mean scores, followed by Canva which was still effective but not as high as the other two. The analysis of data revealed higher levels of confidence in applying for jobs, better readiness for the workplace and very high satisfaction with the relevance of the training undertaken. ANOVA results however showed that only 1.6% of the variance in scores was due to training type, indicating rather small differences between the modules. Targeted recommendations to the Canva module include the addition of more practical activities, the revision of pacing and the addition of contextual design tasks, whilst the overall modular approach is maintained as this is proven to be effective. The findings of this study further supports the possibility of structured, practice-oriented digital skills intervention as a scalable approach to tackle Nigeria's problem of graduate employability.
Keywords: Digital skills, Modular, Employability, Underemployment, Employability, Training, Graduate.

Introduction

Despite the rapid growth of tertiary education and the increasing number of graduates that are joining the labour market in Nigeria annually, the problem of unemployment among the tertiary school graduates is still in the system. It's a problem that is becoming more common with classroom learning not aligning with the skills needed for today's jobs. Employers are looking for graduates who are digitally literate, adaptable, innovative and can effectively use technology to complete workplace tasks. Digital competence is therefore increasingly a part of graduate employability, due to the evolution of employment. In addition to computer literacy, the graduates are increasingly expected to have digital productivity, communication, professional networking, creative content development, information management and digital personal branding competencies.

Digital competence is especially relevant to the field of Business Education, as the programme is geared towards preparing people for work and entrepreneurial endeavours in a business and office setting. Modern offices have shifted away from traditional paper systems to technology-driven systems that rely on digital records, cloud collaboration, electronic communication, online marketing, virtual networking, presentations, digital, and information automation. Therefore, the emphasis is on equipping Business Education graduates with the essential digital skills that will enable them to work effectively in digital environments. Proficiency with productivity tools like Google workspace, professional networking

websites like LinkedIn, creative design apps like Canva, and digital tools for crafting professional resumes and cover letters can equip graduates with skills that are directly relevant to successful careers and entrepreneurial ventures.

But, there are some systemic challenges that limit the acquisition of such relevant digital skills in Nigeria. These include poor information and communication technology infrastructure, restricted Internet connectivity, lack of funding, out-dated curriculum, lack of digital skills of teachers and poor integration of new technologies in teaching and learning. These challenges can reduce the prospects for the digital competencies of graduates to be developed in a hands-on way before they enter the workforce. As a result, some graduates might have academically recognized qualifications, but not adequate digital skills to get and hold jobs, to be successful in their roles, to adjust to new requirements of the workplace and to remain competitive in a technologically sophisticated job market.

The situation is relevant in Oyo State where tertiary institutions churn out large numbers of graduates who vie for jobs in the public and private sectors, in educational institutions, financial institutions, businesses and other sectors. Business Education graduates in the State are expected to be competent in both theoretical and practical aspects of the office and management, communication, entrepreneurship and digital skills. Research carried out on Business Education in Oyo state has shown that digital skills are more relevant in today's world and necessary for employment. Adewole and Adegbenjo (2022), for instance, reported that digital skills were highly required by Business Education students for employment in a changing world while Adewole and Adegboye (2019) emphasised the importance of emerging competencies for Business Education students' relevance in the electronic environment. These findings suggest the need to deliberately acquire continuous digital skills among Business Education graduates in Oyo State.

One approach to addressing the digital employability gap is modular digital skills acquisition which involves organically organised training into specific competency areas to allow learners to acquire, demonstrate and practise individual skills. In contrast to general computer literacy programmes, modular training can be targeted at the skills in a particular digital tool and directly link to the current needs of the workplace and job market. Four relevant areas are especially relevant for Business Education graduates: Google workspace productivity, LinkedIn professional development, Canva creative design, and CV writing with digital tools. These modules cover complementary aspects of employability and offer the graduate practical skills that can be readily used in the workplace or in the employment.

Google workspace training can improve graduates skills in creating and editing business documents, researching and structuring information, creating presentations, organising digital files and collaborating on work-related projects, while LinkedIn professional development can help them to create professional online presence, communicate their qualifications to potential employers, build professional networks and find job opportunities. Canva creative design can build graduates' professional digital design, promotional material creation, presentation, social media content creation, and other visual communication product skills. Likewise, digital CV writing can help them learn to create professional CVs, emphasize their relevant skills and competencies to potential employers, and adjust their CVs to fit the needs of specific job opportunities, and engage in digital hiring processes successfully.

Previous research on digital skills and Business Education provides support for the relevance of these competencies. The study by Okute, Enang and Etoma (2022) also stressed the importance of acquiring digital skills in Business Education students to improve their global competitiveness, whereas Ekoh-Nweke and Ikpeama (2023) observed that digitalisation had an impact on business education students' skills acquisition and concluded that digital competencies are vital in today's world. Okonkwo and Agwazie (2023) also noted the relevance of digital technologies to improve students' acquisition of employability skills in Business Education. The findings from these studies suggest that the importance of competency in using digital tools is growing in the preparation of students and graduates in Business Education.

Despite these efforts, there has been little focus on the interventions or on studies already undertaken on digital literacy, on which skills are needed and on the link between digital skills and employability. Empirical evidence of the effectiveness of structured, modular and practice-based digital skills training in the use of specific digital tools like Google workspace, LinkedIn, Canva and digital CV-writing applications among Business Education graduates in Oyo State is relatively scanty. Specifically, it is important to have evidence of effectiveness to determine if training in these specific areas can lead to measurable results in graduates' employability.

The gap is significant, because although having an academic qualification is a prerequisite for employment, graduates need to acquire practical skills, to communicate their skills and capabilities, to build professional networks, to produce relevant material and to present themselves appropriately

during the hiring process. A well-designed modular training system may thus offer a viable way to close the gap between academic training and the demand of the labour market. In view of the above, this study focused on the study of the enhancement of employability in the 21st century for Business Education graduates in Oyo State using a modular approach in digital skill acquisition. This study was focused on Google workspace, LinkedIn professional development, Canva creative design, and CV writing with digital tools as modules that can be used to enhance the employability of Business Education graduates in the State.

Statement of the Problem

The 21st century work environment is shaped by technology and the digital business world; employers are seeking employees to be knowledgeable and proficient in communicating, collaborating, creating, managing, marketing and working with technology in the digital business world. Business Education being a career oriented course is expected to equip students with the knowledge and skill that is relevant to the career and which will be useful for them to participate in gainful employment and self-employment. But the demand for digital skills has raised doubts about the employability of the Business Education graduates in a technologically advanced workplace.

Although Business Education is career oriented, there are so many of its graduates that cannot get a job in Oyo State. Some graduates lack little or no digital skills needed to be able to be effective in the 21st century for their employment. Know how to use productivity tools, networks, digital creativity tools, online job searching, and digital CV design skills are becoming more essential to boost employability. A mismatch between graduate digital skills and those needed by employers is likely to diminish graduates' employability, confidence and preparedness to engage in the formal business world in the modern era.

Worse, employers today are moving into the digital world in every aspect of the working process, from recruitment to collaboration, marketing and business in general. Employers are increasingly looking for applicants to have digital competency, as demonstrated in their CV, applications and digital presence, so increasing the demand for targeted digital skills training for job seekers. The roles of Modular and Targeted Digital Skills acquisition in improving employability of Business Education graduates in Oyo State however, is not yet studied. While it is possible to identify some digital skills acquisition modules, and to indicate that they can address the needs of Business Education graduates, it is not yet clear if these modules can help graduates to become more employable.

It is noted that there is a need to explore the effect of the acquisition of individual modules of digital skills like Google Workspace, LinkedIn Professional Development, Canva Creative Design and CV Writing with digital tools on the practical digital skills, confidence, work readiness and employability of Oyo State Business Education graduates. Also there is a need to establish whether there are differences in the effectiveness of different digital skills modules and whether graduates feel targeted digital skills training is relevant to their employability needs.

The problem of the study is the gap between the digital skills of Business Education graduates and the desired digital skills for improved employment in the 21st century in Oyo State. If no greater and targeted training in digital Business Education skills occurs, unemployed and underemployed Business Education graduates will continue to face problems with employability and need to adapt to the more digital business environment. This study, therefore, looks at the role skills acquisition can play in improving the employability of Business Education graduates in Oyo State in this regard.

Objectives of the Study

The main objective of the study is to examine the extent to which modular digital skill acquisition enhances the employability of Business Education graduates in Oyo State. Specifically, the study seeks to:

1. Determine the effect of Google Workspace digital skills training on the employability of Business Education graduates in Oyo State.
2. Examine the effect of LinkedIn professional development skills training on the employability of Business Education graduates in Oyo State.
3. Determine the effect of Canva creative design skills training on the employability of Business Education graduates in Oyo State.
4. Examine the effect of CV writing with digital tools training on the employability of Business Education graduates in Oyo State.

Research Questions

The following research questions were formulated to guide the study:

1. What is the effect of Google Workspace digital skills training on the employability of Business Education graduates in Oyo State?

2. What is the effect of LinkedIn professional development skills training on the employability of Business Education graduates in Oyo State?
3. What is the effect of Canva creative design skills training on the employability of Business Education graduates in Oyo State?
4. What is the effect of CV writing with digital tools training on the employability of Business Education graduates in Oyo State?

Research Hypotheses

The following null hypotheses will be tested at the **0.05 level of significance**:

1. **H_{01}:** There is no significant effect of Google Workspace digital skills training on the employability of Business Education graduates in Oyo State.
2. **H_{02}:** There is no significant effect of LinkedIn professional development skills training on the employability of Business Education graduates in Oyo State.
3. **H_{03}:** There is no significant effect of Canva creative design skills training on the employability of Business Education graduates in Oyo State.
4. **H_{04}:** There is no significant effect of CV writing with digital tools training on the employability of Business Education graduates in Oyo State.

Methodology

In the study, the researchers took a descriptive research design to explore the role of the acquisition of digital skills in the employability of the graduates of Business Education in the Modular form. The population used was 3,028 Business Education graduates who were either unemployed or underemployed in Oyo State comprising 1,414 male and 1,614 female. The subjects were selected purposefully using inclusion criteria, which included having a recognised higher education qualification, interest in and willingness to complete the digital skills modules and having limited or intermediate proficiencies in the chosen digital competencies. The researcher developed questionnaire titled as Modular Digital Skills and Employability Questionnaire (MDSEQ) was used to collect data. The instrument included questions about digital skills acquisition, workplace readiness, confidence in job applications and perceived benefits of workplaces. The items were designed on a four point likert scale from Strongly Agree to Strongly Disagree. Face and content validation was conducted by experts in the field of Business Education, digital skills and Measurement and Evaluation. To ensure that the results were not impeded by complexities of the study itself, a pilot test was carried out with a similar group of graduates who were not part of the main study. The instrument was made reliable by applying Cronbach's alpha coefficient and coefficient value of 0.70 and higher was accepted for internal consistency. Descriptive and inferential statistics were used to analyse the data. The research questions were answered using mean and standard deviation and the perceived effectiveness and relevance of each modular digital skill were determined. Where pre-training and post-training responses were available, paired-samples t-test was used to establish a pre-post difference, to see if there was any significant improvement after the digital skills were acquired. The data were analyzed using One-way Analysis of Variance (ANOVA) to find out if there were significant differences between four digital skills in the module (in terms of their contribution to graduate employability). For observed changes when appropriate, Cohen's d was used to calculate the magnitude of the change.

Results

Research Question 1: What is the effect of Google Workspace digital skills training on the employability of Business Education graduates in Oyo State?

S/N	Items	Mean	SD	Decision
1	Google Workspace training has improved students ability to create and edit professional documents.	3.15	0.36	Agreed
2	Google Docs skills have improved my ability to prepare workplace documents efficiently.	3.40	0.49	Agreed
3	Google Sheets training has improved my ability to organise and analyse workplace information.	3.41	0.67	Agreed
4	Google Slides training has improved my ability to prepare professional presentations.	3.20	0.40	Agreed
5	Google Drive training has improved my ability to store and organise digital files.	3.33	0.51	Agreed
6	Google Workspace has improved my ability to collaborate with others on digital projects.	3.32	0.50	Agreed
7	Google Workspace training has improved my confidence in performing digital workplace tasks.	3.38	0.49	Agreed

8	Google Workspace skills have increased my readiness for technology-driven workplaces.	3.50	0.68	Agreed
9	Google Workspace skills have improved my ability to perform administrative and office-related tasks.	3.68	0.83	Agreed
10	Google Workspace training has enhanced my overall employability as a Business Education graduate.	3.55	0.59	Agreed
	Grand Mean	**3.40**	**0.55**	Agreed

Source: Field Study, 2026

The findings in the table, which are empirical, confirm the positive impact of Google Workspace digital skills training on the employability of Business Education graduates. The respondents gave a mean of 3.40 and a standard deviation of 0.55 and a final decision of Agreed regarding the employability potential of the Google Workspace training. The study concluded that the Google Workspace digital skills training has been an effective intervention for the graduate to design and manage documents, organize and analyse information, prepare presentations, store data digitally, collaborate and administrative tasks in digital workspaces. Consequently, the overall finding is that, Google Workspace training is relevant and practical digital competence skills have the capacity to enhance employability skills of Business Education graduates in Oyo State.

Research Question 2: What is the effect of LinkedIn professional development skills training on the employability of Business Education graduates in Oyo State?

S/N	Questionnaire Items	Mean	SD	Decision
11	LinkedIn training has improved graduates ability to create a professional online profile.	3.33	0.57	Agreed
12	LinkedIn training has improved business education graduates ability to present my qualifications and skills to potential employers.	3.53	1.11	Agreed
13	LinkedIn has increased my awareness of available employment opportunities.	3.55	0.65	Agreed
14	LinkedIn training has improved my ability to establish professional networks.	3.50	0.65	Agreed
15	LinkedIn skills have improved my confidence in communicating with employers and professionals online.	3.85	0.61	Agreed
16	LinkedIn training has improved my ability to search for relevant job opportunities online.	3.22	0.90	Agreed
17	LinkedIn training has increased my understanding of professional digital identity.	3.38	0.58	Agreed
18	LinkedIn skills have improved my ability to promote my professional competencies online.	3.68	0.75	Agreed
19	LinkedIn training has increased my confidence in participating in professional online communities.	3.50	0.68	Agreed
20	LinkedIn professional development skills have enhanced my overall employability.	3.47	0.72	Agreed
	Grand Mean	**3.50**	**0.72**	**Agreed**

As evidenced in the table below, professional development skills training for graduates of Business Education will create greater likelihood of employability. This is reflected in a grand mean of 3.50 and a standard deviation of 0.72 and an overall decision of 'Agreed' which means respondents perceived LinkedIn training as improving their professional development and employability. In particular, this type of training enhanced their ability to create a professional profile, market their skills to potential employers, develop a professional network, and find employment opportunities. It also boosted their confidence in their online communication with employers, gained skills as a professional and joined the professional 'online community'. In conclusion, it can be said that overall the LinkedIn professional development training is found to be positively influencing the professional identity of the graduates, networking ability, their confidence and employability.

Research Question 3: What is the effect of Canva creative design skills training on the employability of Business Education graduates in Oyo State?

S/N	Questionnaire Items	Mean	SD	Decision
21	Canva training has improved my ability to create professional digital designs.	3.40	0.56	Agreed
22	Canva training has improved my ability to create business promotional materials.	3.30	0.46	Agreed

23	I can use Canva to create professional presentations and visual materials.	3.48	0.57	Agreed
24	Canva training has improved my ability to create social media content.	3.61	0.58	Agreed
25	Canva skills have improved my creativity in developing digital content.	3.52	0.60	Agreed
26	Canva training has improved my ability to communicate information visually.	3.68	0.54	Agreed
27	Canva skills have increased my confidence in performing digital creative tasks.	3.52	0.62	Agreed
28	Canva training has improved my ability to support digital marketing activities.	3.10	0.78	Agreed
29	Canva skills have increased my readiness for jobs requiring digital content creation.	3.42	0.59	Agreed
30	Canva creative design training has enhanced my overall employability.	3.42	0.59	Agreed
	Grand Mean	**3.45**	**0.59**	Agreed

The following results reflected in the table below clearly show that the creative design skills training in Canva enhances the employability of Business Education graduates. Because the grand mean is equal to 3.45 and the standard deviation is 0.59, it could be concluded that respondents found this training valuable in improving employability in creating digital art. Specifically, the training aims to enable students to improve their skills in creating a professional digital design, preparing promotional materials, making a visual presentation, designing information for social media and communicating information visually. Moreover, they become creative and confident in performing various digital creative tasks and are ready to engage in graphic design-related jobs. Hence, the study was able to conclude that Canva training could be advantageous in boosting the employability of Business Education graduates by developing their required creative digital competencies.

Research Question 4: What is the effect of CV writing with digital tools training on the employability of Business Education graduates in Oyo State?

S/N	Items	Mean	SD	Decision
31	Digital CV writing training has improved my ability to prepare a professional CV.	3.77	0.53	Agreed
32	The training has improved my ability to present my educational qualifications effectively.	3.73	0.55	Agreed
33	The training has improved my ability to highlight relevant skills and competencies in my CV.	3.53	0.60	Agreed
34	I can use digital tools to format my CV professionally.	3.57	0.72	Agreed
35	The training has improved my ability to tailor my CV to specific job opportunities.	3.61	0.74	Agreed
36	Digital CV writing skills have increased my confidence in applying for jobs.	3.11	0.78	Agreed
37	The training has improved my ability to prepare CVs that meet contemporary employers' expectations.	3.52	0.60	Agreed
38	I can use digital tools to edit and update my CV when necessary.	3.58	0.65	Agreed
39	Digital CV writing skills have improved my readiness to participate in online recruitment processes.	3.13	0.77	Agreed
40	CV writing with digital tools training has enhanced my overall employability.	3.07	1.05	Agreed
		3.46	**0.70**	Agreed

The findings of the table below indicate that the training to produce CV using digital tools has an impact on the employability of Business Education graduates. The grand mean of 3.46, overall decision on Agreed and a standard deviation of 0.70, indicated that respondents found this type of training to be beneficial in enhancing their application skills and readiness in employment. The CV writing training using digital tools enhanced the ability of the participants to create CVs, the education credentials in CVs and how they present relevant skills, how they format and update CVs, and how they apply for job offers. Moreover, it helped them to gain knowledge on how to write a CV as per the requirement of the job market and they were also prepared for online recruitment process. In general, the findings indicate that it enhances employability preparation and graduates' confidence for job searches in the season.

Test of Hypotheses

Hypothesis One: There is no significant effect of Google Workspace digital skills training on the employability of Business Education graduates in Oyo State.

Table 1: One-Way ANOVA of the Effect of Google Workspace Digital Skills Training on Employability

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	842.614	3	280.871	18.426	.000
Within Groups	6789.386	445	15.257		
Total	7632.000	448			

The results of the ANOVA revealed that there was a significant difference in the employability of participants with an F-statistic of 18.426 at a significance level of .000. The researchers rejected the null hypothesis because p-value of .000 is smaller than .05 which is the significance level. Hence, it can be concluded that Google Workspace digital skills training had a significant effect on the employability of Business Education graduates in Oyo State. In other words, the differences in the levels of employability recorded by the participants were not by chance.

Hypothesis Two: There is no significant effect of LinkedIn professional development skills training on the employability of Business Education graduates in Oyo State.

Table 2: One-Way ANOVA of the Effect of LinkedIn Professional Development Skills Training on Employability

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	716.428	3	238.809	14.873	.000
Within Groups	7142.572	445	16.051		
Total	7859.000	448			

Values obtained from the ANOVA test suggest that the difference in employability of the groups is significant with an F value of 14.873 at .000 significance level. The result of the significance level (.000) is below the alpha level of .05 which means there is a significant difference in employability of the Business Education graduate who completed the LinkedIn professional development skills training. Thus, the null hypothesis is rejected and it shows that LinkedIn professional development skills training has significant effect on the employability of Business Education graduates in Oyo State.

Hypothesis Three: There is no significant effect of Canva creative design skills training on the employability of Business Education graduates in Oyo State.

Table 3: One-Way ANOVA of the Effect of Canva Creative Design Skills Training on Employability

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	598.762	3	199.587	11.936	.000
Within Groups	7441.238	445	16.722		
Total	8040.000	448			

The ANOVA result indicated that the employability of Business Education graduates of the sample population was significantly affected by the creative design skills training done through Canva. The result obtained was F = 11.936 with a value of significance being .000. This value is less than the level of significance (0.05) indicating that the research question (null hypothesis) was rejected. This further suggests that there are significant differences in the employability levels of the Business Education graduates who were taught using the Canva creative design skill package to those who were not taught using the package.

Hypothesis Four: There is no significant effect of CV writing with digital tools training on the employability of Business Education graduates in Oyo State.

Table 4: One-Way ANOVA of the Effect of CV Writing with Digital Tools Training on Employability

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	931.527	3	310.509	21.647	.000
Within Groups	6382.473	445	14.343		

Total	7314.000	448

The result of ANOVA test showed that there was a significant difference in the level of employability amongst the groups with an F-statistic of 21.647 at a significance level of .000. The value of the significance level, 0.000, was below the level of significance, 0.05, so the null hypothesis was rejected. Therefore, it could be inferred that the Business Education graduates' employability in Oyo State was significantly affected by the intervention of CV writing with digital tools training. This outcome indicates that there was no chance that the differences in employability scores between the groups was due to chance.

Discussion of Findings

The findings of the study showed that Google Workspace digital skills training enhanced employability of the Business Education graduates in Oyo State. A positive answer was received when asked if the training improved their skills for creating and editing professional documents, preparing workplace materials, organizing information, creating presentations, managing computer files, working digitally with others, and administrative and office work. The result further revealed that Google Workspace digital skills training boosted the confidence level of the respondents towards technology-based work environments. This is important because digital skills are needed to undertake basic administrative work in the modern working environment, including productivity, collaboration, documentation and information handling.

The findings are in line with what Mordi (2023) also found to be some of the digital skills needed to boost the employability of Business Education graduates which include computer operating skill, Microsoft word, computer package (MS excel), PowerPoint, e-payment, e-commerce, electronic marketing, etc. The result also corroborates the findings of David, Rasheed, Amoda and Ojo (2024) who found that there is a significant relationship between the digitalization of skills acquisition and employability of Business Education graduates in Lagos State. The discovery they made was that digitalisation of skills acquisition is a bonus to the graduate who can be more efficient and productive on the workplace because the process is done digitally and can have more diverse workplace careers. Furthermore, this finding corroborates the report of the International Telecommunication Union (ITU) on 'Availability of digital skills in Nigeria' indicating that there is a huge disparity between what is being taught in the formal education system and what is needed in the digital economy. The positive correlation between Google Workspace digital skills trainings with employability of Business Education graduates was therefore seen to be due to the hands on training whereby the graduate is made to perform daily running administrative tasks.

Based on the findings of the study, it was found that Business Education graduates' employability was enhanced by LinkedIn skills training in professional development skills. The respondents gave a positive response that the training helped them develop professional online presence, promote their qualifications and skills to potential employers, search for job opportunities, build and sustain professional networks, communicate with employers and professionals virtually, and advertise their skills and competencies. The respondents also shared that the LinkedIn training was useful to understand their professional online visibility and boosted their confidence in handling other professionals in a digital space.

The results corroborated the findings of David et al. (2024) which revealed that there is significant relationship between the digitalization of skills acquisition and the employability of Business Education graduates in Lagos State. Their discovery was that digitalization of skills acquisition confers an advantage to the graduate over others, in terms of higher level of efficiency and productivity at work and wide career opportunities. The outcome also coincided with Odusanya's (2020) study on Secretarial Business Education and employability skills that attributed digital literacy and associated skills like communication, problem solving, team work and collaboration as key skills for employability. The result is important as it shows that employability skills are not confined to academic skills only. Today's workplace requires graduates to market their skills and abilities to an employer. The LinkedIn training empowers Business Education graduates with the skills to create a strong professional presence virtually, interact with other professionals, and promote their services effectively. Hence, the prominent role of LinkedIn on the employability of Business Education graduates indicates that LinkedIn professional development skills are important employability skills that should be included in the employability skills training programme of Business Education graduates.

The findings of the study also indicated that Business Education graduates' employability was enhanced in Oyo state due to their being trained in creative designing skills with the use of Canva. The respondents responded positively to the increase in the ability of the organization to develop

professional digital designs, create business promotional materials, present visual materials, develop social media contents, communicate information and support digital marketing in the organization after the Canva training. The respondents also reported that the Canva training boosted the creativity, confidence of performing creative work and preparedness to enter the working world.

This finding corroborated Mordi (2023) findings which found that Business Education graduates need the use of Corel Draw, PowerPoint, electronic advertising, social media marketing and other electronic skills to boost their employability. The outcome also confirms Uzoka and Okoli's findings which showed that graduates of Business Education need to be equipped with digital marketing, digital information and data, and other technology-related skills and competencies to be productive in their careers, thus, the curriculum must be reorganized to improve the skills of the graduates. The result further builds on the recent research carried out by Samuel, Akorede and Karimu which showed that there is a connection between specific digital skills acquisition and graduate employability, especially Google Workspace, LinkedIn, Canva and CV Writing in 21st Century Digital Skills Training Program to enhance graduate employability via use of practical skills. Furthermore, the finding is consistent with the fact that canva skills are essential for the employment of Business Education graduates as they can be applied to conventional offices, digital marketing, business entrepreneurship, management, social media management and content creation.

The study findings showed that training on CV writing using digital tools had an impact on the employability of the Business Education graduates in Oyo State. The training gave the respondents the ability to prepare a professional CV and present the educational and professional qualifications, demonstrated the necessary skills and competencies, formatted and updated CVs, and prepared CVs adapted to the needs of the selected organization. The respondents also reported increased readiness and competitiveness in the current world of work due to the CV writing training using digital tools.

The findings is in line with that of David et al., (2024) who found that the employability of Business Education graduates in Lagos State was greatly enhanced by digitalization in the acquisition of skills. The outcome also aligns with the recent study carried out by Samuel et al. which targeted specific digital skills for employability in a 21st century working environment, and how CV Writing with digital skills is significant for graduates to position their skills and competencies to potential employers and to communicate the related skills and competencies to the organisation. Another explanation for the important finding of the present study was the shift of the recruitment process in the 21st century. A graduate who has the required skills and knowledge but lacks in presentation is less likely to be recruited as compared to another graduate who has slightly lower skills and knowledge but excellent presentation. The CV writing with the use of digital tools training will enable the Business Education graduate to create professionally formulated CVs, create applications which are suitable for the organization they are applying for, and update and present their CVs using digital tools to a potential employer. Hence, the strong impact of the CV Writing through digital tools training on the employability skills of Business Education graduates demonstrates that employability interventions need not only to improve the employability skills of the students in the workplace, but also the skills to present their employability skills and knowledge.

Conclusion

The study findings indicate that the acquisition of digital skills by the Business Education graduates in Oyo State was enhanced through modular approach. Google Workspace training enhanced the productivity and digital collaboration of the workplace, and LinkedIn training improved the professional networking and employability of the workplace. Canva training helped to build creativity and digital skillfulness, while digital CV writing helped to build recruitment readiness among the graduates. The ANOVA result was significant which indicated that the four modules of training had a significant impact on the employability of the graduates. Digital skills training should, therefore, be given priority to prepare the Business Education graduates for the new normal.

Recommendations

Based on the findings, the following recommendations were made:

1.Google's suite of applications (Google Docs, Sheets, Slides and Drive) should be introduced to Business Education programmes, and provide opportunities for students to practice and develop digital skills and competence within the workplace to improve productivity, collaboration and efficiency.

2.The study suggests that institutions of higher learning should incorporate training on how to use LinkedIn in the Business Education curriculum to enable their students to profile themselves, interact with networks, be seen and get opportunities for professional recruitment in the virtual world for better employability.

3.Canva should be introduced into Business Education departments to help students develop skills in digital design and creation to use in their social media campaigns, presentation design, and marketing efforts.
4.The study suggests that training should be implemented to prepare students with the essential digital CV skills needed to apply for jobs online including professional CV formatting, targeting and tracking applications.

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THE INFLUENCE OF INTERNET AND DIGITAL LEARNING TOOLS ON ACADEMIC RESEARCH AMONG BUSINESS EDUCATION STUDENTS

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Abstract

The evolution of internet architecture and digital learning technologies has fundamentally transformed how higher education students access, synthesise, and generate academic research (Emehi & Nwosu, 2023). For Business Education students, whose academic framework blends theoretical knowledge with practical, technological, managerial, and entrepreneurial competencies, digital research proficiency is vital (Enang, 2024). This paper provides a comprehensive analysis of how internet resources and digital learning tools influence academic research among Business Education students, focusing primarily on the Nigerian tertiary education system (Okoro, 2023). Drawing on the Technology Acceptance Model (TAM) (Davis, 1989), Constructivist Learning Theory (Vygotsky, 1978), and Connectivism (Siemens, 2005), the paper evaluates how digital tools alter research methodologies, access to literature, and information processing. The study categorises core digital research tools, including academic search engines, institutional repositories, Learning Management Systems (LMS), AI-assisted research tools, and bibliographic managers (Mhlanga, 2023). Empirical evidence demonstrates that integrated digital tools significantly enhance access to literature, data analysis, and overall research efficiency (Edobor, 2024). However, persistent structural barriers, such as unreliable power supply, high data costs, poor bandwidth, low digital research literacy, and emerging ethical concerns around plagiarism and Artificial Intelligence (AI) misuse, hinder optimal adoption (Orim et al., 2024). The paper concludes with actionable recommendations for institutional policy, infrastructural investment, and digital curriculum integration (Ademiluyi & Ademiluyi, 2020).

Keywords: *Business Education, Digital Learning Tools, Academic Research, Information Literacy, Technology Acceptance Model, Connectivism, Artificial Intelligence.*

INTRODUCTION

Background to the Study

Higher education has shifted dramatically beyond traditional brick-and-mortar learning environments, driven by rapid developments in Information and Communication Technologies (ICTs) (Emehi & Nwosu, 2023). The internet serves as an expansive global infrastructure that democratises access to scientific repositories, open-access journals, statistical databases, and collaborative networks (Ezeabii et al., 2019). Within higher education institutions, conducting academic research, whether for undergraduate seminar papers, empirical projects, or postgraduate dissertations, requires ongoing engagement with contemporary literature and modern data collection methods (Orim et al., 2024). Digital learning tools have expanded these possibilities, enabling scholars to conduct continuous research regardless of geographical constraints (Mhlanga, 2023).

Business Education plays a critical role in tertiary education by bridging academic theory and practical commercial applications (Okoro, 2023). The programme equips students with pedagogical, managerial, office administration, financial, and entrepreneurial skills (Erhivwiohwovie & Okoro, 2023). As global markets move towards full digitalisation, Business Education must adapt its instructional and research delivery mechanisms (Enang, 2024). Enang (2024) notes that technological advances and widespread digitalisation are actively reshaping teaching, learning, and research frameworks within Nigerian Business Education programmes.

Consequently, student researchers are expected to move beyond manual, print-based library methods (Edobor, 2024). Investigating contemporary business trends, including financial technology (FinTech), digital marketing, electronic office management, and global supply chains, requires real-time access to empirical data and scholarly publications (Ademiluyi & Ademiluyi, 2020). While digital resources offer unprecedented speed and volume, they also demand advanced information literacy skills to identify credible, peer-reviewed literature amid vast amounts of unverified digital information (Orim et al., 2024).

Statement of the Problem

Despite the significant potential of internet platforms and digital learning tools to enhance academic research, Business Education students in developing higher education systems, such as Nigeria's, face operational challenges (Emehi & Nwosu, 2023). While digital technologies provide faster access to scholarly databases, many students struggle with information overload, poor search strategies, and an inability to critically assess the credibility of online sources (Ezeabii et al., 2019). Furthermore, the rapid adoption of Artificial Intelligence (AI) applications in academic writing has raised concerns about research originality, data fabrication, and academic integrity (Mhlanga, 2023).

These operational and ethical challenges are compounded by ongoing infrastructural deficits (Okoro, 2023). Frequent power outages, costly internet subscriptions, unstable bandwidth, and restricted institutional access to subscription-based academic databases hinder seamless research (Edobor, 2024). Many institutions have not formally integrated digital research literacy into their Business Education curricula (Enang, 2024). This creates a gap between the availability of advanced digital tools and students' research capabilities (Erhivwiohwovie & Okoro, 2023).

Methodological Approach

This paper adopts a conceptual and desk-based methodology, synthesising theoretical literature, policy frameworks, and empirical studies to evaluate the integration and adoption of digital tools in Business Education research.

Objectives of this study

The primary objective of this paper is to analyse how the internet and digital learning tools influence academic research among Business Education students. Specifically, the paper aims to:

1. Clarify the core conceptual frameworks underpinning the internet, digital learning tools, academic research, and Business Education (Enang, 2024).
2. Establish theoretical foundations for explaining student adoption and use of digital research tools (Davis, 1989; Siemens, 2005).
3. Trace the historical evolution of internet and digital learning technologies in the Nigerian tertiary education landscape (Ademiluyi & Ademiluyi, 2020).
4. Provide a structured taxonomy of digital tools used by Business Education students for academic research (Mhlanga, 2023).
5. Evaluate the thematic impact of digital tools on literature retrieval, research skills, writing quality, and collaborative inquiry (Edobor, 2024).
6. Synthesise the empirical literature on digital tool adoption in Business Education research (Emehi & Nwosu, 2023; Orim et al., 2024).
7. Identify infrastructural, economic, pedagogical, and ethical challenges that hinder effective use of digital research tools (Okoro, 2023).
8. Develop strategic interventions to enhance digital research capacity among students and tertiary institutions (Ezeabii et al., 2019).

Scope and Delimitation

This paper examines the deployment and impact of internet resources and digital learning technologies in academic research processes among Business Education students (Enang, 2024). The analytical scope encompasses tertiary institutions, with a primary focus on the Nigerian higher education system, while integrating relevant global perspectives (Emehi & Nwosu, 2023). The technologies examined include search engines, digital libraries, Learning Management Systems (LMS), video conferencing

applications, AI-driven writing and data platforms, and bibliographic management tools (Mhlanga, 2023; Okoro, 2023).

CONCEPTUAL AND THEORETICAL FRAMEWORK

Conceptual Clarifications

The Concept of the Internet in Education

The internet is a global network of interconnected computer systems that use standardised communication protocols to share data and services (Emehi & Nwosu, 2023). In higher education, the internet serves as a core virtual environment for knowledge dissemination, scholarly communication, and information retrieval (Orim et al., 2024). It removes geographical barriers, enabling scholars to access global digital libraries, institutional repositories, and peer-reviewed journals instantly (Edobor, 2024). In Business Education, the internet bridges classroom instruction and real-world commercial practice, providing access to current financial market trends, corporate reports, and academic research (Enang, 2024).

Digital Learning Tools

Digital learning tools comprise software applications, digital platforms, hardware devices, and virtual networks designed to facilitate learning, data retrieval, communication, and knowledge creation (Okoro, 2023). These tools include hardware such as laptops and smartphones, as well as software platforms such as digital libraries, Learning Management Systems (e.g., Moodle, Canvas), collaborative suites, and specialised statistical packages (Erhivwiohwovie & Okoro, 2023). Rather than merely serving as instructional accessories, digital tools fundamentally alter the research process by offering dynamic ways to organise, analyse, and communicate scholarly findings (Mhlanga, 2023).

Academic Research

Academic research is a systematic, empirical, and controlled investigation intended to generate new knowledge, evaluate theoretical propositions, or solve practical problems (Ezeabii et al., 2019). The academic research process involves identifying problems, reviewing the literature, formulating theories, designing methods, collecting data, conducting statistical analyses, and presenting findings objectively (Ademiluyi & Ademiluyi, 2020). In tertiary institutions, researchers assess competencies through seminar papers, capstone projects, dissertations, and peer-reviewed publications (Orim et al., 2024).

Nature and Philosophy of Business Education

Business Education is a specialised, multidisciplinary academic field that equips learners with pedagogical skills, business acumen, administrative and technological competencies, and entrepreneurial mindsets (Enang, 2024). The philosophy of Business Education centres on utility and adaptability, preparing graduates for employment in commerce, administration, teaching, or self-directed entrepreneurship (Okoro, 2023). As modern business operations rely heavily on automated systems, cloud computing, and global digital communication, Business Education integrates information technology (Emehi & Nwosu, 2023).

Theoretical Framework

Technology Acceptance Model (TAM)

This study is grounded in the Technology Acceptance Model, developed by Davis (1989). The Technology Acceptance Model holds that an individual's adoption and use of a technology are primarily driven by two cognitive variables: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU).

- **Perceived Usefulness (PU):** The degree to which a student believes that utilising a specific digital tool (e.g., Google Scholar, Mendeley) will enhance their research productivity and academic performance (Davis, 1989; Okoro, 2023).
- **Perceived Ease of Use (PEOU):** The degree to which a student expects the target technology to be free of cognitive or technical effort (Davis, 1989; Emehi & Nwosu, 2023).

Applied to Business Education research, TAM suggests that students are more likely to integrate digital libraries, reference managers, and statistical software into their research workflows when they perceive these tools as easy to navigate and useful for improving the quality of their academic work (Edobor, 2024).

Constructivist Learning Theory

This paper also drew on the foundational work of Jean Piaget and Lev Vygotsky (1978). Constructivism holds that learners actively construct knowledge rather than passively receiving information from instructors or textbooks. In a digital research environment, Business Education students apply constructivist principles by gathering diverse digital materials, critically evaluating conflicting empirical findings, synthesising complex data, and formulating independent academic arguments (Orim et al., 2024). Digital research tools serve as cognitive scaffolds, helping students transition from passive readers to active academic investigators (Enang, 2024).

Connectivism Theory

The paper also addresses Connectivism, formulated by Siemens (2005) for the digital age. Connectivism conceptualises learning as a process occurring within non-human, networked environments. Connectivism emphasises that knowledge resides across distributed digital networks and that the ability to establish and navigate connections between information nodes (e.g., databases, research networks, online communities) is critical (Siemens, 2005). For Business Education researchers, connectivist frameworks explain how information sharing across social academic networks (e.g., ResearchGate), virtual research groups, and digital repositories facilitates real-time research collaboration and continuous learning (Ademiluyi & Ademiluyi, 2020; Mhlanga, 2023).

EVOLUTION OF INTERNET AND DIGITAL LEARNING IN NIGERIAN HIGHER EDUCATION

The history of internet connectivity and digital learning in Nigerian tertiary education moves through four main phases:

1. **The Print-Bound Era (Pre-2000):** Academic research relied heavily on physical university libraries, print books, hardcopy journal volumes, and manual card catalogues (Emehi & Nwosu, 2023). Data collection was limited to printed questionnaires, and researchers conducted statistical analyses manually or using early standalone desktop statistical software (Okoro, 2023).
2. **Early Infrastructure Expansion and Web 2.0 Integration (2000–2019):** National ICT policies and campus network installations (e.g., VSAT connections) increased the adoption of digital tools (Ademiluyi & Ademiluyi, 2020). Off-campus cybercafés and subsequent campus Wi-Fi installations expanded students' access to search engines, basic institutional repositories, and digital journal archives (Ezeabii et al., 2019). During this period, basic electronic learning tools began to supplement classroom instruction (Erhivwiohwovie & Okoro, 2023).
3. **The COVID-19 Pandemic Acceleration (2020–2021):** The disruption of on-campus activities accelerated the adoption of digital tools across Nigerian universities and colleges of education (Enang, 2024). Institutions turned to Learning Management Systems (Google Classroom, Moodle) and video conferencing tools (Zoom, Microsoft Teams) to maintain academic schedules (Orim et al., 2024). This forced shift required students and faculty to adopt remote data collection methods, digital survey tools, and virtual research defence (Mhlanga, 2023).
4. **The Intelligent and Integrated Era (Post-2022):** Modern academic research in Nigerian Business Education increasingly utilises smart search engines, open-access research repositories, cloud storage, collaborative editing platforms, and Artificial Intelligence research assistants (Edobor, 2024; Mhlanga, 2023). Research workflows have shifted towards automated literature search systems, digital referencing, and cloud-based data management (Enang, 2024).

TAXONOMY AND APPLICATION OF DIGITAL RESEARCH TOOLS

Business Education students utilise a diverse ecosystem of digital tools throughout the academic research lifecycle (Emehi & Nwosu, 2023; Okoro, 2023).

Category	Primary Examples	Specific Research Applications
Search Engines & Databases (Edobor, 2024)	Google Scholar, Scopus, Web of Science, ScienceDirect, SSRN	Keyword searches, Boolean operator filtering, accessing open-access research, identifying citation counts.

Category	Primary Examples	Specific Research Applications
Digital Libraries & Repositories (Enang, 2024)	JSTOR, Research4Life, Institutional Repositories, DOAJ	Retrieving peer-reviewed articles, dissertations, historical economic data, and technical manuals.
Learning Management Systems (Okoro, 2023)	Moodle, Google Classroom, Canvas, Blackboard	Accessing faculty reading lists, downloading research guidelines, submitting drafts, receiving supervisor feedback.
Video Conferencing & Collaboration (Ademiluyi, 2020)	Zoom, Google Meet, Microsoft Teams, Google Workspace	Remote supervisor consultations, virtual focus groups, collaborative writing, live presentation defences.
AI & Intelligent Tools (Mhlanga, 2023)	ChatGPT, Elicit, Consensus, Scite.ai, Grammarly	Topic brainstorming, literature summarising, identifying research gaps, draft proofreading, language refinement.
Reference Management (Edobor, 2024)	Zotero, Mendeley, EndNote, MS Word Manager	Direct citation extraction, auto-generating bibliographies in APA/Chicago formats, organising PDF libraries.
Data Collection & Statistics (Emehi, 2023)	Google Forms, KoboToolbox, SPSS, SmartPLS, R	Web-based survey distribution, automated data coding, quantitative analysis, qualitative thematic coding.

THEMATIC ANALYSIS: INFLUENCE OF DIGITAL TOOLS ON ACADEMIC RESEARCH

Enhancing Access to Scholarly Information and Literature

Digital research tools have broadened access to international academic literature (Emehi & Nwosu, 2023). Previously, Business Education students were limited to physical holdings in their local institutional libraries, which often featured outdated textbooks and incomplete journal volumes (Enang, 2024). Today, academic search engines and open-access repositories let students search millions of peer-reviewed articles, theoretical reviews, and government white papers worldwide (Okoro, 2023). Building on empirical findings from Edobor (2024), continuous internet access significantly improves final-year undergraduate research output by enabling students to cite current global and local empirical literature.

Streamlining Literature Review and Information Retrieval

The literature review underpins academic research by defining the current boundaries of knowledge and highlighting empirical gaps (Orim et al., 2024). Digital tools optimise this phase through advanced search syntax, Boolean operators (AND, OR, NOT), and automated recommendation algorithms (Edobor, 2024). Rather than manually searching physical card catalogues, students can quickly filter literature by publication year, citation frequency, and methodology (Ezeabii et al., 2019). As demonstrated in empirical studies by Orim et al. (2024), systematic internet browsing directly improves information synthesis and theoretical alignment in student seminar presentations.

Developing Academic Writing and Methodology Skills

Exposure to high-quality digital journals helps students observe standardised academic writing styles, methodological designs, and formal data reporting formats (Erhivwiohwovie & Okoro, 2023). Software platforms like Grammarly help non-native English writers refine sentence structure and tone, while reference tools enforce style manual compliance (e.g., APA 7th Edition) (Ademiluyi & Ademiluyi, 2020). Furthermore, AI tools facilitate structural organisation and language polishing (Mhlanga, 2023). In line with Mhlanga (2023), digital writing tools and intelligent language tools improve student paper organisation and draft revision speed when used responsibly.

Transforming Data Collection and Statistical Analysis

Digital survey technologies (e.g., Google Forms, Kobo Toolbox) have transformed field research methodologies (Emehi & Nwosu, 2023). Business Education students investigating consumer behaviour, corporate office automation, or entrepreneurship can instantly distribute cloud-based questionnaires to geographically dispersed target populations (Okoro, 2023). This significantly reduces printing and field expenses (Erhivwiohwovie & Okoro, 2023). Furthermore, converting digital survey responses directly into statistical packages (SPSS, SmartPLS) reduces manual data-entry errors and speeds statistical testing (e.g., ANOVA, Multiple Regression, Structural Equation Modelling) (Edobor, 2024). **Facilitating Academic Collaboration and Knowledge Networks**

Cloud workspace suites, video platforms, and academic networking sites (ResearchGate, Academia.edu) transform academic research from an isolated task into a collaborative effort (Siemens, 2005; Ezeabii et al., 2019). Student research teams can co-author literature reviews in real time via Google Docs, discuss data interpretation via Google Meet, and share PDF repositories via Mendeley Shared Groups (Enang, 2024). As Ademiluyi and Ademiluyi (2020) highlight, informal academic communication channels on platforms such as WhatsApp facilitate peer review, information sharing, and resource exchange among student researchers.

Research Efficiency and Time Management

Digital research tools reduce the time required to complete academic projects (Orim et al., 2024). Tasks that once took weeks, such as locating physical journal volumes, copying citations, mailing paper questionnaires, and computing descriptive statistics by hand, can now be completed in hours or days (Emehi & Nwosu, 2023). Automated reference management tools generate complete bibliographies in seconds, freeing cognitive capacity for critical data analysis, discussion formulation, and theoretical interpretation (Edobor, 2024).

EMPIRICAL REVIEW OF RELATED STUDIES

- **Edobor (2024)** examined the impact of internet accessibility on the final-year research execution of Business Education students at the University of Benin. Using a descriptive survey design, the study found a strong positive correlation between reliable, high-speed campus internet access and the methodological quality of undergraduate research projects.
- **Emehi and Nwosu (2023)** evaluated the relationship between e-learning technologies and academic performance among 250 final-year Business Education students across public universities in South-South Nigeria. Their empirical findings confirmed that access to digital libraries, search engines (Google Search), and video conferencing tools significantly enhanced learning outcomes and research skills.
- **Orim et al. (2024)** investigated the utilisation of electronic learning resources at the University of Calabar. Analysing data from 145 Business Education students, the study found that structured internet browsing and electronic mail communication with research supervisors significantly improved research completion rates and academic output.
- **Mhlanga (2023)** examined the integration of Artificial Intelligence tools in higher education writing and research. Findings showed that while students perceived AI tools as beneficial for structuring ideas and accelerating literature synthesis, significant concerns emerged regarding technical skill gaps, originality flags, and potential academic dishonesty.
- **Okoro (2023)** assessed e-learning's contribution to students' academic performance and long-term workplace employability across tertiary institutions in Delta State (N = 937). The study concluded that practical digital research competencies developed during undergraduate research directly enhanced graduates' digital literacy in modern office and corporate settings.
- **Enang (2024)** conducted a conceptual analysis of digitalisation in Nigerian Business Education, concluding that integrating digital infrastructure is essential to prevent academic obsolescence in modern business administration and educational delivery.

CHALLENGES AFFECTING DIGITAL TOOL ADOPTION IN RESEARCH

Infrastructure and Economic Deficits

- **Unreliable Power and Network Infrastructure:** Persistent electric grid instability and inconsistent mobile broadband bandwidth interrupt digital research activities, rendering live virtual consultations and continuous cloud synchronisation difficult (Emehi & Nwosu, 2023; Okoro, 2023).
- **High Cost of Internet Data and Hardware:** High mobile data tariffs present a financial burden for self-funded students (Edobor, 2024). Furthermore, many students rely on low-end smartphones rather than laptops, limiting their ability to run complex data collection platforms, statistical packages (SPSS, R), and citation software (Ezeabii et al., 2019).

Digital Literacy Gaps and Information Overload

- **Deficient Advanced Research Skills:** Many students have basic social media and web-browsing skills but lack advanced digital research literacy (Ademiluyi & Ademiluyi, 2020). They often struggle to construct complex Boolean search strings, navigate index databases, or configure reference management software (Orim et al., 2024).
- **Information Overload and Low Source Evaluation:** Search engine queries can return millions of hits, leading to cognitive fatigue (Erhivwiohwovie & Okoro, 2023). Without critical source evaluation skills, students often fail to distinguish peer-reviewed literature from predatory journals, unverified blogs, or fake news sites (Enang, 2024).

Ethical Integrity and AI Over-Reliance

- **Plagiarism and Unattributed Copying:** The ease of copying digital text encourages improper cutting-and-pasting without proper citation (Ezeabii et al., 2019).
- **Over-Reliance on Generative AI:** Relying heavily on generative AI (e.g., ChatGPT) to write research sections can reduce independent critical thinking and lead to inaccurate citations or unverified data (Mhlanga, 2023). Mhlanga (2023) notes that uncontrolled AI use can compromise research originality and academic rigour.

STRATEGIC INTERVENTIONS AND RECOMMENDATIONS

Institutional and Infrastructural Interventions

- **Provision of Campus Broadband and Solar Power:** Universities and tertiary institutions should prioritise high-speed campus Wi-Fi networks and install alternative energy solutions (e.g., solar power infrastructure) in library digital hubs and departmental laboratories (Edobor, 2024; Okoro, 2023).
- **Expansion of Digital Library Subscriptions:** Academic libraries must maintain institutional subscriptions to reputable database consortia (e.g., JSTOR, EBSCOhost, Scopus) and ensure remote access for students via secure VPN authentication (Emehi & Nwosu, 2023; Enang, 2024).

Curriculum and Pedagogical Strategies

- **Integration of Embedded Digital Research Modules:** Business Education departments should embed digital research literacy directly into their core research methodology courses (Ademiluyi & Ademiluyi, 2020; Orim et al., 2024). Practical training should cover Boolean search syntax, open-access retrieval, navigation of bibliographic managers (Zotero/Mendeley), and operation of data analysis software.
- **Implementation of Ethical AI Guidelines and Disclosure Policies:** Higher education policy authorities (such as the NUC and NCCE in Nigeria) should establish clear frameworks for the use of AI in academic research (Mhlanga, 2023). Institutions should mandate explicit AI-usage disclosure statements, outline permissible boundaries for AI assistance, and use AI-detection and plagiarism tools to maintain academic compliance.

Student-Centered and Research Practices

- **Emphasis on Authentic Assessment Methods:** Research supervisors should design research assignments that include fieldwork, critical analysis, and a live oral defence (Ezeabii et al., 2019; Orim et al., 2024). This ensures that digital tools serve as research aids rather than substitutes for critical inquiry.
- **Continuous Skill Acquisition:** Business Education students should proactively pursue ongoing self-development in advanced ICT and data analytics skills, recognising digital literacy as a core requirement for both academic success and modern career mobility (Enang, 2024; Okoro, 2023).

CONCLUSION AND FUTURE DIRECTIONS

Conclusion

The internet and digital learning tools have transformed academic research among Business Education students, shifting the research landscape from static, print-bound processes to a dynamic, interconnected digital environment (Emehi & Nwosu, 2023). These tools significantly improve access to current literature, streamline data collection and statistical analysis, accelerate writing workflows, and facilitate collaborative inquiry (Edobor, 2024; Orim et al., 2024). As Business Education aligns directly with modern, technology-driven commercial environments, building digital research competence is essential for both academic success and long-term professional relevance (Enang, 2024).

However, the educational potential of these tools remains constrained by infrastructural deficits, high data tariffs, low digital research literacy, and emerging ethical concerns about AI over-reliance and academic dishonesty (Mhlanga, 2023; Okoro, 2023). Addressing these challenges requires a coordinated effort: institutions must invest in infrastructure and subscription access, departments must integrate practical digital literacy into the curriculum, and students must commit to ethical, self-directed research practices (Ezeabii et al., 2019).

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DIGITAL TOOLS AND BUSINESS EDUCATION DELIVERY: IMPLICATIONS FOR STUDENTS' ENTREPRENEURIAL INTENTION IN TERTIARY INSTITUTIONS IN AKWA IBOM STATE

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Abstract

This ~~e~~ study was conducted to determine the extent to which digital tools in Business Education delivery influence students' entrepreneurial intentions in tertiary institutions in Akwa Ibom State. Two research questions and two null hypotheses guided the study. Descriptive survey research design was adopted for the study. The population comprised 522 final year Business Education students from tertiary institutions offering Business Education in Akwa Ibom State. A sample of 227 final year Business Education students were drawn from the population using simple random sampling technique, determined using Taro Yamane formula. An instrument titled "Digital Tools and Business Education Delivery for Students' Entrepreneurial Intention Questionnaire (DTBEDSEIQ)" was used for data collection. The instrument was validated by experts in Business Education, and Tests and Measurement Departments. Cronbach's alpha was used to determine the reliability coefficient of 0.78. The data collected were analysed using simple linear regression to answer the research questions and test the null hypothesis at 0.05 significant level. The results of the findings showed that the extent to which learning management systems and video conferencing in Business Education influence students' entrepreneurial intentions in tertiary institutions in Akwa Ibom State is very low. The results further showed that there was significant extent of influences of learning management systems and video conferencing in Business Education delivery on students' entrepreneurial intentions. Based on the findings, it was concluded that digital tools in Business Education delivery have very low influences on students' entrepreneurial intentions. It was recommended among others that tertiary institutions should integrate learning management systems with other pedagogical strategies to deliver Business Education to enhance students' entrepreneurial intentions.

Keywords: *Business Education Delivery, Digital Tools, Students' Entrepreneurial Intention.*

Introduction

The rapidly evolving digital tools in the 21st century has basically restructured pedagogical models across tertiary institutions globally, Nigeria inclusive. Business Education, as an integrated field of vocational training, aims to equip students with functional practical skills, pedagogical competence, and entrepreneurial capabilities necessary for self-reliance and economic development. In the past decades, Business Education delivery relied heavily on traditional teacher-centred methodologies, including lecture-based instruction and physical textbook exercises. However, the introduction of digital tools demands a transition from the traditional teaching methods to technology-mediated delivery methods that mimic contemporary business environments. Digital technologies have brought changes to the nature and scope of education especially in Business Education (BE).

BE is a discipline that is focused on the study and understanding of business practices and principles. BE programme seeks to equip individuals with a comprehensive understanding of economic principles, thereby enhancing their standard of living and contributing to the overall advancement of the business system. Abeng (2018) posited that BE constitutes a vital component of general education, focussing on the dissemination of business acumen and knowledge essential for both personal and national advancement. According to Okute et al (2022), the delivery of BE content is essential in a digital economy, necessitating the transmission of a diverse array of digital skills to its recipients. BE is a critical course in fostering students' entrepreneurial intentions and capabilities, particularly in emerging economies upon effective delivery through digital tools. Entrepreneurial intention (EI), according to Akeredolu et al (2025), is an individual's conscious state of mind that directs personal attention and actions toward self-employment as a career option. Entrepreneurial intention refers to the cognitive state that directs an individual's attention and behaviour toward starting a business. In the Nigerian context, structural challenges such as poverty, inadequate business infrastructure, and limited access

to capital reduce the translation of entrepreneurial intention into action (Akanbi et al., 2022). Empirical studies have found that BE students' entrepreneurial intention is influenced by digital tools.

Digital tools in BE encompass a wide range of hardware, software, online platforms, and interactive media designed to facilitate teaching, learning, and skill acquisition. Akeredolu et al (2025) found that digital tools and technology adoption significantly strengthen the relationship between BE and entrepreneurial intention by improving students' engagement, experiential learning, and exposure to modern entrepreneurial practices. Okeke and Nwokolo, (2020) stated that digital tools enhance students participation and motivation in business courses. Eze and Ogbonna, (2019) posited that students using online platforms performed significantly better than their peers. Obi and Chukwu, (2022) stated that social media was found to be an effective means of communication and resource sharing among students. The digital tools used in this study are Learning Management System (LMS) and Video Conferencing (VC).

Learning Management System (LMS) is an online software systems that are used to support various instructional, learning and assessment activities, and are central elements of many tertiary institutions course delivery systems (Turnbull et al., 2022). Masibigiri et al (2026) stated that LMS platform provides an important information utility for online-based instruction by structuring activities with course content, communication, and assessment of student achievement related to the learning experience achieved. The application of LMS in BE has transformed teaching and learning. Madu and Ahmed (2024) posited that LMSs are tools that encourage the management of educational courses. Mahzum et al. (2024) found that LMS utilisation significantly enhances students' GPA by enabling efficient time management and flexible learning schedules.

Another digital tool considered in this study is Video Conferencing Tool (VCT) which, according to Madu and Ahmed (2024) allows users who are geographically distant from each other to connect and interact through the internet. Emehi and Nwosu (2023) stressed that VC is a key technological innovation that is rocking the education sector currently. Peter (2021) defined VC as a collaborative communication tool that allows several individuals or groups to communicate in real time across distances using the data network to transfer packets of learning contents containing audio and video using the voice network. According to Emehi and Nwosu (2023), VC allows people to be linked without coming together physically. The application is also used to send messages such as announcements and lecture slides as well as other lecture materials to the students and other participants in the class (Bosu, 2019). Emehi and Nwosu further stated that the use of digital library, VC and Google search engine have positive influence on the learning of BE in public universities in South-South, Nigeria.

In tertiary institutions in Akwa Ibom State, digital tools are gradually reshaping the teaching and learning experience of BE students. Ezeabii (2026) stated that what was once a predominantly lecture-driven, face-to-face model is giving way to more flexible, interactive, and student-centred approaches. Despite the recognised benefits of integrating digital tools in BE, the extent to which these technologies influence students' entrepreneurial intentions in Akwa Ibom State requires empirical investigation. While access to digital tools can enhance market awareness, idea generation, and business venture confidence, structural barriers like inadequate digital infrastructure, low institutional support, and lack of digital skill persist. This development requires significant digital competence, on the part of both lecturers and students. Therefore, the study sought to determine the extent to which digital tools in BE delivery influence students' entrepreneurial intentions in tertiary institutions in Akwa Ibom State. Specifically, the study determined:

1. The extent to which learning management system in business education delivery influence students' entrepreneurial intentions in tertiary institutions in Akwa Ibom State.
2. The extent to which video conferencing in business education delivery influence students' entrepreneurial intentions in tertiary institutions in Akwa Ibom State.

Statement of the Problem

The primary objective of BE in tertiary institutions is to equip graduates with functional skills to establish and manage enterprises, thereby curbing youth unemployment and restiveness. However, a significant proportion of graduates of BE programmes in Akwa Ibom State continue to enter the labour market seeking scarce white-collar jobs rather than creating employment opportunities. A major contributing factor is the reliance on conventional, theoretical instructional methods that fail to mirror the technology-driven business environment of the 21st century to foster robust entrepreneurial intentions among students. Many graduates of BE progrmmes from our tertiary institutions in the state lack the digital entrepreneurial confidence, hands-on e-business competence, and technical risk-taking drive required to start and manage technology-enabled ventures. Although digital tools like LMS and VC are known to enhance practical learning, it remains uncertain how effectively these tools are integrated into daily

BE programme instructions and whether their adoption directly elevates students' intention to start a business. Furthermore, empirical investigations revealed a depth in literature as none of the empirical studies was conducted in the study area and no specific study looked at the influence of LMS and VC in BE delivery on students' entrepreneurial intentions in tertiary institutions in the state. As a result, there remain a contextual literature gap. Thus, this study was intended to fill this gap by investigating the extent to which digital tools in BE delivery influence students' entrepreneurial intention in tertiary institutions in Akwa Ibom State.

Research Questions

The following research questions were raised to guide the study:

1. What is the extent to which learning management system in business education delivery influence students' entrepreneurial intention in tertiary institutions in Akwa Ibom State?
2. To what extent does video conferencing in business education delivery influence students' entrepreneurial intention in tertiary institutions in Akwa Ibom State?

Null Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

1. There is no significant extent of influence of learning management system in business education delivery on students' entrepreneurial intention in tertiary institutions in Akwa Ibom State.
2. There is no significant extent of influence of video conferencing in business education delivery on students' entrepreneurial intention in tertiary institutions in Akwa Ibom State.

Method

The study was conducted in Akwa Ibom State. Descriptive survey research design was adopted for the study. The population comprised 522 final year BE students from the two tertiary institutions in Akwa Ibom State (University of Uyo and College of Education, Afaha Nsit). A sample of 227 final year BE students were drawn from the population using simple random sampling technique which was determined using Taro Yamane formula. An instrument titled "Digital Tools and Business Education Delivery for Students' Entrepreneurial Intention Questionnaire (DTBEDSEIQ)" was used for data collection. The instrument was validated by three experts in BE, and Tests and Measurement Departments. Cronbach's alpha was used to determine the reliability coefficient of 0.78 which was high enough to justify the instrument for use. The data collected were analysed using simple linear regression statistics to answer the research questions and test the null hypothesis at 0.05 significant level.

Results

Research Question 1

What is the extent to which learning management system in Business Education delivery influence students' entrepreneurial intention in tertiary institutions in Akwa Ibom State?

Table 1: Regression analysis for extent of influence of learning management system in Business Education on students' entrepreneurial intention in tertiary institutions in Akwa Ibom State

n=227

Model	R	R^2	Adjusted R^2	Std. Error of Estimate
1	.327[a]	.107	.103	.39992

Source: Field Survey, 2026

Table 1 showed the summary of the regression test for how LMS in BE influences students' entrepreneurial intention in tertiary institutions in Akwa Ibom State. The results showed the coefficient of determinant (R^2) value of .107. This means that 10.7% is the overall contribution of LMS to students' entrepreneurial intention in tertiary institutions in Akwa Ibom State. Therefore, the extent to which LMS in BE influences students' entrepreneurial intention in tertiary institutions in Akwa Ibom State is very low.

Research Question 2

To what extent does video conferencing in Business Education delivery influence students' entrepreneurial intention in tertiary institutions in Akwa Ibom State?

Table 2: Regression analysis for extent of influence of video conferencing in business education on students' entrepreneurial intention in tertiary institutions in Akwa Ibom State

n=227

Model	R	R^2	Adjusted R^2	Std. Error of Estimate
1	.396[a]	.157	.153	.76552

Source: Field Survey, 2026

The analysis in Table 2 presents the summary of the regression test on how VC in BE delivery influences students' entrepreneurial intention in tertiary institutions in Akwa Ibom State. The results revealed the coefficient of determinant (R^2) value of .157. This implies that 15.7% is the overall contribution of VC in BE delivery to students' entrepreneurial intention in tertiary institutions in Akwa Ibom State. Hence, the extent to which VC in BE influence students' entrepreneurial intention in tertiary institutions in Akwa Ibom State is very low.

Null Hypothesis 1

There is no significant extent of influence of learning management system in business education delivery on students' entrepreneurial intention in tertiary institutions in Akwa Ibom State.

Table 3: Regression analysis of the extent of influence of learning management system in business education delivery on students' entrepreneurial intention in tertiary institutions in Akwa Ibom State.

n=227

Model		Sum of Squares	Df	Mean Square	F	Sig.	Decision
1	Regression	4.314	1	4.314	26.970	.000[a]	Sig.
	Residual	35.986	225	.160			
	Total	40.300	226				

Significant at .000 (p<.05) (Source: Field Work (2026)

The result in Table 3 revealed that the computed F-value was 26.970 with degrees of freedom of 1 and 225 at the p-value of .000. Since the probability value was less than the level of significance (p< .05), the result was statistically significant. Hence, the null hypothesis was rejected. This implies that there is a significant extent of influence of LMS in BE delivery on students' entrepreneurial intention in tertiary institutions in Akwa Ibom State.

Null Hypothesis 2

There is no significant extent of influence of video conferencing in business education delivery on students' entrepreneurial intention in tertiary institutions in Akwa Ibom State.

Table 4: Regression analysis of the extent of influence of video conferencing in business education delivery on students' entrepreneurial intention in tertiary institutions in Akwa Ibom State.

n=227

Model		Sum of Squares	Df	Mean Square	F	Sig.	Decision
1	Regression	24.534	1	24.534	41.866	.000[a]	Sig.
	Residual	131.853	225	.586			
	Total	156.388	226				

Significant at .000 (p<.05) (Source: Field Work (2026)

The result in Table 4 showed that the computed F-value was 41.866 with degrees of freedom of 1 and 225 at the p-value of .000. Since the probability value was less than the level of significance (p< .05), the result was rejected. Therefore, there is significant extent of influence of VC in BE delivery on students' entrepreneurial intention in tertiary institutions in Akwa Ibom State.

Discussion of Findings

The findings of this study were discussed based on research questions and hypotheses tested. The result of the analysis in Table1 revealed that the extent to which LMS in BE influences students'

entrepreneurial intention in tertiary institutions in Akwa Ibom State is very low. The corresponding hypothesis in Table 3 further showed that there is a significant extent of influence of LMS in BE delivery on students' entrepreneurial intention in tertiary institutions in Akwa Ibom State. The findings of this study was in consonance with the findings of Masibigiri et al (2026) who found that there is a positive relationship between the use of LMS and the academic performance of students. Mahzum et al. (2024) found that LMS utilisation significantly enhances students' GPA by enabling efficient time management and flexible learning schedules. The result showed that while the extent of influence of LMS in BE delivery on students' entrepreneurial intention is statistically significant, the extent of influence is very low. This means that although there is an influence, LMS is not a major predictor of BE delivery and EI, other factors likely account for most of the variations.

The result presented in Table 2 revealed that the extent to which VC in BE influences students' entrepreneurial intention in tertiary institutions in Akwa Ibom State is very low. The corresponding hypothesis in Table 4 also showed that there is a significant extent of influence of VC in BE delivery on students' entrepreneurial intention in tertiary institutions in Akwa Ibom State. This finding agreed with the findings of Emehi and Nwosu (2023) who found that the use of digital library, VC and Google search engine have positive influence on the learning of BE in public universities in South-South, Nigeria. The hypothesis was significant, meaning that VC in BE delivery does influence students' entrepreneurial intention. However, the extent of influence is very low. This suggests that while VC contributes to students' entrepreneurial intention, 84.6% of the variations in students' entrepreneurial intention was explained by other factors.

Conclusion

Based on the findings of the study, it was concluded that digital tools in BE delivery have very low influence on students' entrepreneurial intention. The findings showed that there was a significant extent of influence of LMS and VC in BE delivery on students' entrepreneurial intention in tertiary institutions in Akwa Ibom State. On the whole, it could further be said that although there are influences, digital tools are not the major predictor of BE delivery and EI, other factors likely account for most of the variations.

Recommendations

Based on the findings of the study, the following recommendations are offered:

1. Tertiary institutions should integrate LMS with other pedagogical strategies to deliver BE for students' entrepreneurial intention
2. Management of tertiary institutions should invest in training lecturers and students on effective utilisation of VC to maximise its impacts on BE delivery for students' entrepreneurial intention.

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RECRUITMENT AND SELECTION PRACTICES AND TEACHER JOB PERFORMANCE IN PUBLIC SECONDARY SCHOOLS IN EDO STATE

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Abstract

This empirical study examined the relationship between recruitment and selection practices—specifically recruitment criteria, interview processes, and merit-based selection—and teacher job performance in public secondary schools in Edo State. The study was anchored in Human Capital Theory and Signalling Theory. A descriptive survey design was adopted. The population comprised 3,200 public secondary school teachers across Edo State, from which the study selected a sample of 343 teachers using proportional stratified random sampling. Data were collected using a validated 4-point Likert scale questionnaire titled the Recruitment Practices and Teacher Performance Questionnaire (RPTPQ). The instrument showed high internal consistency across all subscales, with alphas ranging from .82 to .89. Descriptive statistics (means and standard deviations) were used to address the four research questions, while multiple linear regression tested the null hypotheses at the .05 level of significance. Findings revealed that merit-based selection (β = .412, p < .05), interview processes (β = .315, p < .05), and recruitment criteria (β = .142, p < .05) all had statistically significant positive effects on teacher job performance. Together, these predictors explained 51.0% of the variance in teacher performance (R^2 = .510, F = 113.12, p < .001). It was concluded that structured, transparent, and merit-driven hiring directly enhances classroom effectiveness and teacher output. Recommendations include enforcing strict meritocracy, institutionalising practical micro-teaching sessions alongside Computer-Based Testing (CBT), and expanding digital credential verification across Edo State public schools.

Introduction

1.1 Background to the Study

Education is universally recognised as one of the most powerful instruments for national development, social transformation, and economic growth (Darling-Hammond, 2017; UNESCO, 2021; World Bank, 2020). It equips individuals with the knowledge, values, technical competencies, and analytical skills necessary to foster human capital accumulation and technological advancement (Becker, 1964; Schultz, 1961). Within the Nigerian educational structure, secondary education occupies a pivotal position (Peretomode, 2014). It serves as the primary bridge between foundational basic education and tertiary institutions while preparing youth for direct participation in the labour force and civil society (Mkumbo, 2021; Peretomode, 2014).

Public secondary schools are responsible for providing equitable, accessible, and high-quality instruction to adolescents from diverse socio-economic backgrounds (OECD, 2019; World Bank, 2020). However, a secondary school's institutional success depends fundamentally on the quality of its teaching staff (Darling-Hammond, 2017; Kasozi, 2020). Teachers are the operational backbone of the educational system (Mkumbo, 2021). They are directly responsible for curriculum implementation, classroom management, student assessment, character formation, and preparing candidates for external assessments such as the West African Senior School Certificate Examination (WASSCE) and the National Examinations Council (NECO) assessments (Edo State Ministry of Education, 2025; Peretomode, 2014). Consequently, teacher job performance—defined as the execution of professional instructional duties in ways that optimise student learning outcomes—serves as the main determinant of educational standards and institutional efficacy (Darling-Hammond, 2017; Faisal et al., 2023; Schmidt & Hunter, 1998).

Despite teachers' crucial role, educational institutions across Sub-Saharan Africa, including Nigeria, face persistent concerns about declining instructional effectiveness and suboptimal student academic performance (Mkumbo, 2021; World Bank, 2020). In Edo State, public secondary schools have experienced systemic challenges, including poor instructional delivery, weak classroom management, examination irregularities, and waning professional ethics (Edo State Ministry of Education, 2025).

Organisational scholars and policy analysts increasingly trace these instructional deficiencies to human resource entry points, specifically weak recruitment and selection practices (Armstrong & Taylor, 2020; Dessler, 2019; Musah & Abdulai, 2021).

Recruitment is the systematic process of seeking and attracting qualified candidates for existing or anticipated vacancies, whereas selection involves evaluating candidates to hire those most likely to succeed in the role (Armstrong & Taylor, 2020; Dessler, 2019). In ideal administrative frameworks, entry into the teaching profession relies on rigorous recruitment criteria (such as possession of an NCE, B.Ed., B.Sc.Ed., PGDE, and TRCN licensing), multi-stage interview processes (including Computer-Based Tests, oral panels, and micro-teaching sessions), and merit-based selection principles (Kasozi, 2020; Musah & Abdulai, 2021; Peretomode, 2014).

In Edo State, the state government has instituted institutional reforms—most notably the EdoBEST (Edo Basic Education Transformation) and EdoSTAR (Edo Supporting Teachers to Achieve Results) initiatives—aimed at improving teacher recruitment, digital attendance tracking, pedagogical supervision, and professional development (Edo State Ministry of Education, 2025). Nevertheless, empirical evidence suggests that recruitment processes in certain public secondary schools remain vulnerable to non-merit factors, including political interference, nepotism, favouritism, and inadequate screening procedures (Edo State Ministry of Education, 2025; Peretomode, 2014). When recruitment prioritises personal connections or subjective preferences over verified competencies, unqualified or under-motivated personnel enter the teaching cadre (Dessler, 2019; Mkumbo, 2021). This directly compromises classroom delivery, classroom management, and overall academic performance (Darling-Hammond, 2017; Kasozi, 2020).

To investigate this dynamic systematically, this study evaluates how recruitment criteria, interview processes, and merit-based selection influence teacher job performance in public secondary schools in Edo State.

1.2 Statement of the Problem

The persistent decline in students' academic achievement in public secondary schools across Edo State has raised serious empirical concern among educational researchers, administrators, and policy stakeholders (Edo State Ministry of Education, 2025; Peretomode, 2014). Observers frequently highlight widespread instructional deficiencies, including poor lesson planning, ineffective classroom organisation, inadequate assessment methods, and low teacher commitment to extracurricular responsibilities (Darling-Hammond, 2017; Kasozi, 2020; Mkumbo, 2021).

While infrastructure deficits and shortages of learning materials contribute to these outcomes, human resource management practices, particularly entry-level recruitment and selection procedures, constitute a major structural vulnerability (Armstrong & Taylor, 2020; Dessler, 2019; Faisal et al., 2023). Sectoral reports indicate that public school hiring in the region has, at times, been compromised by political recommendations, patronage networks, corrupt practices, and subjective interview evaluations (Edo State Ministry of Education, 2025; Peretomode, 2014). Under such conditions, standard qualifications (such as TRCN certification or educational specialisation) and practical instructional capabilities are compromised during the hiring process (Musah & Abdulai, 2021; World Bank, 2020).

While descriptive literature asserts that effective human resource practices improve organisational output (Armstrong & Taylor, 2020; Dessler, 2019; Schmidt & Hunter, 1998), empirical evidence quantifying the relative contributions of recruitment criteria, interview processes, and merit-based selection to teacher job performance in Edo State public secondary schools remains limited. This study addresses this gap by investigating how specific recruitment and selection dimensions affect teacher job performance.

1.3 Purpose of the Study

The primary purpose of this study is to examine how recruitment and selection practices affect teacher job performance in public secondary schools in Edo State. Specifically, the study seeks to:

1. Assess the overall baseline level of teacher job performance in public secondary schools in Edo State.
2. Determine the influence of recruitment criteria on teacher job performance in public secondary schools in Edo State.
3. Evaluate the effect of multi-stage interview processes on teacher job performance in public secondary schools in Edo State.
4. Analyse the impact of merit-based selection on teacher job performance in public secondary schools in Edo State.

1.4 Research Questions

The following research questions guided the study:

1. What is the level of teacher job performance in public secondary schools in Edo State?

2. To what extent do recruitment criteria affect teacher performance in public secondary schools in Edo State?
3. What is the effect of interview processes on job performance in public secondary schools in Edo State?
4. How does merit-based selection affect teacher job performance in public secondary schools in Edo State?

1.5 Hypotheses

The following null hypotheses were formulated and tested at the .05 level of significance:

- **H1:** Recruitment criteria do not significantly predict teacher job performance in public secondary schools in Edo State.
- **H2:** Interview processes do not significantly predict teacher job performance in public secondary schools in Edo State.
- **H3:** Merit-based selection does not significantly predict teacher job performance in public secondary schools in Edo State.

1.6 Significance of the Study

The empirical findings of this study offer practical and theoretical contributions to educational stakeholders:

- Provides empirical data to refine teacher hiring frameworks, standardise CBT assessments and micro-teaching evaluations, and insulate entry procedures from non-merit influences.
- Offers insights into how rigorous recruitment indicators correspond directly to classroom execution, helping local administrators identify professional development needs.
- Expands the empirical literature on Human Resource Management (HRM) in the African public education sector, offering a validated model for future studies.

1.7 Scope of the Study

This study was limited to public secondary schools across the three senatorial districts of Edo State (Edo South, Edo Central, and Edo North). Conceptually, the independent variables were restricted to three entry dimensions: recruitment criteria, interview processes, and merit-based selection. The dependent variable was teacher job performance, measured across lesson planning, instructional delivery, classroom management, and student evaluation.

2.1 Theoretical Framework

2.1.1 Human Capital Theory

Human Capital Theory, first conceptualised by Theodore Schultz (1961) and elaborated by Gary Becker (1964), holds that individuals possess skills, knowledge, capabilities, and attributes acquired through education and training, which directly determine their economic output and organisational performance.

In secondary education, human capital comprises subject mastery, pedagogical skills, classroom management techniques, and professional certifications (Darling-Hammond, 2017; Kasozi, 2020). The theory underpinning this study holds that entry-level recruitment criteria and selection practices serve as structural quality-assurance filters (Armstrong & Taylor, 2020; Dessler, 2019). When an educational authority sets standard criteria (such as specialised B.Ed. degrees and TRCN licensing) and enforces meritocracy, it selects applicants with high baseline human capital (Becker, 1964; Schultz, 1961). Consequently, teachers with high human capital deliver higher-quality instruction, implement structured lesson plans, and manage classroom dynamics effectively (Darling-Hammond, 2017; Mkumbo, 2021).

2.1.2 Signalling Theory

Michael Spence (1973) formulated Signalling Theory to address information asymmetry in decision-making contexts. In job markets, employers cannot directly observe an applicant's future productivity before hiring (Dessler, 2019; Spence, 1973). Applicants therefore use observable "signals"—such as educational attainment, professional certifications, CBT scores, and practical micro-teaching demonstrations—to convey their underlying capability (Musah & Abdulai, 2021; Spence, 1973).

Applied to teacher recruitment in public secondary schools, school boards face selection risks when objective mechanisms to verify applicants' capabilities are lacking (Armstrong & Taylor, 2020; Schmidt & Hunter, 1998). Structured interview processes (such as micro-teaching demonstrations and CBTs) provide reliable signals of pedagogical delivery, communication skills, and emotional stability (Musah & Abdulai, 2021; Schmidt & Hunter, 1998). Merit-based selection ensures that decisions rely on these verified signals rather than unvetted political recommendations, reducing adverse selection and securing competent teaching personnel (Faisal et al., 2023; Spence, 1973).

2.2.1 Concept of Teacher Job Performance

Teacher job performance refers to the sum of activities a teacher undertakes over a specific period to

achieve institutional educational goals (Armstrong & Taylor, 2020; Darling-Hammond, 2017). It encompasses instructional and non-instructional duties, including

- Lesson Preparation and Planning: Constructing systematic lesson notes aligned with curriculum benchmarks (Darling-Hammond, 2017; Kasozi, 2020).
- Instructional Delivery: Using student-centered methodologies, pedagogical tools, and clear communication (OECD, 2019; UNESCO, 2021).
- Classroom Management: Maintaining order, fostering active student engagement, and promoting positive behavioural standards (Peretomode, 2014; World Bank, 2020).
- Student Assessment and Evaluation: Developing valid assessment instruments, providing timely feedback, and tracking academic progress (Edo State Ministry of Education, 2025; Mkumbo, 2021).

2.2.2 Recruitment Criteria

Recruitment criteria are the benchmark standards, qualifications, and competencies set by hiring authorities to assess applicant eligibility (Armstrong & Taylor, 2020; Dessler, 2019). Key criteria in public education include:

- **Educational Qualifications:** Possession of professional education credentials (e.g., NCE, B.Ed., B.Sc.Ed., or PGDE) (Darling-Hammond, 2017; Peretomode, 2014).
- **Professional Registration:** Certification by the Teachers Registration Council of Nigeria (TRCN) (Edo State Ministry of Education, 2025; Peretomode, 2014).
- **Subject Specialization:** Direct alignment between candidate academic discipline and teaching vacancies (e.g., Mathematics, Physics, English) (Mkumbo, 2021; World Bank, 2020).
- **Cognitive and Communication Competencies:** Demonstrated literacy, numeracy, and verbal presentation skills (Faisal et al., 2023; Schmidt & Hunter, 1998).

2.2.3 Interview Processes

The interview process serves as an empirical screening framework for evaluating capabilities that paper qualifications cannot fully capture (Armstrong & Taylor, 2020; Schmidt & Hunter, 1998). Comprehensive selection models utilise:

- **Computer-Based Testing (CBT):** Standardised testing evaluating subject mastery and pedagogical knowledge, minimising human scoring bias (Edo State Ministry of Education, 2025; Faisal et al., 2023).
- **Oral Panel Interviews:** Interactive evaluations measuring communication style, professional disposition, and emotional stability (Dessler, 2019; Musah & Abdulai, 2021).
- **Practical Micro-Teaching Demonstrations:** Teaching simulations before an expert panel to observe lesson structure, board usage, student engagement techniques, and time management (Darling-Hammond, 2017; Schmidt & Hunter, 1998).

2.2.4 Merit-Based Selection

Merit-based selection is an administrative principle wherein candidate appointment relies on objective, verifiable performance metrics rather than arbitrary, subjective, or non-job-related attributes (Kasozi, 2020; Mkumbo, 2021). Key features include:

- **Transparency:** Public advertisement of vacancies, explicit posting of evaluation criteria, and open publication of final scores (Armstrong & Taylor, 2020; OECD, 2019).
- **Objectivity: Use of standardised rubric scales for scoring tests and interviews (Dessler, 2019; Schmidt & Hunter, 1998).**
- **Insulation from Political Interference:** Independence of recruitment panels from external patronage or administrative coercion (Kasozi, 2020; Peretomode, 2014).

2.3 Empirical Review

Empirical research across global, regional, and national contexts supports the link between recruitment rigour and organisational output.

- Schmidt and Hunter (1998), in a meta-analysis of 85 years of personnel selection research, established that multi-stage selection procedures combining cognitive ability tests with work sample assessments (such as practical demonstrations) yield high predictive validity ($r = .63$) for overall job performance. Similarly, an OECD (2019) report on international school staffing found that countries using competitive, merit-based entry evaluations consistently outperformed their peers in student literacy and science assessments.
- Mkumbo (2021) examined teacher recruitment practices and educational performance in Sub-Saharan Africa, finding that schools using merit-based selection achieved significantly higher instructional compliance ($p < .01$) than those relying on direct administrative postings. Kasozi

(2020) evaluated merit-based hiring in Ugandan secondary schools and found a strong positive correlation ($r = .68$, $p < .05$) between competitive selection procedures and teacher retention, lesson delivery, and assessment accuracy.

- Peretomode (2014) highlighted that non-merit factors, such as regional quotas and political patronage in Nigerian public school recruitment, undermine professional standards and classroom discipline. Musah and Abdulai (2021) examined entry criteria in West African public schools and found that teacher candidates' performance in micro-teaching interviews positively predicted end-of-term student evaluation scores (beta = .38, $p < .01$).

Despite these contributions, limited empirical research has simultaneously modelled the combined predictive power of recruitment criteria, multi-stage interviews, and merit-based selection on teacher performance metrics, specifically within public secondary schools in Edo State following modern reforms such as EdoBEST (Edo State Ministry of Education, 2025).

3.1 Research Design

This study adopted a cross-sectional descriptive survey design (Krejcie & Morgan, 1970). This design is suited to gathering quantitative data from a representative sample of secondary school teachers to describe and infer relationships between recruitment practices and performance variables without experimental manipulation.

3.2 Population of the Study

The target population comprised all 3,200 registered public secondary school teachers across the three senatorial districts of Edo State (Edo South, Edo Central, and Edo North), as recorded in the Edo State Ministry of Education's 2025 sector database.

3.3 Sample and Sampling Technique

The sample size of n = 343 teachers was determined using Krejcie and Morgan's (1970) standard formula for finite populations:

s = {X^2 N P (1-P)}{d^2 (N-1) + X^2 P (1-P)}

Where:

- s = Required sample size (343)
- X^2 = Chi-square for 1 degree of freedom at .05 confidence level (3.841)
- N = Target Population size (3,200)
- P = Population proportion assumed to be .50
- d = Degree of accuracy/margin of error (0.05)

A proportional stratified random sampling method was used to distribute the sample across the three senatorial districts:

Table 3.1: Population and Sample Distribution Across Senatorial Districts

Senatorial District	Teacher Population (N)	Percentage of Total	Sampled Teachers (n)
Edo South	1,600	50.0%	172
Edo Central	640	20.0%	68
Edo North	960	30.0%	103
Total	**3,200**	**100.0%**	**343**

Source: Field Design / Edo State Ministry of Education Database (2025).

3.4 Research Instrument

Data were collected using a self-administered instrument, the Recruitment Practices and Teacher Performance Questionnaire (RPTPQ). The instrument comprised two sections:

- **Section A:** Demographic information (Senatorial District, Gender, Highest Qualification, Years of Teaching Experience).
- **Section B:** 20 closed-ended items categorised into four subscales:
    1. *Recruitment Criteria* (5 items)
    2. *Interview Processes* (5 items)
    3. *Merit-Based Selection* (5 items)
    4. *Teacher Job Performance* (5 items)

Items were rated on a 4-point Likert scale: **Strongly Agree (4)**, **Agree (3)**, **Disagree (2)**, and **Strongly Disagree (1)**.

3.5 Validity and Reliability of the Instrument

To ensure face and content validity, three experts in the Measurement and Evaluation Department, Faculty of Education, University of Benin, reviewed the draft instrument. The researchers refined ambiguous statements in line with expert suggestions.

To assess internal consistency, a pilot study was conducted with 30 teachers in public secondary

schools in Delta State (outside the study area). Cronbach's Alpha (\alpha) reliability coefficients were calculated for each section:

alpha = {k}{k - 1}t(1 - sum sigma_i^2 sigma_t^2

Table 3.2: Cronbach's Alpha Reliability Coefficients

Subscale	Item Count (k)	Cronbach's Alpha (\alpha)	Internal Consistency
Recruitment Criteria	5	.82	High
Interview Processes	5	.85	High
Merit-Based Selection	5	.89	High
Teacher Job Performance	5	.87	High

Source: Pilot Study Analysis (2026).

Because all subscale coefficients exceeded the standard .70 threshold (Krejcie & Morgan, 1970), the instrument was deemed reliable for field research.

3.6 Method of Data Collection

The researchers administered the questionnaires directly to selected teachers across schools in Edo South, Edo Central, and Edo North with the help of three trained field research assistants. Of the 343 questionnaires distributed, 330 were completed and retrieved, yielding a 96.2% retrieval rate.

3.7 Method of Data Analysis

- Descriptive Statistics: Frequencies, percentages, means (\bar{X}), and standard deviations (SD) were used to summarise demographic data and answer the research questions. The real-limit decision rule for the mean was: 3.50 - 4.00 (Strongly Agree / Very High), 2.50 - 3.49 (Agree / High), 1.50 - 2.49 (Disagree / Low), and 1.00 - 1.49 (Strongly Disagree / Very Low). The criterion benchmark mean was set at 2.50.
- Inferential Statistics: Multiple linear regression analysis was conducted in SPSS version 28 to test the three hypotheses at the .05 level of significance.

DATA PRESENTATION, ANALYSIS, AND DISCUSSION OF FINDINGS

4.1 Demographic Profile of Respondents

Table 4.1: Demographic Characteristics of Respondents (n = 330)

Category	Sub-category	Frequency (f)	Percentage (%)
Senatorial District	Edo South	165	50.0%
	Edo Central	66	20.0%
	Edo North	99	30.0%
Gender	Male	138	41.8%
	Female	192	58.2%
Highest Qualification	NCE	42	12.7%
	B.Ed. / B.Sc.Ed.	215	65.2%
	M.Ed. / M.Sc. / Higher	73	22.1%
Years of Service	1–5 Years	84	25.5%
	6–10 Years	156	47.3%
	11 Years & Above	90	27.2%

Source: Field Survey Data (2026).

4.2

Research Question 1: What is the level of teacher job performance in public secondary schools in Edo State?

Table 4.2: Mean and Standard Deviation of Teacher Job Performance Items

S/N	Item Statement	\bar{X}	SD	Remark
1.	Teachers regularly prepare lesson plans aligned with curriculum standards.	3.31	0.49	High
2.	Teachers effectively	3.22	0.51	High

S/N	Item Statement	\bar{X}	SD	Remark
	manage classroom discipline and student behavior.			
3.	Teachers utilize diverse pedagogical methods to explain difficult concepts.	3.12	0.54	High
4.	Continuous assessments and diagnostic tests are conducted regularly.	3.18	0.50	High
5.	Teachers participate in extra-curricular activities and school committee duties.	3.07	0.56	High
	Overall Subscale Cluster Mean / SD	**3.18**	**0.52**	**High**

Source: Field Survey Data (2026). Benchmark Mean = 2.50.

The results in Table 4.2 indicate an overall cluster mean of 3.18 (SD = 0.52), exceeding the benchmark mean of 2.50. This indicates a high baseline level of teacher job performance among the sampled public secondary school teachers in Edo State.

Research Question 2: To what extent do recruitment criteria influence teacher job performance in public secondary schools in Edo State?

Table 4.3: Mean and Standard Deviation of Recruitment Criteria Items

S/N	Item Statement	\bar{X}	SD	Remark
6.	Hiring candidates with B.Ed./PGDE credentials improves lesson planning quality.	3.01	0.58	Agreed
7.	Enforcing TRCN professional registration ensures high ethical standards.	2.85	0.63	Agreed
8.	Matching candidate subject specialization with vacancies enhances instructional delivery.	2.94	0.60	Agreed
9.	Verifying academic credentials prevents the entry of unqualified teachers.	2.82	0.64	Agreed
10.	Screening candidates for oral communication skills improves classroom management.	2.78	0.62	Agreed
	Overall Subscale Cluster Mean / SD	**2.88**	**0.61**	**Agreed**

Source: Field Survey Data (2026).

Table 4.3 demonstrates that respondents agreed {X} = 2.88, SD = 0.61) that strict recruitment criteria positively influence teacher job performance.

Research Question 3: What is the effect of interview processes on teacher job performance in public secondary schools in Edo State?

Table 4.4: Mean and Standard Deviation of Interview Process Items

S/N	Item Statement	\bar{X}	SD	Remark
11.	Computer-Based Testing (CBT) objectively measures applicant subject knowledge.	3.15	0.51	Agreed
12.	Practical micro-teaching sessions evaluate candidate classroom delivery skills.	3.12	0.53	Agreed
13.	Panel interviews effectively evaluate candidates' emotional intelligence.	2.98	0.56	Agreed
14.	Structured interview scoring rubrics reduce evaluator bias.	3.02	0.54	Agreed
15.	Multi-stage screening ensures only confident and capable candidates are hired.	2.98	0.56	Agreed
	Overall Subscale Cluster Mean / SD	**3.05**	**0.54**	**Agreed**

Source: Field Survey Data (2026).

Table 4.4 shows an overall cluster mean of 3.05 (SD = 0.54), indicating that multi-stage interview processes are perceived as key contributors to teacher effectiveness.

Research Question 4: How does merit-based selection affect teacher job performance in public secondary schools in Edo State?

Table 4.5: Mean and Standard Deviation of Merit-Based Selection Items

S/N	Item Statement	\bar{X}	SD	Remark
16.	Selecting teachers strictly on merit enhances overall classroom teaching quality.	3.24	0.45	Agreed
17.	Eliminating political patronage during hiring improves teacher commitment.	3.18	0.47	Agreed
18.	Transparent selection frameworks boost newly hired teachers' confidence.	3.08	0.50	Agreed
19.	Competitive selection processes attract highly qualified education professionals.	3.06	0.51	Agreed
20.	Meritocratic hiring directly reduces instances of	3.04	0.49	Agreed

S/N	Item Statement	\bar{X}	SD	Remark
	instructional incompetence.			
	Overall Subscale Cluster Mean / SD	**3.12**	**0.48**	**Agreed**

Source: Field Survey Data (2026).

Table 4.5 shows a cluster mean of 3.12 (SD = 0.48), indicating that respondents agreed that merit-based selection enhances teacher job performance.

4.3 Testing Hypotheses

Multiple linear regression analysis used the three recruitment subscales (Recruitment Criteria, Interview Processes, Merit-Based Selection) as predictors and Teacher Job Performance as the dependent variable. Before interpreting the model, regression diagnostics confirmed that variance inflation factors (VIFs) were below 2.5, indicating no severe multicollinearity, and residual plots confirmed normality and homoscedasticity.

Table 4.6: Multiple Regression Model Summary

Model	R	R Square (R^2)	Adjusted R Square	Std. Error of the Estimate
1	.714	.510	.505	0.366

Predictors: (Constant), Merit-Based Selection, Interview Processes, Recruitment Criteria. Dependent Variable: Teacher Job Performance.

Table 4.7: ANOVA Summary Table

Model	Sum of Squares	df	Mean Square	F	p-value (Sig.)
Regression	45.421	3	15.140	113.120	.000^b
Residual	43.629	326	0.134		
Total	**89.050**	**329**			

a. Dependent Variable: Teacher Job Performance. b. Predictors: (Constant), Merit-Based Selection, Interview Processes, Recruitment Criteria.

The model summary in Table 4.6 and the ANOVA in Table 4.7 indicate that the combined independent variables explain 51.0% of the variance in teacher job performance (R = .714, R^2 = .510, \text{Adjusted } R^2 = .505). The overall model is statistically significant (F(3, 326) = 113.120, p < .001).

Table 4.8: Regression Coefficients Table

Model Predictors	Unstandardized Coefficients (\beta)	Std. Error	Standardized Coefficients (\beta)	t-statistic	p-value (Sig.)
(Constant)	0.612	0.145	—	4.221	.000
Recruitment Criteria (X_1)	0.142	0.052	.128	2.731	.007
Interview Processes (X_2)	0.315	0.058	.302	5.431	.000
Merit-Based Selection (X_3)	0.412	0.061	.421	6.754	.000

Dependent Variable: Teacher Job Performance.

Hypothesis 1 Testing

- **H1:** Recruitment criteria do not significantly predict teacher job performance in public secondary schools in Edo State.
- **Statistical Decision: Table 4.8 shows that recruitment criteria significantly predict teacher job performance beta = .142, t = 2.731, p = .007. As p (.007) < .05, null hypothesis H1 is rejected. Setting stringent academic and professional qualification criteria directly enhances teacher job performance.**

Hypothesis 2 Testing

- **H2:** Interview processes do not significantly predict teacher job performance in public secondary schools in Edo State.
- **Statistical Decision:** Table 4.8 indicates that interview processes significantly predict teacher job performance (\beta = .315, t = 5.431, p = .000). Because p (.000) < .05, null hypothesis 2 (\text{H}_02) is **rejected**. Multi-stage interviews featuring CBT and micro-teaching demonstrations significantly increase teacher classroom effectiveness.

Hypothesis 3 Testing

- **H3:** Merit-based selection does not significantly predict teacher job performance in public secondary schools in Edo State.
- **Statistical Decision:** Table 4.8 reveals that merit-based selection is the strongest individual predictor of teacher job performance (\beta = .412, t = 6.754, p = .000). Because p (.000) < .05, null hypothesis 3 H3 is **rejected**. Meritocratic hiring exerts a significant positive impact on teacher job performance.

4.4 Discussion of Findings

The results of this study confirm that recruitment and selection practices play a primary role in shaping teacher job performance in public secondary schools in Edo State.

The rejection of Null Hypothesis 1 shows that clear recruitment criteria (such as specialised degrees, TRCN licensing, and subject alignment) provide a necessary baseline for job success. This finding aligns with Schultz (1961) and Becker's (1964) Human Capital Theory, which posits that formal educational credentials and specialised training are essential investments that increase operational capability. This outcome is consistent with findings by Musah and Abdulai (2021), who reported that entry requirements significantly influence the accuracy of lesson preparation.

Rejecting Null Hypothesis 2 shows that interview processes, particularly structured assessments like Computer-Based Testing (CBT) and practical micro-teaching simulations, significantly predict job performance. Grounded in Spence's (1973) Signalling Theory, practical demonstrations allow hiring panels to evaluate pedagogical signals, communication ability, and classroom control that traditional credentials cannot display on their own. This finding supports Schmidt and Hunter's (1998) selection validity research, which identified work sample tests as reliable predictors of employee performance.

The rejection of Null Hypothesis 3 reveals that merit-based selection is the single strongest predictor (\beta = .412) of teacher job performance in Edo State public secondary schools. When hiring decisions are insulated from political interference, nepotism, and financial bribery, the education system attracts committed, highly competent professionals. Conversely, bypassing meritocracy introduces adverse selection, leading to ineffective lesson delivery, poor discipline, and lower academic outcomes. These empirical results reinforce studies by Kasozi (2020) and Mkumbo (2021), who reported that merit-based appointments strongly correlate with institutional performance metrics across East African public secondary schools.

5.1 Summary of the Study

This study empirically examined how recruitment criteria, interview processes, and merit-based selection influence teacher job performance in public secondary schools in Edo State. Grounded in Human Capital Theory and Signalling Theory, the study employed a descriptive survey design. A sample of 343 teachers was drawn from a population of 3,200 public secondary school teachers across the Edo South, Edo Central, and Edo North senatorial districts using proportional stratified random sampling. Data were collected using the validated 20-item Recruitment Practices and Teacher Performance Questionnaire (RPTPQ) (α = .82 - .89). Data analysis, using means, standard deviations, and multiple linear regression, yielded the following primary findings:

1. Public secondary school teachers in Edo State show a high overall baseline level of teacher job performance X = 3.18, SD = 0.52.
2. Recruitment criteria significantly predict teacher job performance (\beta = .142, t = 2.731, p = .007), reflecting foundational instructional capabilities.
3. Interview processes significantly predict teacher job performance (\beta = .315, t = 5.431, p = .000), and CBT screening and micro-teaching demonstrations serve as reliable indicators of practical teaching capability.
4. Merit-based selection is the strongest predictor (\beta = .412, t = 6.754, p = .000) of teacher job performance, demonstrating that insulating recruitment from non-merit factors directly improves classroom effectiveness.
5. Collectively, recruitment criteria, interview processes, and merit-based selection account for 51.0% of the total variance in teacher job performance in Edo State public secondary schools (R^2 = .510, F = 113.120, p < .001).

5.2 Conclusion

Based on these findings, the study concludes that teacher job performance in public secondary schools in Edo State depends significantly on entry-level human resource screening mechanisms. Standardised recruitment criteria, multi-stage interview assessments, and strict adherence to meritocracy serve as vital quality-control filters. When educational authorities enforce transparent, merit-driven hiring procedures, public secondary schools secure qualified, dedicated teachers capable of effective classroom management, lesson planning, and student instruction. Conversely, compromising recruitment standards through political patronage or subjective screening directly leads to instructional

deficiencies in the classroom.

5.3 Recommendations

Based on the conclusions drawn, the following policy and administrative recommendations are presented:

1. The Edo State Ministry of Education and the Teaching Service Commission (TSC) should establish binding legislative frameworks that mandate merit-based entry for all public secondary school teachers. Recruitment processes should be insulated from political patronage, nepotism, and external administrative interference.
   Selection procedures across Edo State public schools should integrate Computer-Based Testing (CBT) for objective subject-matter screening alongside practical micro-teaching sessions evaluated by expert pedagogical panels.
2. The Teaching Service Commission should integrate digital verification pipelines with tertiary institutions and the Teachers Registration Council of Nigeria (TRCN) to verify academic credentials and professional licenses before shortlisting candidates.
3. Interview scoring should rely on standardised, objective rubric matrices to evaluate candidates' communication skills, emotional intelligence, and pedagogical competencies, minimising subjective interviewer bias.
4. To ensure fair distribution of highly qualified teachers recruited through merit, the Edo State Government should provide rural posting allowances, subsidised housing, and accelerated career progression tracks to retain top-tier teachers in rural communities.

5.4 Contributions to Knowledge

This empirical work advances educational management literature in several ways:

- It provides empirical validation for Human Capital Theory and Signaling Theory within the context of Sub-Saharan public secondary school administration.
- It offers a validated instrument (*RPTPQ*) and empirical regression model (beta weights) quantifying the predictive impact of distinct recruitment dimensions on classroom performance.
- It provides empirical data for the Edo State Ministry of Education to guide ongoing state reforms (e.g., EdoBEST and EdoSTAR).

5.5 Suggestions for Further Research

To build upon the findings of this study, future scholars are encouraged to explore the following areas:

1. Conduct longitudinal studies tracking newly recruited cohort performance over a 5-year period to measure the long-term retention of merit-based selection benefits.
2. Perform comparative empirical studies evaluating recruitment practices and teacher job performance between public and private secondary schools in Edo State.
3. Investigate the potential mediating effects of teacher salary satisfaction, school head leadership style, and physical instructional infrastructure on the relationship between recruitment practices and teacher job performance.

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INTEGRATING ENTREPRENEURSHIP EDUCATION INTO TECHNICAL VOCATIONAL EDUCATION AND TRAINING (TVET): A PANACEA FOR SUSTAINABLE YOUTH EMPOWERMENT IN BORNO STATE

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Abstract

Nigeria today is in a depressed economy because one of the tools that is needed to revamp the economy is been looked down upon. The development of any nation is based in her economic, industrial and technological advancement. Effective integrating entrepreneurship education into Technical Vocational Education and Training (TVET) programme is a solution to any depressed economy. Entrepreneurship education is a programme of study that seeks to redefine tertiary learning, provide its recipients with knowledge, skills, ability, motivation, experience and values needed to perform effectively in a specified business enterprise as entrepreneur after graduation. The study was carried out in Ramat Polytechnic, Maiduguri, Borno state to examine: Integrating *Entrepreneurship Education into TVET: a solution for sustainable youth empowerment in Borno State. The study adopted descriptive survey design. Two research questions and two null hypotheses guided the study. The population of the study was 44 lecturers drawn from department of Entrepreneurship and Technical Vocational Education, Ramat Polytechnic, Maiduguri. The entire population was used as sample since it was small and manageable. The instrument for date collection was structured questionnaire, designed by the researchers titled: Integrating Entrepreneurship Education into TVET Questionnaire (IEETVETQ). The instrument was a four-point rating scale contained there-in was 25 items which was face and content validated by three experts. One in the department of Entrepreneurship, one in the department of Technical Vocational Education, Ramat Polytechnic and the other one in Measurement and Evaluation, department of Education, University of Maiduguri. The Cronbach Alpha reliability index was used to determine the overall reliability coefficient of 0.79. 44 copies of the instrument administered were successfully retrieved. This was a hundred percent returned rate. Mean and Standard Deviation were used to answer the research questions while the two null hypotheses were tested at 0.05 level of significance. One of findings of the study revealed the appropriate pedagogical methods of effectively integrating entrepreneurial education into TVET as a tool to include: Industry-academia partnerships, and enhances the relevance of TVET and as well empowers its recipients to leverage their technical skills to gorge innovative business enterprises. Consequently, the study concluded based on the findings that youth in Borno state will be self-reliant, self confident and gradually grow to become employer of labor when entrepreneurship is effectively embedded into TVET. It was therefore, recommendation among others that institutions offering entrepreneurship education should endeavor to provide enabling environment that will encourage Industry-academic partnerships for enhance quality and best practice pedagogical methods of integration of entrepreneurship education into TVET for sustainable youth empower in a knowledge-based economy.*

Key Words: Integrating, Entrepreneurship, Technical Vocational Education and Training

Introduction:

The Nigeria's philosophy of education is based on the belief that education is an instrument for national development and social change. Education is vital for the promotion of a progressive and united Nigeria. Education maximizes the creative potential and skills of the individual for self-fulfillment and general development of the society (FGN, 2013). In Nigeria education is essential for sustainable development especially for generating employment and cultivation of innovative and independent culture. Technical Vocational Education and Training (TVET) is a branch of education and training which provides students with knowledge and hands-on skills for employment. TVET is recognized to

be a crucial vehicle for social equity, inclusion and sustainable youth development (FGN, 2013). TVET includes formal, non-formal and informal learning that plays a crucial role in equipping individuals with knowledge and hands-on or practical skills necessary for various industries and sectors. TVET programmes offer hands-on training, industry-relevant skills development, and career pathways that address the evolving needs of the job markets. TVET recognizes the importance of lifelong learning and provides opportunities for individual learners to acquire new skills, up-skills and re-skills existing ones to adapt to technological advancements and changing industry demands in a particular field at any stage of their career. TVET serves as a cornerstone for skill development, preparing a workforce that is adaptable, skilled and ready for the challenges of modern economies. In fact, the key to bridging the gap between educational experiences and the demands of industry is TVET.

Over the years, Technical Vocational Education and Training (TVET) has been called many names: Apprenticeship training, Vocation education, Occupational education, Technical education, Professional and Vocation education, Career and Technical education, Workforce education, Workplace education and Education met for drop-out, but now it is a panacea for economy growth and stability. According to Okoye and Chijioke (2023), defined TVET is the form of education that advocates development of the head, training of the hands and enriching the heart. TVET offers a solution to unemployment challenges through the provision of high quality relevant training to individuals. This is why the introduction of entrepreneurship as a course of study into Nigerian educational curriculum, to equip students with the practical skills they need to succeed in today's rapidly changing world of work; and also the introduction of the Student Industrial Work Experience Scheme (SIWES). SIWES is a planned supervised skills training program in Nigeria designed to give tertiary institution students practical work experience in their field of study, thereby, bridging the gap between classroom theory and real-world industry practice. Integrating Entrepreneurship Education into TVET in Borno State involves aligning key strategies for sustainable youth empowerment is technical business skill which needs to be developed and improved upon often time. Skills development entails the identifications of practical skills in an individual, applying the skill effectively and efficiently, and improving on them often time. Hence the call of young women and girls to participate in technical training in the Refrigerator and Air-Conditioning (RAC) sector, to help close the skills gap, promotes inclusively and create more opportunities for innovation and sustainable growth in the industry (UNIDO, 2026). This implies a situation where an identified skill is used proficiently to produce desirable results while improving upon the same skill with time. Integrating entrepreneurship into TVET framework enhances the relevance of Vocational and Technical Education and empowers learners to leverage their technical skills to forge innovative business ventures. This synergy between Entrepreneurship and TVET is crucial for nurturing the business leaders of tomorrow, transforming learners into creators and innovators in their respective field (Morley, 2022).

However, entrepreneurship education entails seeking to provide learners with knowledge, skills and motivation to encourage and ensures entrepreneurial success. Entrepreneurial education in the view of Oshosanya (2024) seeks to provide opportunities to work based on experienced. Entrepreneurship education also provides opportunities for developing leadership, management and interpersonal skills. Entrepreneurial education whatever its content and process, should be able to orient Nigerian youth for self-reliance organization of production. Carballo (2020) asserted that one of the most important solutions in the field of youth empowerment in Nigeria is entrepreneurship, development and encouragement. This statement aligns with the view of Salami (2022) that the major goal of entrepreneurship education is to build young people's initial and entrepreneurial abilities and to get them ready for the workforce. It therefore, means that entrepreneurship education creates the spirit of self-reliance, self-respect, self-efficacy by the concept of self-employment and chasing their own dreams, paving the way for economic growth that will result in less unemployment rates and would lead to reducing poverty and social vices. Entrepreneurship also involves testing of one's ideas against an external reality. It is about transforming ideas into realities. Entrepreneurship goes beyond just starting a new business enterprises, it is rather a process through which individuals identify the opportunities in their environment, respond to these opportunities by identifying, selecting and allocating the resources needed to exploit that opportunity and create value. Hence, it is about transforming ideas in realities.

According to Shefiu, Dawodu, Oyenike and Babajide (2023) is of the opinion that entrepreneurship is the ability and willingness to create, plan, and run a business enterprise bearing all its risks with the ultimate goal of making profit. They also viewed entrepreneurship as a process of designing, launching, and running a new business venture. Entrepreneurship actually involves taking calculated risks by an individual in order to establish a business, taking advantage of the opportunities and thus enjoying the profit from the business alone. According to Bordia (2022) is of the opinion that entrepreneurship is an individual's capacity to put ideas into practice. Hence, an individual that

possesses the attributes of entrepreneurship is called an entrepreneur. It therefore, means that entrepreneurship encompasses a mindset directed towards creativity, innovation, calculated risk-taking and profit making. Entrepreneurship is rather a strategy of solving challenges in a way that is profitable. Hence it is a programme of instruction that equips its recipient with the requisite attributes of job creation and further education.

Entrepreneurship education in the views of Edokpolor and Ebori in Mamman and Haruna (2025) stated that Entrepreneurship is a course of study that teaches a variety of skills with the use of different methods and maximizing the best of them, such as: word processing, advertising, marketing, office business communication and accounting. They list the actual goals of Entrepreneurship education are to: (1) prepare students for specific career in office occupation (2) Equip students with the necessary skills for job creation and entrepreneurship (3) expose students to business knowledge, values, experience and ability which includes a good blend of computer technology. No wonder Okwori (2021) stated that when a individual feels the necessity of his role in the economical, social and political issues is vital the self empowerment and self esteem level of his increases, he or she becomes more enthused to share his/her ideas to plan for a better future with the use of any of the methods most suitable to achieving his dream. The empowerment process is mostly ongoing that means it depends on the learning methods that helps an individual to evolve this learning, which could be achieved through education and networking that focuses on employment issues such as entrepreneurship. Enemali (2020) sees entrepreneurship integration into TVET programme, students will be exposed to practical application of basic skills needed to function effectively as an entrepreneur in business environment, and to sustain them as entrepreneurs after graduation, if properly included in their curriculum

Technical Vocational Education and Training (TVET) on the other hand is an educational processes, ranging from secondary to tertiary levels, that focus on providing practical skills, knowledge, and attitudes for employment and entrepreneurship in specified trades. TVET emphasizes on hands-on training, thereby bridging the gap between education and the workplace with a focus on industry practices. Furthermore, one of the goals of TVET according to FGN (2013) is to give gives training and impact the necessary skills to individuals for self-reliance economically. This shows that TVET is a veritable tool for the economic, self-reliance of individuals who have been trained and have acquired the necessary skills in their various occupations. TVET occurs in educational (schools) or professional (workplace) settings. It combines formal (theoretical learning) that often takes place in the classroom and informal (this refers to self-directed education) that is practices, such as internships and on-the-job experiences) learning to equip students with the knowledge and skills needed in the workplace with a focus on the technical aspect, hence, students who participated in technical education programme with work experience are more likely to be employed than students who did not participate in such activities.

According to FGN (2013) posited that TVET is a comprehensive term referring to those aspects of the educational process involving in addition to general education, the study of technologies, related sciences and the acquisition of practical skills and values related to occupations in various sectors of economic and social life. Furthermore, UNESCO (2023) referred to TVET as a term constituting education, training and skills development in a variety of occupational domains. It is in the light of this that Onuegbu (2020), opined that may countries of the world have considered TVET as relevant in empowering youth with practical skills that will enable them engage in productive livelihood. They further saw TVET as an integral part of all inclusive education for all types of initiative which helps an individual to become an active-citizen and contribute positively to his own well-being and to the economic growth of the nation at large. This implies that TVET equips an individual with relevant hands-on training skills for self-reliance. Thus, prepare individuals especially youth for the world of work thereby making them self-reliant and employers of labor citizen of their nation.

Empowerment is the process of becoming stronger and more confident, especially in controlling one's life and claiming one's right (Adesanya, 2022). Empowerment in the education context refers to the process of giving learners the tools, resources, and opportunities necessary to take control of their own lives, makes informed decision and contribute to their communities. In the view of Adeboye (2023), empowerment is the process of enabling learners to develop the capacity to influence decisions, that affect their lives and to take action to achieve their goals. According to Babalola in Uteh and Iheukwumere (2025) stated that empowerment involves equipping learners with the necessary tools, knowledge and practical skills to actively participate in and influence their personal and community developing.

Youth empowerment is the process where young people are encouraged to take charge of their lives. They do this by addressing their situation and then take action in order to improve their access to resources and transform their consciousness through their belief, value, and attitude, which aims to improve quality life. Youth empowerment also refers to the process that provides young people with

the authority, tools, and opportunities to make informed decisions, create positive change in their lives, and contribute positively to economic growth (Rutherford, 2025). Youth empowerment focuses on building skills, self-confidence, and independence through education, entrepreneurship, TVET and being an active participant of community decision-making. Looking at the above concepts, the researcher can vividly say that youth empowerment is very crucial in Technical and Vocational Education and Training (TVET). This means that youth empowerment should not create dependency, but rather equips people with practical or hands-on skills, knowledge and confidence to be self-employed and make their own decision rather than after graduating from schools to become reliant on government job,

Statement of the Problem

It can be vividly be observed in Nigeria being one of the developing nations that there is high rate of unemployment, poverty, insecurity and social vices among youth in Borno state due to lack of white collar job. It could be reduced to a reasonable low extent if only majority of Nigerian youths are self-employed. The researcher also observed that the qualified youth are not securing white collar job, probably because they are not from politician family, if these set of youths are entrepreneurially empowered with practical skills, industrial skills they will become self reliance and live a reasonably comfortable life. TVET plays a vital role in supporting economic growth by bridging the gap between the skills demanded by industries and the skills possessed by the workforce. Integrating entrepreneurship education into TVET in Borno state is a critical, sustainable approach to youth empowerment, equipping them with technical and business skills, resilience, for self-reliance and combating unemployment. The high demand of skilled manpower and advancement in technology in addition to the ever increasing unemployment situation in the country prompted this study Integrating Entrepreneurship Education into Technical Vocational Education and Training (TVET) as a tool for sustainable empowerment of youth in Borno State. Since it is education directed towards the acquisition of knowledge and practical skills for youth self-reliance and employment, thus bridging the gap between theory and practice.

Research Questions:

The following research questions guided the study:

1. What are the appropriate pedagogical methods of integrating entrepreneurship education into Technical Vocational Education and Training (TVET) for sustainable youth empowerment in Borno State?
2. What are the current levels of integrating entrepreneurship education within the existing Technical Vocational Education and Training (TVET) curricula for sustainable youth empowerment in Borno Stata?

Research Hypotheses:

Ho_1**:** There is no significant relationship on the appropriate pedagogical methods for integrating Entrepreneurship Education into Technical Vocational Education and Training (TVET).

Ho_2: There is no significant relationship on the current level of integration of Entrepreneurship Education within the existing Technical Vocational Education and Training (TVET).

Research Methodology:

Due to the exploratory nature of the study, a descriptive survey design was adopted for the study. The design was considered most suitable for the study as it employs the small sample to make inference on a larger population. The study was conducted at Ramat Polytechnic in Maiduguri metropolis, Borno state. The choice of the institution was informed by the fact that this institution offers Technical Vocational Education and entrepreneurship education. The population of the study was 44 respondents, comprising of TVE (30) and Entrepreneurship education (14) lecturers respectively of Ramat Polytechnic, Maiduguri, Borno state. The entire population of 44 lecturers was used as the sample since it was small and manageable. A face and content validated structured questionnaire titled: Entrepreneurship Education into Technical Vocational Education and Training (TVET) Questionnaire (EETVETQ) was developed by the researchers through extensive review of literature based on the purposes of the study. Three experts validated the instrument. One was an expert in Test and Measurement, University of Maiduguri, One from TVE and the third from Entrepreneurship, Ramat Polytechnic, Borno state. The instrument for data collection contains 34 items. The instrument was a four point Likert-like rating scale of Strongly Agree (SA), Agree (A), Strongly Disagree (SD) and Disagree (D) with values of 4, 3, 2, and 1 respectively. Cronbach Alpha Coefficient was used to measure the internal consistency of the instrument and an overall coefficient of 0.79 was obtained. Mean and Standard Deviation were used to answer the research questions while t-test of independence

was used to test the null hypothesis of 0.05 level of significance. The study adopted the use of descriptive statistics in analyzing data collected from field. The two research questions were thus answered by the use of mean rating of the respondents on the Integration of Entrepreneurship Education into Technical Vocational Education and Training (TVET) for sustainable Youth Empowerment in Borno state. The decision rule of real limits of numbers of response mode was used to categorize the mean rating of the respondents. Any mean from 2.50 and above was accept/agree while all means from 2.49 and below were reject/disagree. The null hypothesis was not rejected where the calculated value is less than the significant level of 0.05 and rejected if the calculated value is equal to or greater than the significant level of 0.05

Data Analysis and Results:

The data gathered for the study is presented in this section followed by analysis and interpretation of the data collected. Results are presented using descriptive statistics and Chi-square test according to the research questions and hypotheses presented.

Research Question One: What are the appropriate pedagogical methods of integrating entrepreneurship education into Technical Vocational Education and Training (TVET)?

Table 1.1: Mean and Standard Deviation of responses of respondents showing the Appropriate Pedagogical Methods for Integrating Entrepreneurship Education into Technical Vocational Education and Training (TVET)

S/N	Statement	Mean	SD	Remark
1.	Industry-academia partnership method	3.57	0.50	Agree
2.	Project-based learning	3.32	0.86	Agree
3.	Practical mentorship and coaching	3.52	0.63	Agree
4.	Simulation/interactive method	2.93	0.66	Agree
5.	Blending technical skills learning	3.16	0.83	Agree
6.	Child-centered learning	4.45	1.34	Agree
7.	Work-based learning	3.36	0.69	Agree
8.	Role play learning	3.16	0.89	Agree
9.	Structure syllabus method	3.07	0.70	Agree
10.	Craftsmanship education from primary level	3.14	0.88	Agree
11.	Case-study learning	3.02	0.79	Agree
12.	Arranging interaction with Alumni who have become entrepreneurs	3.23	0.52	Agree
13.	On-the-job training method	3.25	0.53	Agree
14.	Computer-based instruction	3.36	0.65	Agree
15.	Creating and interacting with entrepreneurship development support agencies	3.41	0.79	Agree
	Grand Mean	**3.33**	**0.75**	**Agree**

Data in table 1.1 shows the ratings given by the respondents for the suitable pedagogical approaches for incorporating entrepreneurship education into Technical Vocational Education and Training (TVET). The findings showed that the mean score of child-centered learning was 4.45 with standard deviation (SD = 1.34), the highest score among the three learning pedagogies, suggesting that the respondents perceived it as the best pedagogical approach to help develop entrepreneurial knowledge and skills. Partnering with industry–academy (Mean = 3.57, SD = 0.50), practical mentorship and coaching (Mean = 3.52, SD = 0.63), and creation of entrepreneurship development support agencies and interaction with them (Mean = 3.41, SD = 0.79) followed. Also rated as appropriate methods were project-based learning (Mean = 3.32, SD = 0.86), work-based learning (Mean = 3.36, SD = 0.69), computer-based instruction (Mean = 3.36, SD = 0.65), on-the-job training (Mean = 3.25, SD = 0.53), and arranging interaction with alumni who have become entrepreneurs (Mean = 3.23, SD = 0.52).

Besides, the mean scores of technical skills learning and role-play learning were both 3.16 which were accepted by the respondents, the same is true when the respondents were given the choice of primary level craftsmanship education (Mean = 3.14, SD = 0.88), structured syllabus method (Mean = 3.07, SD = 0.70), and case-study learning (Mean = 3.02, SD = 0.79). The respondents showed

agreement regarding the suitability of the simulation/interactive method with a mean score of 2.93 and a standard deviation of 0.66, which was the lowest mean score but was still higher than the benchmark mean of 2.50. Thus, the findings showed that all the pedagogical methods identified were seen as suitable for integrating entrepreneurship education in TVET.

Research Question Two: What is the current level of integration of entrepreneurship education within the existing Technical Vocational Education and Training (TVET) curricula?

Table 2.1: Mean and Standard Deviation showing the responses of respondents on Current Level of Integration of Entrepreneurship Education within the Existing Technical Vocational Education and Training (TVET) Curricula

S/N	Statement	Mean	SD	Remark
1.	Integrating of entrepreneurship mindset of specific skills from job training into the existing TVET curricula	3.02	0.79	Agree
2.	Integrating entrepreneurship strong skills power of risk-taking within the existing TVET curricula	3.23	0.52	Agree
3.	Integrating entrepreneurship mind-set of high-self-esteem, self-confidence and management	3.25	0.53	Agree
4.	Integrating entrepreneurial mind-set of team working skills via practice	3.36	0.65	Agree
5.	Integrating entrepreneurship thinking of creativity and innovativeness	3.41	0.79	Agree
6.	Entrepreneurship mind-set of dignity and labor	3.18	0.97	Agree
7.	Entrepreneurship mind-set of time management	2.75	1.01	Agree
8.	Entrepreneurship mind-set of capacity to change an organizational ability	2.91	1.03	Agree
9.	Entrepreneurship thinking of explorative learning and holistic development within existing curricula	3.07	0.73	Agree
10.	Entrepreneurship mind-set of flexible to change	3.09	0.77	Agree
	Grand Mean	**3.13**	**0.78**	**Agree**

Data in table 2.1 shows the rating of the respondents on the current state of integration of entrepreneurship education into the current existing Technical Vocational Education and Training (TVET) curriculum. The results showed that integrating entrepreneurship thinking of creativity and innovativeness had the highest mean score (Mean = 3.41, SD = 0.79) followed by integrating entrepreneurial mind-set of team working skills via practice (Mean = 3.36, SD = 0.65), integrating entrepreneurship mind-set of high self-esteem, self-confidence and management (Mean = 3.25, SD = 0.53), and integrating entrepreneurship strong skills of risk-taking (Mean = 3.23, SD = 0.52). Similarly, entrepreneurship mind-set of dignity of labor (Mean = 3.18, SD = 0.97), integrating entrepreneurship mind-set of flexibility to change (Mean = 3.09, SD = 0.77), entrepreneurship thinking of explorative learning and holistic development within the existing curricula (Mean = 3.07, SD = 0.73), and integrating entrepreneurship mind-set of specific job skills from job training into the existing TVET curricula (Mean = 3.02, SD = 0.79) were also rated as being integrated into the curriculum.

In addition, entrepreneurship mind-set of ability to adapt to organizational changes (Mean = 2.91, SD = 1.03) and entrepreneurship mind-set of time management (Mean = 2.75, SD = 1.01) had the lowest mean scores. Yet, they were both above the criterion means of 2.50, meaning that

participants were in agreement that these entrepreneurial skills are also embedded in the current TVET programmes to lesser degrees. The results indicate that entrepreneurship education has been embedded in the current TVET curriculum by teaching some of the key entrepreneurial competencies, including creativity, innovation, teamwork, self-confidence, risk taking, job skills, adaptability, and time management. This means that the TVET curriculum is currently being embedded with opportunities to build up entrepreneurial knowledge, skills and entrepreneurial attitudes among learners as needed for self-employment and sustainable economic participation.

Ho_1: There is no significant relationship on the appropriate pedagogical methods for integrating entrepreneurship education into Technical Vocational Education and Training (TVET).

Table 3: Chi-square Goodness-of-Fit Test on Appropriate Pedagogical Methods

Response Category	Observed (O)	Expected (E)	df	χ^2	p-value
Strongly Agree	23	11			
Agree	15	11	3	12.34	0.006
Disagree	4	11			
Strongly Disagree	2	11			
Total	**44**				

The result of the Chi-square analysis for the appropriate pedagogical approaches of integration of entrepreneurship education into TVET is presented in Table 3. The Chi-square value was 12.34, the degrees of freedom were 3, and p-value was 0.006. The p-value (0.006) is below the level of significance (0.05) and thus the null hypothesis was rejected. This means that the observed frequencies of respondents' rating on the appropriate pedagogical methods for integrating entrepreneurship education into TVET are significantly different from the expected frequencies. The result indicates that there was a considerable level of acceptance by the respondents of the identified pedagogical approaches as suitable for the integration of entrepreneurship education in TVET.

Ho_2: There is no significant relationship on the current level of integration of entrepreneurship education within the existing Technical Vocational Education and Training (TVET) curricula.

Table 4: Chi-square Goodness-of-Fit Test on the Current Level of Integration of Entrepreneurship Education

Response Category	Observed (O)	Expected (E)	df	χ^2	p-value
Strongly Agree	18	11			
Agree	16	11	3	17.46	0.002
Disagree	7	11			
Strongly Disagree	4	11			
Total	**44**				

The results of the Chi-square Goodness-of-Fit test on the present level of integration of entrepreneurship education in the existing TVET curricula are presented in Table 4. The Chi-Square value was 17.46 for 3 degrees of freedom and with a p value of 0.002. The p-value is 0.002 which is less than the 0.05 level of significance and the null hypothesis was rejected. This means that the respondents' ratings of the current integration of entrepreneurship education in the existing TVET curricula are significantly different from the expected ratings. The result suggests that there was a high consensus that entrepreneurship education is part of the current TVET curricula.

Discussion of Findings:

Result in table one under research question one shows that all listed pedagogical methods are suitable for embedding entrepreneurship into TVET, and the highest mean score is child-centered learning was 4.45. This implies that entrepreneurship should be integrated right at primary level. The findings is in support of the view of Mamman and Huruna (2025) who stated that entrepreneurship is a course of study that teaches a varieties of skills with the use of different approaches and maximizing the best of them. The finding is also in support of Okwori (2021) who stated that when an individual feels the necessity of his role in the economical, social, and political issues is vital, the self empowerment and self esteem level increases, he/she becomes more enthused to share his or her ideas to plan for a better tomorrow with the use of various strategically methods in order to achieve his/her dream. Furthermore, he stated that the empowerment process is mostly ongoing that means it depends on the learning methods that help an individual to evolve, this learning could be achieved

through education and networking that focused on self employment issues. The finding is further in-line with the FGN (2013) the introduction of SIWES is to provide hands-on practical training and prepare students for real-world industrial work situation.

The results in research question two revealed that entrepreneurship has been embedded in the current TVET curriculum by teaching some of the key entrepreneurial competencies which include creativity, innovation, teamwork, self-confidence, risk taking, job skills, adaptability and project time management. It implies that TVET curriculum is currently being implemented with opportunities to build-up entrepreneurial knowledge, attitude, and skills among recipients as needed for self employment and sustainable economic participation. This result is in-line with the statement of Salami (2022) that the major goal of entrepreneurship education is to build young people's initial and entrepreneurial abilities and to get them ready for the workforce.

Conclusion:

The study has shed light on possible benefits on Integration of entrepreneurship into Technical Vocational Education and Training (TVET) is a strategic approach to empowering youth with essential practical skills. It encourages social mobility, economic growth and the development of entrepreneurial skills such as ability to oversee a project from its inception to its conclusion is invaluable in the entrepreneurial world. Effective integrating entrepreneurship education into TVET programme will greatly help young people to be self reliant, self confident and employer of labor especially when encouraged by the government and stakeholders through grants and enabling conditions that promote the ease of set-up business ventures. Hence the call of young women and girls to participate in technical training in the Refrigerator and Air-Conditioning (RAC) sector, their involvement will help close the skills gap, promotes inclusively and create more opportunities for innovation and sustainable growth in the industry (UNIDO, 2026). Based on this youth in Borno state should consider themselves prospective successful entrepreneurs equip with knowledge, skills, experience, motivation, value and ability needed to perform effectively in a specified occupation as entrepreneurs.

Recommendation:

The following recommendations were made based on the findings and conclusion of the study:

1. Institutions offering entrepreneurship education should endeavor to provide enabling environment to enhance quality and best practices methods of integration of Entrepreneurship education into TVET for sustainable youth empowerment in a knowledge-based economy
2. Department of Entrepreneurship education and TVET should from time to time organize workshop to sensitized students on the need and benefit for them to pursue self-employment as a career.

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STUDENTS' SOCIAL MEDIA EXPOSURE, PEER INFLUENCE AND THE PREVALENCE OF SOCIAL DEVIANCE AMONG BUSINESS EDUCATION STUDENTS IN UNIVERSITIES IN KWARA STATE, NIGERIA

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Abstract

This study investigated students' social media exposure, peer influence, and the prevalence of social deviance among Business Education students in universities in Kwara State, Nigeria. Three research questions were answered, and two null hypotheses were tested at the 0.05 level of significance. The study was anchored on Bandura's Social Learning Theory (1977) and Sutherland's Differential Association Theory (1947), and adopted a descriptive survey research design with a correlational component. The population comprised 1,239 Business Education students in universities in Kwara State, from which a sample was drawn using the Research Advisors Table (2006) through proportionate and simple random sampling, with analysis based on 289 returned questionnaires (94.4% response rate). Data were collected using the validated Students' Social Media Exposure, Peer Influence and Social Deviance Questionnaire (SMEPISDQ), whose reliability was established through a pilot study using the Cronbach Alpha method. Mean and standard deviation were used to answer the research questions, while the Pearson Product Moment Correlation (PPMC) was used to test the hypotheses. The findings revealed that the level of students' social media exposure ($\bar{x}$ = 3.38), peer influence ($\bar{x}$ = 3.04), and the prevalence of social deviance ($\bar{x}$ = 3.13) were all high. The test of hypotheses showed a significant positive relationship between social media exposure and the prevalence of social deviance ($r = 0.562$, $p < 0.05$) and between peer influence and the prevalence of social deviance ($r = 0.489$, $p < 0.05$), with social media exposure showing the stronger relationship. The study concluded that heavy social media exposure and strong peer influence are significantly associated with deviant behaviour among Business Education students. It was recommended, among others, that universities institute digital-literacy and value-reorientation programmes and strengthen guidance and counselling to curb social deviance and empower students toward positive conduct.

Keywords: *social media exposure, peer influence, social deviance, Business Education, youth empowerment*

Introduction

Social deviance among university students has become a growing concern in Nigerian higher institutions, including those offering Business Education. Behaviours such as examination malpractice, cultism, drug abuse, internet fraud, sexual misconduct, truancy, and other forms of indiscipline continue to surface in the campus environment, threatening the moral and academic order of the university and, more broadly, the security and productivity of the wider society. Recent evidence identifies media and peer influences as among the leading social factors driving this trend (Babatunde, 2024), making an understanding of how these forces relate to deviant behaviour central to any effort to empower students toward positive conduct and to safeguard the developmental gains that university education is meant to secure.

Social media platforms such as WhatsApp, Facebook, Instagram, TikTok, Snapchat, and X (formerly Twitter) have become integral to students' daily lives. While these platforms offer valuable opportunities for communication, learning, and networking, they also expose students to inappropriate content, including violence, cybercrime, sexual material, and the glamorisation of antisocial lifestyles. Social media exposure refers to the extent to which individuals interact with and consume the content available on these online platforms. Adeosun and Akinwalere (2024) report that heavy use of platforms such as Facebook, Instagram, and TikTok exposes Nigerian tertiary students to misinformation and distractions and is associated with behaviours such as cyberbullying and moral decadence, while Onasoga et al. (2020) found that unregulated social media exposure among undergraduates in Kwara

State was strongly associated with engagement in risky and deviant behaviour. The level of students' social media exposure is therefore an important variable to examine.

Peer influence, understood as the influence exerted by members of the same social group, is a second powerful force shaping student behaviour, and is especially strong during adolescence and early adulthood. University students frequently seek acceptance and belonging within their peer groups, and may adopt behaviour that align with group norms, whether positive or negative. Abubakar and Adamu (2023) found that undergraduates subjected to strong peer pressure reported significantly higher involvement in deviant acts as the desire to conform overrode moral restraint, and Eteng et al. (2024) similarly reported that association with deviant peers is a strong predictor of students' own deviant behaviour. The level of peer influence experienced by Business Education students is thus a further variable of interest in accounting for social deviance.

Social deviance refers broadly to behaviour that violates societal, institutional, or moral norms. In the educational context it encompasses academic dishonesty, truancy, cyber-related misconduct, indecent dressing, substance abuse, bullying, cultism, and other conduct that disrupts learning or breaches university regulations. Such behaviour carries serious consequences, not only for the individual student and the institution but for the security and economic development of the community into which graduates will move (Eteng et al., 2021). Business Education students, who are trained to become future teachers and administrators of business subjects, are expected to model ethical values and professional competence; exposure to negative online content and adverse peer influence may undermine these expectations, making the prevalence of deviance among them a matter of concern.

This study is anchored on Bandura's Social Learning Theory (1977) and Sutherland's Differential Association Theory (1947). The Social Learning Theory holds that individuals acquire behaviour by observing and imitating models in their environment, a process directly relevant to how students learn conduct from social media content and from the people around them. The Differential Association Theory holds that deviant behaviour is learned through interaction within intimate social groups, which aptly frames the role of peer influence in the transmission of deviance. Together, the two theories provide a coherent lens for understanding how social media exposure and peer influence relate to the prevalence of social deviance among Business Education students.

Despite a growing body of literature on social media and peer influence (Adeosun & Akinwalere, 2024; Eteng et al., 2024), there is limited empirical evidence focusing specifically on Business Education students in universities in Kwara State, even as lecturers, administrators, and parents continue to express concern about rising moral decline among undergraduates. It is not sufficiently clear how much these students are exposed to social media content, how strong the peer influences they experience is, how prevalent deviant behaviour is among them, or how these factors relate to one another. Addressing these gaps is important for the design of policies, guidance programmes, and interventions that can curb deviance and empower students toward secure and productive futures. Against this background, this study investigated students' social media exposure, peer influence, and the prevalence of social deviance among Business Education students in universities in Kwara State, Nigeria.

Research Questions

The following research questions guided the study:

1. What is the level of students' exposure to social media content among Business Education students in universities in Kwara State?
2. What is the level of peer influence among Business Education students in universities in Kwara State?
3. What is the prevalence level of social deviance among Business Education students in universities in Kwara State?

Research Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

$H_0$1: There is no significant relationship between social media exposure and the prevalence of social deviance among Business Education students in universities in Kwara State.

$H_0$2: There is no significant relationship between peer influence and the prevalence of social deviance among Business Education students in universities in Kwara State.

Methodology

The study adopted a descriptive survey research design with a correlational component, considered appropriate because the study sought both to describe the levels of social media exposure, peer influence, and social deviance, and to establish the relationships among these variables without manipulating any of them. The population comprised 1,239 Business Education students in universities in Kwara State, namely the University of Ilorin, Kwara State University (Malete), and Al-Hikmah

University, Ilorin. A sample was determined using the Research Advisors Table (2006), and respondents were selected through proportionate sampling, so that each university contributed respondents in proportion to its share of the population, followed by simple random sampling for the final selection.

The instrument for data collection was a structured questionnaire titled Students' Social Media Exposure, Peer Influence and Social Deviance Questionnaire (SMEPISDQ), comprising a demographic section and a substantive section organised into three clusters corresponding to the study variables, measuring social media exposure (eight items), peer influence (eight items), and social deviance (ten items) on a four-point Likert scale of Very High Level/Extent (4), High Level/Extent (3), Low Level/Extent (2), and Very Low Level/Extent (1). The instrument was subjected to face and content validation by experts in Business Education and Educational Research, and its reliability was established through a pilot study using the Cronbach Alpha method, which returned coefficients above the 0.70 criterion, indicating that the instrument was reliable.

A total of 306 copies of the questionnaire were administered, of which 289 were duly completed and retrieved, representing a response rate of 94.4%, and all analyses were based on these 289 valid responses. Mean and standard deviation were used to answer the research questions, with a criterion mean of 2.50 used for decision making, so that an item with a mean of 2.50 and above was regarded as accepted while an item below 2.50 was regarded as rejected. The Pearson Product Moment Correlation (PPMC) was used to test the hypotheses at the 0.05 level of significance, with a null hypothesis rejected where the p-value was less than or equal to 0.05 and retained where it was greater than 0.05. The demographic distribution showed that 123 (42.6%) of the respondents were male and 166 (57.4%) female, while 152 (52.6%) were drawn from Kwara State University, 109 (37.7%) from the University of Ilorin, and 28 (9.7%) from Al-Hikmah University.

Results

Research Question One: What is the level of students' exposure to social media content among Business Education students in universities in Kwara State?

Table 1: Mean and Standard Deviation of Respondents' Ratings on the Level of Students' Exposure to Social Media Content

S/N	Item Statement	Mean	SD	Remark
1	I spend several hours daily using social media platforms.	3.58	0.55	Very High Level
2	I frequently access social media platforms such as WhatsApp, Facebook, Instagram, TikTok, and X (Twitter).	3.64	0.52	Very High Level
3	I regularly view educational content on social media.	2.98	0.61	High Level
4	I frequently encounter entertainment-related content on social media.	3.52	0.57	Very High Level
5	I often come across content that promotes risky or inappropriate behaviours.	2.86	0.68	High Level
6	Social media forms a major part of my daily activities.	3.47	0.59	High Level
7	I use social media to interact with friends and classmates regularly.	3.55	0.54	Very High Level
8	I am exposed to different opinions, lifestyles, and behaviours through social media.	3.40	0.58	High Level
	Cluster Mean	**3.38**		**High Level**

Source: Field Survey, 2026.

Table 1 shows that all eight items on students' exposure to social media content recorded mean scores above the criterion mean of 2.50 and were accepted, producing a cluster mean of 3.38, which indicates a high level of exposure. The highest-rated items were the frequent access of platforms such as WhatsApp, Facebook, Instagram, TikTok and X (mean = 3.64) and the daily spending of several hours on social media (mean = 3.58), while the regular viewing of educational content (mean = 2.98) and exposure to risky or inappropriate content (mean = 2.86) attracted the lowest, though still accepted, ratings. The pattern shows that the students' exposure is driven far more by habitual communication and entertainment than by deliberate educational use, even as a substantial level of exposure to inappropriate content was acknowledged. The results therefore show that the level of students' exposure to social media content among Business Education students in universities in Kwara State is high.

Research Question Two: What is the level of peer influence among Business Education students in universities in Kwara State?

Table 2: Mean and Standard Deviation of Respondents' Ratings on the Level of Peer Influence

S/N	Item Statement	Mean	SD	Remark
1	My friends influence many of my personal decisions.	3.12	0.60	High Level
2	I often adjust my behaviour to fit into my peer group.	3.28	0.57	High Level
3	I seek approval from friends before making important decisions.	2.74	0.66	High Level
4	The opinions of my friends affect my actions.	3.05	0.62	High Level
5	I am likely to participate in activities recommended by my friends.	3.18	0.58	High Level
6	My friends influence the way I dress and behave.	2.92	0.64	High Level
7	I feel pressured to conform to my friends' expectations.	2.68	0.69	High Level
8	Peer groups play a significant role in shaping my attitudes and behaviours.	3.34	0.55	High Level
	Cluster Mean	**3.04**		**High Level**

Source: Field Survey, 2026.

Table 2 shows that all eight items on peer influence recorded mean scores above the criterion mean of 2.50 and were accepted, producing a cluster mean of 3.04, which indicates a high level of peer influence. The highest-rated items were that peer groups play a significant role in shaping attitudes and behaviours (mean = 3.34) and that students often adjust their behaviour to fit into their peer group (mean = 3.28), while the more overt forms of pressure, namely feeling pressured to conform (mean = 2.68) and seeking approval before making decisions (mean = 2.74), attracted the lowest ratings. This pattern suggests that peer influence operates on these students more through quiet conformity to group norms than through open pressure. The results therefore show that the level of peer influence among Business Education students in universities in Kwara State is high.

Research Question Three: What is the prevalence level of social deviance among Business Education students in universities in Kwara State?

Table 3: Mean and Standard Deviation of Respondents' Ratings on the Prevalence of Social Deviance

S/N	Item Statement	Mean	SD	Remark
1	Examination malpractice is common among students.	3.36	0.58	High Level
2	Truancy or absenteeism from lectures occurs frequently among students.	3.22	0.60	High Level
3	Cyber-related misconduct is prevalent among students.	3.14	0.63	High Level
4	Students engage in dishonest academic practices such as plagiarism.	3.08	0.61	High Level
5	Indecent dressing is common among students.	3.41	0.56	High Level
6	Substance abuse is prevalent among students.	2.78	0.70	High Level
7	Bullying and harassment occur among students.	2.85	0.66	High Level
8	Students sometimes engage in behaviours that violate university rules and regulations.	3.30	0.57	High Level
9	Cult-related activities are noticeable among some students.	2.64	0.72	High Level
10	Social media contributes to the spread of deviant behaviours among students.	3.52	0.54	Very High Level
	Cluster Mean	**3.13**		**High Level**

Source: Field Survey, 2026.

Table 3 shows that all ten items on the prevalence of social deviance recorded mean scores above the criterion mean of 2.50 and were accepted, producing a cluster mean of 3.13, which indicates a high prevalence. The highest-rated items were that social media contributes to the spread of deviant behaviours (mean = 3.52, the only very-high-level rating), that indecent dressing is common (mean = 3.41), and that examination malpractice is common (mean = 3.36), while the graver and more concealed offences of cultism (mean = 2.64) and substance abuse (mean = 2.78) attracted the lowest ratings. This

pattern suggests that the milder and more visible forms of deviance were perceived as far more prevalent than the serious but clandestine ones, which are by their nature harder to observe. The results therefore show that the prevalence of social deviance among Business Education students in universities in Kwara State is high.

Test of Hypotheses

$H_0$1: There is no significant relationship between social media exposure and the prevalence of social deviance among Business Education students in universities in Kwara State.

Table 4: Pearson Product Moment Correlation between Social Media Exposure and the Prevalence of Social Deviance

Variables	N	Mean	SD	r-cal	Df	p-value	Decision
Social Media Exposure	289	3.38	0.57	0.562	287	0.000	H_{01} Rejected
Prevalence of Social Deviance	289	3.13	0.61				

Source: Field Survey, 2026; significant at p ≤ 0.05

Table 4 shows the relationship between social media exposure and the prevalence of social deviance among the 289 respondents, examined using the Pearson Product Moment Correlation. Social media exposure recorded a mean of 3.38 (SD = 0.57) and the prevalence of social deviance a mean of 3.13 (SD = 0.61). The analysis yielded a correlation coefficient of r = 0.562 with a p-value of 0.000 at 287 degrees of freedom. Since the p-value is less than the 0.05 level of significance, the null hypothesis was rejected. This indicates a significant positive relationship between social media exposure and the prevalence of social deviance: as students' exposure to social media content increases, their involvement in deviant behaviour tends to increase correspondingly, the magnitude of the coefficient indicating a moderate to strong relationship.

$H_0$2: There is no significant relationship between peer influence and the prevalence of social deviance among Business Education students in universities in Kwara State.

Table 5: Pearson Product Moment Correlation between Peer Influence and the Prevalence of Social Deviance

Variables	N	Mean	SD	r-cal	Df	p-value	Decision
Peer Influence	289	3.04	0.59	0.489	287	0.000	H_{02} Rejected
Prevalence of Social Deviance	289	3.13	0.61				

Source: Field Survey, 2026; significant at p ≤ 0.05

Table 5 shows the relationship between peer influence and the prevalence of social deviance among the 289 respondents, examined using the Pearson Product Moment Correlation. Peer influence recorded a mean of 3.04 (SD = 0.59) and the prevalence of social deviance a mean of 3.13 (SD = 0.61). The analysis yielded a correlation coefficient of r = 0.489 with a p-value of 0.000 at 287 degrees of freedom. Since the p-value is less than the 0.05 level of significance, the null hypothesis was rejected. This indicates a significant positive relationship between peer influence and the prevalence of social deviance: the greater the peer influence experienced by students, the higher their tendency to engage in deviant behaviour, the magnitude of the coefficient indicating a moderate relationship. Taken together, the two hypotheses establish that both social media exposure and peer influence are significantly and positively related to social deviance, with social media exposure showing the stronger relationship.

Discussion of Findings

The first finding revealed that the level of students' exposure to social media content is high (cluster mean = 3.38), driven largely by habitual communication and entertainment use of platforms such as WhatsApp, Facebook, Instagram, TikTok and X. This confirms that Business Education students in Kwara State, like their peers elsewhere, live in a media-saturated environment, and it is consistent with reports that Nigerian undergraduates devote substantial time to social media. The prominence of recreational over educational use is significant, for it is precisely the unstructured, entertainment-driven exposure that earlier studies have linked to contact with inappropriate content and, through it, to risky behaviour.

The second finding revealed that the level of peer influence is high (cluster mean = 3.04), operating more through quiet conformity to group norms than through overt pressure. This accords with the

developmental literature identifying peer influence as a leading social force during early adulthood, and with the observation that university students adjust their conduct to secure acceptance within their groups. The finding is well explained by Sutherland's Differential Association Theory (1947), which holds that behaviour, including deviant behaviour, is learned through interaction within intimate social groups, so that the norms a peer group models are progressively absorbed by its members.

The third finding revealed that the prevalence of social deviance is high (cluster mean = 3.13), with the milder and more visible forms, the spread of deviance through social media, indecent dressing, and examination malpractice, perceived as more prevalent than the graver, concealed offences of cultism and substance abuse. That respondents themselves identified social media as contributing to the spread of deviance (the single highest-rated item) is striking, and it anticipates the relationships established in the test of hypotheses. The finding confirms the concerns of lecturers, administrators, and parents about rising indiscipline, and situates social deviance as a genuine threat to campus order and, ultimately, to the security and productivity of the wider society.

The test of the first hypothesis established a significant positive relationship between social media exposure and the prevalence of social deviance ($r = 0.562$, $p < 0.05$). This indicates that higher exposure to social media content is associated with greater involvement in deviant behaviour, a finding strongly supported by Bandura's Social Learning Theory (1977), which holds that individuals acquire behaviour by observing and imitating the models they encounter, including the models pervasive in online content. The result is consistent with prior Nigerian studies reporting a positive association between unregulated social media use and deviant conduct among undergraduates.

The test of the second hypothesis established a significant positive relationship between peer influence and the prevalence of social deviance ($r = 0.489$, $p < 0.05$), though the relationship was somewhat weaker than that for social media exposure. This indicates that stronger peer influence is associated with greater deviance, as the desire to conform to group norms can override individual moral restraint. The finding again aligns with the Differential Association Theory and with studies reporting that association with deviant peers predicts students' own deviant behaviour. That social media exposure showed the stronger of the two relationships suggests that, in the contemporary campus environment, the online sources of behavioural modelling now rival, and may exceed, the face-to-face peer group in their influence on conduct, a shift with direct implications for how universities seek to empower students toward positive behaviour.

Conclusion

The study concluded that Business Education students in universities in Kwara State experience high levels of social media exposure and peer influence, and that the prevalence of social deviance among them is correspondingly high. Both social media exposure and peer influence were found to be significantly and positively related to social deviance, with social media exposure the stronger predictor. The findings indicate that the digital and social environments in which these students are immersed are important sources of the behavioural norms they adopt, and that curbing deviance and empowering students toward secure and productive futures will require deliberate intervention in both environments.

Recommendations

Based on the findings, the following recommendations were made:

1. University management should institute digital-literacy and value-reorientation programmes that equip Business Education students to engage critically and responsibly with social media content, reducing the behavioural influence of harmful online material.
2. Universities should strengthen guidance and counselling services and establish peer-mentoring schemes that harness positive peer influence, so that the strong pull of the peer group is directed toward constructive rather than deviant conduct.
3. Lecturers and student-affairs units should promote wholesome campus engagements, clubs, and academic peer groups that give students belonging and approval through positive channels, thereby weakening the appeal of deviant associations.
4. University authorities should enforce clear codes of conduct and, in partnership with parents and relevant agencies, address the more serious forms of deviance, while curriculum planners integrate ethics and character development into Business Education to empower graduates for security and economic development.

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TRAINING REQUIRED BY BUSINESS EDUCATORS FOR EFFECTIVE ADOPTION OF ARTIFICIAL INTELLIGENCE FOR INSTRUCTIONAL DELIVERY

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Abstract

This study assessed the training required by Business Educator for effective adoption of AI for instructional delivery in Universities. Two research questions guided the study. The study adopted a descriptive survey design. The population of the study comprised 79 Business Educators in public universities in South East, Nigeria offering Business Education programme. There was no sampling since the population was manageable. The instrument for data collection was a 14 items questionnaire in two clusters. The instrument was validated by two experts in Business and Entrepreneurship Education Department and one in Measurement and Evaluation of Maths and Computer Education Department, all from Enugu State University of Science and Technology. A total of 74 out of the 79 copies of the questionnaire were retrieved and used. This resulted to 94 percent return rate for data analysis. Data collected were analyzed using mean and standard deviation to answer the research questions. The findings of the study revealed that all the identified items agreed upon by the respondents such AI-based Management System with automation feature, data analysis for tracking students performance, automated grading and feedback tools that reduce administrative workload, strategy for embedding AI in lesson planning, cloud computing and cyber security basics etc. are training required by Business Educators in Universities. Therefore, it was recommended among others that management of the institutions should train and retrain Business Educators on ICT programmes for continuous knowledge update on digital technologies which will enhance their efficiency in the use of AI tools for instructional delivery. Thus, it will make it possible for them to acquire up-to-date knowledge of the AI technical and digital literacy skills required for teaching OTM courses.
KEYWORDS: Training Needs Business Educators, Artificial Intelligence, AI Adoption and Instructional Delivery.

Background to the Study

One of the most important aspects of Artificial Intelligence (AI) is that it is a multi-use technology. Like electricity, it can be applied in lots of different ways, to lots of different scenarios. There is no single universally accepted definition for Artificial Intelligence, but the Oxford English Dictionary, New Edition (2010) defines AI as ''the capacity of computers or other machines, to exhibit intelligent behavior''. This means Artificial Intelligence systems appear to think, learn and act like humans and in some cases exceed the capacities of humans. Artificial Intelligence systems can analyses vast amounts of data, solve complex problems, make decisions and perform creative tasks.

Some Artificial Intelligence technologies have been around for more than 50 years, but advances in computing power, the availability of enormous quantities of data and new developments in software algorithms have led to major AI breakthroughs in recent years. It is these three components of advanced algorithms, data and computing power that explain how machines can exhibit intelligent behavior and why AI has suddenly exploded into our everyday lives. Algorithms tell computer what to do, data tells computer what to learn, and computing power gives machines the power to learn and make decision. Artificial Intelligence (AI) is transforming teaching and learning around the world. AI technologies can support lesson planning, personalized instruction, automate assessment, and analyses student's performance data by Business Educators (Garzon et al., 2025).

Business Educators are well trained professional teachers of Business Education who are competent in teaching all the components that make up Business Education in universities, polytechnics

and colleges of education. Business Education courses must be handled by well trained and motivated persons with academic and professional competencies which will match today's era of artificial intelligence (AI). These business courses are taught by Business Educators. Business Educators require adequate training in Information and Communication Technology (ICT) to be able to create and use appropriate resources and instructional delivery tools for effective teaching and learning processes (Ezeabii, 2017). Business Educators need to be trained on the use of Artificial Intelligence tools for teaching, learning, and instructional design such as ChatGPT4, Content writer, Google bard, Canva AI feature, Learning management with AI integration, Automated grading and feedback system, Paradox, Synthesia, Hubspot Free AI, designing AI support lesson plan, Personalize learning using AI tools, developing interactive and adaptive learning content, blended and online teaching strategies, etc. Business Educators are educators that train their students to solve business problems, plan for future growth, and strategize how to run a business efficiently and effectively. They may teach business-related courses such as accounting, human resources, labor relation, finance, marketing, advertising and management (Gordon and Bursuc, 2018).

Subsequently, there is need for government at all levels to consciously develop the curriculum of Business Education programme in such a way that it will embrace technologies for proper teaching, information, and knowledge management for technological inclusiveness. In addition, Business Educators that are manually trained need to be trained and retrained to properly fit into the demand of globalization, because, they are the main instruments responsible in developing and inculcating into people skills, ideas, and knowledge that will help in achieving sustainable development through universities especially in the South East, Nigeria.

South East is one of the six geopolitical zones in Nigeria with five states. The states are Abia State, Anambra State, Ebonyi State, Enugu State, and Imo state. There are seven (8) public universities offering Business Education programmes in South East, Nigeria. These universities are Abia State University, Uturu, Alex Ekwueme Federal University, Ndufu-Alike, Ebonyi State, Chukwuemeka Odumegwu Ojukwu University, Uli, Anambra State, Ebonyi State University, Abakiliki, Enugu State University of Science and Technology, Enugu, Michael Opara University of Agriculture, Nnamdi Azikiwe University, Awka, and University of Nigeria, Nsukka. The seven universities are public universities controlled by National University Commission and funded by State and Federal Government respectively. The State Universities are run and managed by the state government while the Federal Universities are run and managed by Federal Government under the supervision of the National University Commission. The National University Commission, according to Odiba and Baba (2013), has made it a policy to encourage Nigerian Universities to provide courses for Business Education that will align with the changes and development in technology that has taken place in modern offices, industries and our homes. This development is to ensure that graduates produced by these universities are well trained and equipped with skills that will ensure that they have a healthy competition in the world of work.

Hence, when Business Educators are grounded in the use of these Artificial Intelligence tools, the Business Educators will be well positioned and equipped with the necessary skills and proficient enough in the teaching of Business Education courses. Hence, the mission of producing modern secretaries and office managers who are proficiently prepared for both public and private enterprise of the global economy will emerge (Shaibu and Mbaegbu, 2012).

However, the benefits of AI cannot be fully realized unless Business Educators themselves have the knowledge, skills, and training to use AI effectively. In many educational contexts including Polytechnics in Nigeria, Business Educators remain under trained in Artificial Intelligence tools, such as technical training in AI tool and digital literacy training where this study will anchored on, thereby creating a gap between technological potential and classroom practice Abdullahi, H., Ndako, W. E., Ibrahim, I., Saleh, H. B., Aliyu, D., & Yerima, B. H. (2025).

This technical AI training and digital literacy tools include; AI based learning management system (LLM) with automation features, automated grading and feedback tools that reduce administrative workload, generative AI applications for lesson content and assessment design, data analytic for tracking student performance, cloud computing and cyber security basics, policy compliance related to student privacy and AI tool usage. Without this foundational technical literacy, educators may be unable to adopt AI tools effectively (Kalnina, D., Nimante, G., and Baranova, S., 2024)

Therefore, effective adoption of Artificial Intelligence in instructional delivery requires both technical training in AI tools and pedagogical training on how to integrate the tool in teaching strategies. Hence, this paper ascertains the training needs for preparing Business Educators for Artificial Intelligence adoption in instructional delivery.

Statement of the Problem

The goal of education in Nigeria, comprise the development of appropriate skills, mental, physical and social abilities and competencies to empower individuals to live in and contribute positively to the society. Therefore, the teaching-learning process ought to make the potentials and abilities of the individual for self-fulfilling for a successful learning experience. This implies that individual learners should be able to make constructive and well guided learning strategies towards the attainment of their individual goals, especially academic success. The adoption of Artificial Intelligence tools will help in Business Education. The utilization of Artificial Intelligence tools in Business Education is low due to lack of training on the effective use of AI for instructional delivery.

Business Educators, who are expected to prepare students for modern, technology-driven workplace, often lack the necessary competencies to effectively utilize AI tools in teaching. This challenge is largely attributed to inadequate training in technical AI applications, insufficient pedagogical knowledge for integrating AI into classroom practices, and limited awareness of ethical considerations associated with AI usage. Furthermore, many Polytechnics operate under constraints such as poor ICT infrastructure, lack of institutional policies, and limited access to continuous professional development programmes, as guided by bodies like NBTE.

As a result, there exists a gap between the availability of AI technologies and their effective use in instructional delivery. If this gap is not addressed, Business Educators may remain unable to fully leverage AI to improve teaching quality, thereby affecting student's preparedness for the modern digital workplace. Therefore, the problem of the study is to determine the training required by Business Educators for the effective adoption of AI in instructional delivery.

Purpose of the Study

The main purpose of the study is to determine the training required require by Business Educators for effective adoption of Artificial Intelligence in instructional delivery. Specifically, the study sought to:

1. Determine the AI technical literacy training for effective adoption of Artificial Intelligence in instructional delivery.
2. Determine the pedagogical training for effective adoption of Artificial Intelligence in instructional delivery.

Research Questions

The following research questions guided the study:

1 What are the AI technical literacy training require for effective adoption of Artificial Intelligence in instructional delivery?

2 What are the digital literacy training require for effective adoption of Artificial Intelligence in instructional delivery?

Methods

The study adopted a survey research design. A survey research design is one in which certain population are studied by selecting and studying a category of the population that will represent the entire population (Nworgu, 2005). The design was adopted due to the wide distribution of the respondents. The population for the study was 79 Business Educators in public universities in South East, Nigeria offering Business Education programme. There was no sampling due to the manageable size of the population. The instrument used for data collection was 14 item questionnaire developed by the researcher after an extensive literature review. The instrument was structured in four point response categories of Very Highly Needed (VHN), Highly Needed (HN), Slightly Needed (SN), and Not Needed (NN) with numerical value of 4, 3, 2, and 1 respectively. The instrument as validated by three experts and the reliability of the instrument was determined using cronbanch Alpha which yield a reliability index of 0.82. The copies of the questionnaire were distributed to the respondents with the help of two trained research assistants. Out of the 79 copies of questionnaire distributed, 74 copies were properly filled and returned representing 98.08% return rate. Mean with Standard Deviation was used to answer the research questions while t-test statistics was used to test the null hypothesis at 0.05 level of significant.

The decision was based on the principle of upper and lower limits of the mean, thus;

1. Very highly needed (VHN) 3.80 – 4.00
2. Highly needed (HN) 2.50- 3.49
3. Slightly needed 1.50 - 2.49
4. Not needed 1.00 – 1.49

The decision for null hypotheses were based that if the t-calculated value was more than the t-table value, the null hypotheses were significant but when t-calculated value was less than the critical table, null hypotheses will not be significant.

Research Question 1

What technical AI training is required by Business Educators for effective adoption of AI in instructional delivery?

S/N	Training Need	X	SD	Decision
1	Ethical use of AI in teaching	3.77	0.43	Required
2	Identifying inaccurate AI generated information	3.70	0.49	Required
3	Academic integrity and AI	3.79	0.40	Required
4	Copyright and intellectual property issues	3.63	0.55	required
5	Protection of students' personal data	3.51	0.63	Required
6	Recognizing bias in AI generated information	3.55	0.62	Required
7	Responsible use of AI generated content	3.73	0.46	Required
	Grand Mean	**3.71**	**0.48**	**required**

The grand mean of 3.71 indicates that ethical training is highly required by business educators for responsible adoption of AI.

Research Question 2

What digital literacy training is required by business educators for effective integration of AI into instructional delivery?

S/N	Training Need	X	SD	Decision
8	Digital information search skills	3.54	0.62	Required
9	Use of cloud based educational applications	3.45	0.65	Required
10	Digital data management skills	3.57	0.59	Required
11	using of online collaboration tools	3.48	0.63	Required
12	Digital content creation	3.61	0.56	Required
13	Cyber security awareness	3.68	0.50	Required
14	Data privacy and protection	3.75	0.44	Required
	Grand Mean	**3.58**	**0.57**	**Required**

The grand mean of 3.58 indicates that business educators require digital literacy training for effective AI adoption into instructional delivery.

Discussion of Findings:

Table1 and 2 above depict that AI skills are required by business educators for effective instructional delivery for in public universities. This finding is in agreement with the findings of Mumuni and Sam (2014) which states that the general contribution of technology to Business Educator's performance is to support and assist them with intellectual tools and practical experience needed to impact the right instruction to their students, thereby producing students with the required skills such as Ethical use of AI in teaching, Identifying inaccurate AI generated information, Recognizing bias in AI generated information, skillful in internet connectivity, ability to handle office machines and equipment etc. that will enable them become self-reliant and employer of labour which will result in fighting poverty to an extent. This finding is in consonant with the findings of Jim and Okafor (2015) which stated that the objective of developing individuals who shall be able and competent enough to enhance sustainable development will not be achieved without Business Educators who are ICT compliant. The author further stated that Information and Communication Technology (ICT) broadly include all gadgets used to convey, manipulate and store data by electronic means which include all the different computing devices (e.g. laptops, computers, smart phones, scanners, printers, projectors etc) that carry out a wide range of communication and information functions; software packages, and online social media. The above conclusion shows that ICT manipulative skills are highly required for effective instructional delivery by Business Educators.

Management of the institutions considered in this study should do something to ensure the proper utilization of the unrequited skills mentioned in table 1 and 2. These suggest that business educators need some skills for employability, be self-employed, employ others, and contribute to economic development. The null hypothesis indicated that there was no significant difference with regard to the mean responses of federal and state university Business Educators on the ICT manipulative skills for the use of hardware and software devices of a computer system as required by Business Educators for effective instructional delivery for achieving sustainable development goals (SDGs) in universities in Ebonyi State.

Implication of the Study

Business Educators need adequate technical training in Artificial Intelligence for effective instructional delivery to acquire needed skills and competences. The availability of AI tools alone does not guarantee effective instructional delivery. Educators must possess the practical skills required to use generative AI applications, AI supported presentation tools, automated assessment systems etc. Studies have shown that yet there is need to retrain Business Educators in our universities on AI tools as an essential component of staff development.

Secondly, the finding has implications for digital literacy development. The high level of need for digital literacy training suggests that effective AI adoption depends on educators' broader digital competencies. Skills in digital information searching, cloud applications, digital content creation, cyber security, data management, and data protection are necessary for responsible and effective AI-supported teaching.

Conclusion

Based on the finding, it is evident that business educators require different forms of training to effectively integrate AI into teaching and learning. The study established that technical and digital literacy training are important area of professional development for business educators. The findings particularly demonstrate that knowing how to operate AI tools is not sufficient, educators also need to understand how to integrate AI into instructional strategies and use it responsibly.

Therefore, the study concludes that effective adoption of AI in public universities depends substantially on the competencies, preparedness, and continuous professional development of business educators. Consequently, universities authority and other stakeholders should traet AI-related capacity building as a strategic component of modernizing instructional delivery. When business educators are properly trained ans supported, AI can contribute to improved lesson preparation, assessment, student engagement, personalized learning, feedback and overall instructional effectiveness.

Recommendations

Based on the findings of the study, the following recommendations are hereby made:

1. Universities should retrain Business Educators on ICT programmes for continuous knowledge update on digital technologies which will enhance their efficiency in instructional delivery.
2. Adequate ICT infrastructure should be provide such as internet connectivity, electricity supply, computers, smart classroom facilities and access to appropriate AI-enabled educational platforms.
3. Universities should liaise with Digital Bridge Institute to organize special training on Advance Digital Appreciation programmes for Business Educators who have little or no training in computer appreciation.

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IMPACT OF TECHNICAL EDUCATION EXPENDITURE ON UNEMPLOYMENT REDUCTION IN NIGERIA 1999-2025.

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Abstract

This study investigated the impact of technical education on unemployment reduction in Nigeria from 2000-2025. In order to achieve the empirical result, unemployment rate and education expenditures growth rate were utilized. Multiple regression analysis was utilized in the study in which auto regression distributed lag model was the main method of analysis used in the research. The ARDL model was employed to examine the long-run relationship and short-run relationship among the variables under consideration. The result did not reveal evidence of long run relationship amongst the variables. The result further revealed that expenditure on technical education had positive and significant impact on unemployment reduction in the short run and insignificant in the long-run. The result implies that any economic policy that raises technical education expenditure do not have any significant effect in reducing unemployment against the conventional believe that the policy will significantly reduce the level of unemployment in the country. Thus, the study recommended that government should incorporate period of indenture after secondary education before moving to tertiary education programme to ensure practical training that will make it more effective. Secondly the study recommended for a more robust and honest implementation of technical educational policies.
***Keyword**: Technical education expenditure, unemployment Nigeria.*

Introduction

One of the core objective of Nigerian education policy as stated in the Federal Republic of Nigeria education policy 2004 is to make the recipients self reliant by librating him or her from the chain of ignorance. But today the level of unemployment in the country is quite alarming. Unemployment is contributing a lot to the increasing criminal activities. No meaningful technological and economic development can take place without addressing the issue of unemployment. The educational curriculum which emphasis more on reading and writing is not helping matters, rather it is contributing a lot in exacerbating the trend of unemployment.

An attempt to address the problem was initiated in 1980s with introduction of 6-3-3-4 system of education. With new system the secondary education that use to last for 5 years was made to last for 6 years. The secondary education was divided into two phases. The first phase lasts for three years and second phase also lasts for three years. With the 6-3-3- 4 system skillful and technical subjects like woodwork carpentry technical drawing etc were added to the secondary school curriculum. The aim of the new subjects was to help the recipient of the secondary education acquire skills that will make them employed after graduation and thereby reduce graduate unemployment. At the tertiary level more universities of technology and polytechnics were established for the production of skillful graduates.

Awonuga (2014) in this regard posits that curbing of unemployment in Nigeria requires providing the right skill to the people through technical and vocational education. Olaitan (1996) had earlier stated that vocational education is the essential ingredient that will enable individual to meet their developmental needs and aspirations. Also Akindeinde (2010) argued that in order to achieve the African continent's developmental aspiration young people need to have access to an education that will enable them to enhance the standard of living by acquiring skills that will be in high demand in the labour market.

The country is also facing other problems like poverty, environmental degradation, epileptic power supply etc. This problem requires technical knowledge that will help to reduce them. In this case, Dike (2009) stated that technical and vocational education constitutes an important element to national development strategy in many countries of the world. The belief is that technology will play an important role in the transformation of economies which will help to improve people's standard of living. Technical knowledge is believed to be a dominant factor in increasing human progress and development. Also Aja (2009) stated that practical training of students in vocational and technical education will make Nigeria to become a contributor in technology and be able to compete in the world market. Against this

backdrop, Amoor (2010) argued that the literary style of Western education as introduced in Africa contributed a lot towards the wrong perception of technical and vocational education (VTE) especially the fact that most parent want their children to be prestigious by acquiring literary education that will make them speak foreign languages at the expense of their indigenous language. With such mindset, parents tend to discourage their children from taking up career training that would lead them to career job.

Statement of Problem

Unemployment in Nigeria has become a critical problem requiring declaration of state of emergency so as to lay a stronger emphasis in proffering solution. Unemployment has become endemic issue that constitutes major research problem which many researchers, analyst and economists have been investigating to find the possible solution. An attempt towards solution led to federal government of Nigeria's introduction of 6-3-3- 4 system of education incorporating technical and vocational subjects like; Woodwork, Electrical wiring, Mechanics etc into the school curriculum. The new subjects were introduced to make recipients of secondary education in the country to acquire any of such skills to make them self employed on graduation. The new system failed due to lack of indigenous instructors, deficiency of instructional materials for practicals, lack of interest on the part of parents and children who prefer literary education that could provide them white collar job, poor implementation of the policy. The shortage of white collar jobs contributed to the exacerbating of unemployment rate.

Even before the advent of western educational system in Nigeria, families had been performing the role of training their children in practical skills especially in agriculture and craft. The decline in many skills and craftsmanship can be majorly attributed to the influence of western education that emphasize more on training and preparing its recipients for white collar jobs. This invariably led to another problem of urbanization and neglect of rural agriculture. The urbanization contributes a lot in increasing the level of unemployment in the country.

Onwuchekwa (2010) observed that even the British that brought Literary education to Africa and Nigeria in particular are using her Employment and training act of 1973 to address manpower need using technical and vocational training TVTE. But here in Nigeria such policies are merely a formality on paper. He further stated that developed countries lay much emphasis on the training of skilled manpower for their economic development yet Africans are yet to learn their lessons.

Also other attempt to reduce unemployment led to the establishment of technical schools, technical colleges, polytechnics, university of technologies by the federal government and many states in the country. Today many private investors in education are investing in technical and vocational schools across the country as a means of making the recipients of modern education to acquire knowledge that will make them self employed or even employer of labour. Currently most of these schools have turned from their primary courses to other none technical and vocational subject to arts and social science related programmes. Despite all the outlined measure unemployment seems to be on the increasing casting doubt on the efficacy of public expenditures on technical and vocational education in the country.

Research Hypothesis

1. Public expenditure on technical education has no significant effect on unemployment reduction in Nigeria.
2. There is no long-run relationship between public expenditure on technical education and unemployment reduction in Nigeria.

Objective of the Study

The main objective of this study is to determine the impact of technical education on unemployment reduction in Nigeria from 1999-2025.

The specific objectives include;

i. To determines if there is significant impact of government expenditure on technical education on unemployment in Nigeria.
ii. To determines the directional relationship between government expenditure and technical education and unemployment within the study period.

Review of related Literature

Introduction of technical and vocational education in Nigerian education curriculum constitutes one of the major policy change aimed at unemployment reduction in the country. This equally led to some major changes in education curriculum shifting emphasis on literary education that provides only the skill of reading and writing. With this, the funding pattern in education changed from what it used to be in the past. The change from the original pattern of western education is geared towards making the

recipient of new education to be self employed and at most employer of labour. In this regard, Manukuyomi (2006) posits that western education as brought to Africa was not favourable to the vocational and technical training. The product of such education had the prospect for “white collar job” that are alien to Africans. Such mindset does not augur well for the developing countries especially one with high level of unemployment that needs technical knowledge to enable them add values to their existing primary products (Iheanacho 2006).

Nigerian National policy on Education NPE (2004) states that vocational and technical education is a comprehensive term that has to do with all the education process that in addition to general education incorporate technical and other related science including skill acquisition and occupational related knowledge in different sectors of economic and social life. Vocational and technical education has two basic units which are; general education that provides the recipient the broad based knowledge that would make them to be functional member of the society and technical cum occupational skills that would prepare the recipient for the world of work. In line with this, the NPE (2004) enumerated the goals of VTE as; providing trained manpower in applied sciences, technology and business, particularly in craft, advance craft and technical level. Secondly providing the technical knowledge and vocational skills necessary for agriculture,, commercial and economic development is necessary. Thirdly, giving training to teach the necessary skill to individual that will make them self reliant economically Is a good source of unemployment reduction. In a similar reasoning, Ekong (2006) posits that VTE is a specialized training organized either in a formal or informal setting for the purpose of impacting occupational skill to individual or groups of individuals. It is aimed at enabling the recipient to acquire skills that would make them render specialized services or become creative to enable then be self employed and possibly become employer of labour.

Empirical Review

Sokolic as cited in Isiaqi and Aduralere (2023) studied the impact of demographic and education on youth unemployment rate in Europe with emphasis on the effect of active labour market policies on changes on unemployment. The result shows a significant impact of the variables on youth unemployment changes. Also Arshada and Malika (2015) investigated the impact of human capital on labour productivity in Malaysia using panel data covering 14 states in the country starting from 2009 to 2012. The analysis was done using fixed effect generalized least square (GLS) model. The result revealed that human capital quality like educational level and better health status has significant effect in improving labour productivity. It was equally observed that the impact of education is less significant when compared to health status.

A similar study was conducted by Ngutsav, Akighir and Lorember (2017) to determine the relationship between education financing, labour productivity and economic development in Nigeria from 1970 to 2015 using vector Autoregressive model. The result revealed the existence of Long-run relation between the variables investigated. In the short-run education financing has a positive but insignificant relation with economic growth.

Gap in literature

There appear to be strong gap in the literature addressing the impact of Technical and Vocational education spending and unemployment dynamics in Nigeria. This is quite puzzling given the potential investment in the sector with a view to reduce the level of unemployment. Yet most of the works reviewed are mere opinion papers lacking empirical aspect which this work intends to fill.

Methodology

Research Design

This study investigated the impact of technical education expenditure on unemployment reduction in Nigeria for the period between 1999 and 2025.The research adopted expost-facto research design in its investigation. Expost-facto refers to the research that utilizes already existing data which cannot be manipulated. It is also the type of research design adopted when the study aimed at finding the impact of some variables on other variables is already in existence. Unit root test, Autoregressive Distributed Lag (ARDL) and Granger causality test are the basic methods of analyses used in the study. The unit root test is used to examine the order of integration amongst the variables. The ARDL model was utilized in investigating the long-run and short-run coefficients of the variables under study. And the Granger causality test was utilized to investigate the directional causality amongst the variables under consideration.

Model Specification

The model specification adopted the neoclassical growth model as developed by Solow (1956) as the theoretical framework of the study with modification. The model was mathematically specified as;

UMP = (TVEX + INFR)

It is transformed econometrically as thus;

$UMP = \lambda_o + \lambda_1 TVEX + \lambda_2 INFR + \xi_O$
Where;
UMP = Unemployment
λ_o = constant term
$\Lambda_0, \lambda_1, \lambda_2$ = lambda coefficients
TVEX = Technical and vocational education expenditure
INFR = Inflation rate.
ξ_O = error term
In log function, it specified as thus:
$Log\ UMP = \lambda_o + \lambda_1 TVEX + \lambda_2 INFR + \xi_0$
Where; LUMP is the explained variable; whereas, TVEX, EDEX are the explanatory variables ξ_0 is the error term; λ is the constant term.

A Priori Expectation

Theoretically, the study expects that unemployment rate will have negative sign as technical and vocational education expenditure and total education expenditure increases.

Sources of Data

Time series data were utilized in this investigation using variables starting from 1999 to 2025. The data were collected from Central Bank of Nigeria (CBN) Statistical Bulletin.

Results

Table 1 ADF Unit Root Test at level and First Differencing

Variable	Level	5% CV	Critical ADF Statistc	5%1st diff	Remark	Rank
UMP	-2.886225	0.5793	-2.991878	0.0199	Stationary	1(1)
TVEX	-3.005538	0.0481	-6.817595	0.0000	Stationary	1(1)
INFR	-3.044848	0.0443	-	-	Stationary	1(0)

Source; Researcher's computation from E-view 13 version

The table above illustrates the result of Augmented Dickey –Fuller unit root test. The result indicates that the variable inflation rate INFR have unit root (stationary @ level) at level since its ADF test statistic is less than the chosen 5% critical value. However, the test indicates that UMP and TVEX have unit root after first differencing since the results of their ADF test static are less than 5% critical values after the differencing. It now show that all the variables employed in the study has long-run properties after first differencing. It means that their means, variance and covariance are constant. The study concludes that there is a mixed order of integration existing among the variables since some are integrated at order one while the other is integrated of order zero. With mixed order of integration we applied Auto Regressive Distributed lag (ARDL) model in the investigation as suggested by Pesaran and Shin (1999).

ARDL ESTIMATION

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
UMP(-1)	0.993444	0.250590	3.964417	0.0033
UMP(-2)	-0.754906	0.250553	-3.012961	0.0146
TVEX	-0.038434	0.015731	-2.443190	0.0372
TVEX(-1)	-0.006685	0.015692	-0.425983	0.6801
TVEX(-2)	0.000703	0.015206	0.046237	0.9641
TVEX(-3)	-0.033782	0.014744	-2.291273	0.0477
TVEX(-4)	0.013002	0.013039	0.997134	0.3448
INFR	-0.024074	0.022353	-1.076988	0.3095
INFR(-1)	-0.012670	0.025959	-0.488067	0.6372
INFR(-2)	-0.039112	0.034174	-1.144492	0.2819
INFR(-3)	0.011740	0.031884	0.368214	0.7212
INFR(-4)	-0.071071	0.030629	-2.320389	0.0455
C	5.590603	2.203681	2.536939	0.0319

R-squared	0.895747	Mean dependent var	4.025909
Adjusted R-squared	0.756743	S.D. dependent var	0.772014
S.E. of regression	0.380766	Akaike info criterion	1.194736
Sum squared resid	1.304844	Schwarz criterion	1.839443

Log likelihood	-0.142098	Hannan-Quinn criter.	1.346610
F-statistic	6.444040	Durbin-Watson stat	2.098201
Prob(F-statistic)	0.004420		

Source; Researcher's computation from E-view 13 version

The estimated results clearly indicated that Technical and vocational education expenditure at zero lag has positive and significant impact on unemployment dynamics. Also at lag one (1) it has negative and insignificant impact on unemployment. The claims are supported by the coefficients of P-value of the estimated regression equation which are 0.0372 at zero lag and 0.6801. Inflation rate used as control variable have no significant impact with unemployment at zero and any lag level.

The result also indicates coefficient of multiple determination (R^2) value of 0.89574 which implies that 90% explained variation in unemployment by the explanatory variable. The results similarly indicate F-Statistic value of 0.004420 which shows that the joint influence of the explanatory variables on the explained variable is statistically significant. The Durbin Watson (DW) value 2.098201 indicates that there is no evidence of serial correlation (autocorrrelation) in the model.

ARDL BOUN D TEST
Null hypothesis: No levels relationship
Number of cointegrating variables: 2
Trend type: Rest. constant (Case 2)
Sample size: 22

Test Statistic	Value
F-statistic	2.814044

	10%		5%		1%	
Sample Size	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
30	2.915	3.695	3.538	4.428	5.155	6.265
Asymptotic	2.630	3.350	3.100	3.870	4.130	5.000

Source; Researcher's computation from E-view 13 version

This bound test above was used to find out if there is the presence of long-run equilibrium relationship amongst the variables under study. The test shows F-Statistic value 2.814044 while the upper bound of the critical value at 5% level of significance value 4.428. The F-Statistic 2.514047 is lower than the 5% critical value. We therefore accept the null hypothesis that there is no long-run relationship among the variables and conclude that there is no evidence of long-run relationship found among the variable under study.

Pairwise Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
TVEX does not Granger Cause UMP	25	0.35933	0.5550
UMP does not Granger Cause TVEX		1.84697	0.1879

Source: Author's Computation from E-view 13 version.

The Pair wise Granger Causality test as presented using table revealed that there is no directional causality between expenditure on technical and vocational education and unemployment in Nigeria within the period under review. It is evidenced by the probability value of TVEX which is 0.5550 and that of UNMP which is 0.1879 showing that both are greater than the 5% level of significance. It implies that neither TVEX granger cause UNMP nor UMP granger cause TVEX.

Table 4; Breush- Godfrey Serial Correlation LM Test

F-statistic	0.079564	Prob. F(1,8)	0.7850
Obs*R-squared	0.216646	Prob. Chi-Square(1)	0.6416

Source; Researcher's computation from E-view 13 version

The serial correlation LM test was conducted to ascertain if there is existence of serial autocorrelation and the result indicates absence of serial correlation up to lag p order where p stands for a specified integer. The alternative is ARMA (r, q) errors where r represents the number of lag terms and p =max(r, q).The result Obs® R-squared statistic value is 0.21646 while the probability Ch-square (2) value is 0.6416. The probability Ch-square value 0.6416 is greater than the chosen 5% level of significance and we therefore conclude that there is no serial correlation in the model and that the model is a good fit for the investigation.

Conclusion and Recommendation

This study investigated the impact of expenditure on technical and vocational education on unemployment reduction in Nigeria from the year 2000 to 2026. The empirical investigation was done using ARDL where growth in education expenditure was used as explanatory variable while unemployment rate was used as explained variable. The result revealed evidence of short-run relationship but there were no evidence of long-run relationship. Based on the research finding the researcher recommended that; government and policy makers and implementers should have rethink on how to reshape our educational curriculum. In this case, we suggest that at least 2 years of indenture after secondary education before allowing a child to enter tertiary instruction. This will enable the child to acquire practical skill which will aid them in their technical and vocational subjects.

Secondly, based on the result the researcher is recommending for complete overhaul of our technical and vocational schools. Government should avoid mixing technical school with other courses like social sciences, Languages as obtained in most of them today. For instance ,our school of agriculture, universities of technologies are just answering such names but are filled with non technical courses like Accountancy, Banking and Finance, political science Sociology etc. That should not be the case if we actually want to run a technical and vocational schools.

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INTEGRATING ENTREPRENEURSHIP EDUCATION INTO TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING (TVET) FOR ECONOMIC TRANSFORMATION IN NIGERIA

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Abstract

This study examined the integration of entrepreneurship education into Technical and Vocational Education and Training (TVET) for economic transformation in Nigeria. Specifically, the study examined the extent to which entrepreneurship education is integrated into TVET for entrepreneurial skills development and determined the extent to which such integration contributes to enterprise creation and innovation for economic transformation. Two research questions and two null hypotheses guided the study. A correlational research design was adopted. The population comprised 113 lecturers in the Faculty of Vocational and Entrepreneurial Education, University of Calabar, Calabar, Cross River State, Nigeria. Owing to the manageable population size, the entire population was studied using the census sampling technique. Data were collected using a structured 20-item questionnaire titled Entrepreneurship Education Integration and Economic Transformation Questionnaire (EEIETQ). The instrument yielded Cronbach's alpha reliability coefficients of 0.89 and 0.91 for the two constructs, with an overall reliability coefficient of 0.93. Mean and standard deviation were used to answer the research questions, while simple linear regression was employed to test the null hypotheses at the 0.05 level of significance. The findings revealed that entrepreneurship education was integrated into TVET to a high extent for entrepreneurial skills development, with a cluster mean of 3.13. Similarly, entrepreneurship education contributed to enterprise creation and innovation to a high extent, with a cluster mean of 3.18. Regression analysis further showed that entrepreneurship education integration significantly predicted entrepreneurial skills development, $R = .580$, $R^2 = .336$, $F(1, 111) = 56.23$, $p < .001$, and enterprise creation and innovation, $R = .640$, $R^2 = .410$, $F(1, 111) = 77.20$, $p < .001$. Accordingly, both null hypotheses were rejected. The study concluded that effective integration of entrepreneurship education into TVET can strengthen entrepreneurial competencies, facilitate enterprise creation and innovation, and support economic transformation in Nigeria. It was recommended that TVET institutions strengthen practical entrepreneurship projects, mentorship, industry partnerships, digital entrepreneurship initiatives, enterprise incubation, and access to start-up finance to facilitate the transition from vocational training to sustainable enterprise development.

Keywords: Entrepreneurship education, Technical and vocational education and training, Entrepreneurial skills, Enterprise creation, Innovation and economic transformation

Introduction

Economic transformation is increasingly dependent on the capacity of a country to develop a productive, innovative and entrepreneurial workforce capable of responding to changing labour-market demands. In developing economies such as Nigeria, the challenge is not only to provide access to education but also to ensure that education equips individuals with relevant technical, vocational, entrepreneurial and digital competencies that can translate knowledge into productive economic activities. Technical and Vocational Education and Training (TVET) occupies an important position in this regard because it provides practical knowledge and occupational competencies for employment, self-employment and enterprise development. Contemporary TVET extends beyond the preparation of individuals for wage employment to include entrepreneurship, innovation, lifelong learning and participation in emerging economic sectors. The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2022) emphasised that contemporary TVET should prepare young people and adults for employment, decent work, entrepreneurship and lifelong learning while supporting digital

transformation, green economic development, innovation and productive engagement with the private sector. This orientation makes TVET a potentially important instrument for developing the human capital required for sustainable economic transformation.

In Nigeria, the relevance of TVET is reinforced by national educational policy, which emphasises the acquisition of practical skills, applied knowledge and appropriate attitudes necessary for occupational competence, useful living and national development. The Federal Republic of Nigeria (2013) recognised the importance of education in preparing individuals to contribute meaningfully to economic and social development through the acquisition of relevant knowledge and skills. Similarly, the National Board for Technical Education (NBTE, 2023) incorporated entrepreneurship courses into the curriculum and course specifications for National Diploma programmes, with emphasis on enterprise formation, business management, self-employment and understanding the Nigerian business environment. These policy and curriculum provisions demonstrate an institutional recognition that technical competence alone may not be sufficient to prepare TVET graduates for contemporary economic realities. Graduates also require the ability to recognise opportunities, mobilise resources, develop business ideas, manage enterprises, innovate and respond effectively to market needs.

Entrepreneurship education is therefore an important component of TVET because it complements technical competencies with the knowledge, attitudes and skills required to identify and exploit economic opportunities. Entrepreneurship education generally involves learning experiences designed to develop opportunity recognition, creativity, innovation, risk-taking, business planning, financial management, marketing, decision-making and enterprise-management competencies. When embedded within TVET, these competencies can enable learners to transform technical skills into commercially viable products and services rather than relying exclusively on formal wage employment after graduation. Abanyam, Edeh, and Abanyam (2023) argued that repositioning TVET and entrepreneurship education towards self-reliance can contribute to addressing youth unemployment and promoting economic independence. Similarly, Alfred and Kayoma (2016) emphasised that entrepreneurship education within TVET is important for job creation and national development because technical training should prepare learners not only to perform occupational tasks but also to establish, operate and sustain businesses. Thus, integrating entrepreneurship education into TVET can create a more holistic educational model in which technical proficiency is combined with entrepreneurial capability.

The need for such integration is particularly significant given the persistent unemployment, underemployment and skills-mismatch challenges confronting Nigeria. Large numbers of young people enter the labour market each year, while opportunities for formal employment remain insufficient to absorb all new entrants. Consequently, an education system that primarily prepares graduates to seek employment may be inadequate in an environment where employment opportunities are limited and rapidly changing. Entrepreneurship-oriented TVET can provide an alternative pathway by equipping learners with the capacity to create their own economic opportunities and potentially generate employment for others. Yisa, Adetunji, and Areo (2026) noted that harmonising entrepreneurship education with TVET can strengthen problem-solving, innovation, self-reliance and business-creation capabilities because technical competence without entrepreneurial capacity may not sufficiently enable graduates to convert their skills into sustainable economic ventures. This integration can therefore reposition TVET graduates from being predominantly job seekers to becoming potential job creators and contributors to local economic development.

The importance of entrepreneurship within vocational education is also reflected in the broader vocationalisation of education in Nigeria. Ngozi (2015) emphasised the importance of practical competencies that are relevant to individual productivity and national development. For TVET to fulfil this role effectively, learners require opportunities to apply classroom knowledge to authentic economic and occupational situations. Entrepreneurship education provides a framework for such application by exposing learners to business planning, opportunity identification, product development, marketing, customer relations, financial management and enterprise management. In this context, entrepreneurship education should not be treated as an isolated theoretical subject but as an integrated component of the TVET learning process. Practical projects, simulations, enterprise activities, mentorship and industry-based experiences can enable learners to connect their technical skills with actual business opportunities.

The development of entrepreneurial skills among TVET learners is particularly important because entrepreneurial competence encompasses more than the ability to establish a business. It includes creativity, innovation, opportunity recognition, problem-solving, communication, financial literacy, digital competence, resource mobilisation, decision-making and the confidence to operate in uncertain environments. Evidence from Nigerian and international studies supports the potential of

entrepreneurship education to develop these competencies. Musa A. Abdulkarim (2019) found that an action-based experiential approach significantly improved entrepreneurial skills among NCE II Business Education students compared with direct instruction, demonstrating the importance of practical learning in entrepreneurship education. Hassan Haruna (2026) similarly reported that entrepreneurship education significantly enhanced communication, problem-solving and ICT competencies as well as entrepreneurial intentions among Business Education students in North-Eastern Nigeria. Emmanuel Nweke and Mariam-Aminaho Osakwe (2024) also established the relevance of entrepreneurial skills, including conceptual, social-trading and computer-application skills, to technical and vocational education students in Rivers State. These findings suggest that entrepreneurship education can strengthen the competencies required for learners to function effectively in both employment and entrepreneurial environments.

Further evidence indicates that entrepreneurship education does not influence all entrepreneurial competencies in exactly the same way. Buhari (2024) found that entrepreneurship education significantly influenced business planning and marketing skills among Business Education students, whereas its influence on financial-management skills was not significant. This finding suggests that the effectiveness of entrepreneurship education may depend on the particular competency being developed and the nature of learning experiences provided. Similarly, Bahaw et al. (2024) found that a six-month entrepreneurship education intervention improved entrepreneurial intention, attitudes, subjective norms and perceived behavioural control among vocational students. Li and Islam (2021) also reported that perceived entrepreneurship education positively influenced entrepreneurial self-efficacy and entrepreneurial intention among higher vocational students. Taken together, these studies indicate that effective integration of entrepreneurship education into TVET can contribute to both cognitive and behavioural dimensions of entrepreneurial development. However, the extent to which such integration develops practical entrepreneurial skills may depend on the quality of curriculum implementation, experiential learning opportunities, instructor competence and institutional support.

Beyond entrepreneurial skills development, integrating entrepreneurship education into TVET has important implications for enterprise creation and innovation. Enterprise creation involves the capacity of individuals to transform business opportunities and ideas into viable ventures capable of generating income and employment. Innovation, on the other hand, involves the creation, adaptation or application of new products, services, processes, technologies or business approaches. These outcomes are central to economic transformation because new enterprises can expand productive capacity, generate employment, stimulate competition, improve access to goods and services and create opportunities for local economic development. TVET institutions can contribute to these processes by enabling learners to apply their technical knowledge to the development of market-oriented products and services. Entrepreneurship education provides the additional knowledge required to evaluate market opportunities, develop business models, mobilise resources and commercialise technical innovations.

Evidence from recent studies supports the relationship between entrepreneurship education, enterprise development and innovation. Muyiwa Oyinlola et al. (2024) found that entrepreneurship education, innovation support and university–industry partnerships create important opportunities for entrepreneurial development among Nigerian students, although inadequate funding and institutional capacity remain significant constraints. S. A. Keelson et al. (2025) established a significant relationship between innovation and entrepreneurship education and reported a positive effect of entrepreneurship education on entrepreneurial mindset among TVET students in Ghana. In Nigeria, Oluchi Chinazor Obi, Chikeremma Adamma Akudolu, and Nzube Happiness Ikpat (2025) found a significant positive relationship between entrepreneurship workshops and entrepreneurial intentions among Technology and Vocational Education students. These findings indicate that practical entrepreneurship experiences can stimulate learners' interest in venture creation and strengthen their orientation towards innovative economic activities.

Other studies, however, suggest that the contribution of entrepreneurship education to innovation may vary across different forms of entrepreneurial outcomes. Muhammad Sagir Abubakar and Modibbo Buba Muhammed (2026) found that entrepreneurship education significantly influenced marketing innovation among Office Technology and Management graduates but did not significantly influence social innovation. This suggests that entrepreneurship education may be more effective in promoting some forms of innovation than others, depending on curriculum content and learning experiences. Similarly, Ganiyu Akeem Adewale and Oshotoye Bradford Adedayo (2026) found a significant positive relationship between entrepreneurship education and graduate entrepreneurial intentions among TVET students in Southwest Nigeria, although inadequate funding and mentorship

were identified as important constraints. Barakabo (2026), based on a review of recent empirical and policy evidence, further identified practical training, instructor competence, digital skills, mentorship and market linkages as important factors for improving entrepreneurial outcomes, while inadequate finance, infrastructure and post-training support can limit enterprise development.

The digital transformation of the economy further strengthens the need to integrate entrepreneurship education into TVET. Contemporary enterprises increasingly depend on digital technologies for production, marketing, financial transactions, customer relationship management, communication and access to markets. Consequently, TVET learners require digital entrepreneurial competencies that enable them to use technology not only as a workplace tool but also as an instrument for identifying opportunities, creating products and services and developing innovative business models. Ajuluchukwu and Osakwe (2019) highlighted the importance of ICT competencies and employability potentials among undergraduate Business Education students in preparing learners for changing workplace demands. More recently, Ajuluchukwu, Atah, and Emogor (2026) emphasised the importance of human–artificial intelligence collaboration and 21st-century skills among Business Education graduates. These developments suggest that entrepreneurship education within TVET should incorporate digital technologies, emerging technologies and technology-enabled business practices to ensure that learners remain relevant within an increasingly digital economy.

Practical exposure is another critical factor in achieving effective integration. Entrepreneurship education is unlikely to produce substantial economic outcomes if learners are exposed mainly to theoretical concepts without opportunities to practise enterprise development. Practical entrepreneurship projects can allow learners to identify problems, generate business ideas, develop prototypes, undertake market research, prepare business plans, interact with customers and assess the viability of their products or services. Industry-based learning can further expose students to real-world business operations and provide opportunities for mentorship and professional networking. Ajuluchukwu and Udida (2022) highlighted the importance of adequate physical facilities and equipment for effective practical and competency-based training. Without appropriate workshops, laboratories, digital facilities, production equipment and other learning resources, the practical dimension of TVET may be weakened, limiting the capacity of learners to translate technical and entrepreneurial knowledge into productive activities.

Industry collaboration is equally important because enterprise development occurs within a broader economic ecosystem. Effective partnerships between TVET institutions, industries, entrepreneurs, financial institutions and government agencies can provide learners with opportunities for internships, mentorship, market exposure, technology transfer and access to business networks. Ajuluchukwu (2017) emphasised the relationship between corporate social responsibility and sustainable development in TVET, indicating the importance of connecting educational institutions with wider socioeconomic development processes. Stronger industry linkages can therefore help institutions ensure that entrepreneurship education reflects actual market needs and emerging occupational opportunities. The National Board for Technical Education (NBTE, 2026) has also continued to emphasise the strengthening of technical and vocational skills development in response to labour-market and industry needs. This direction reinforces the argument for a TVET system that is closely connected to productive sectors of the economy.

Despite the potential benefits of integrating entrepreneurship education into TVET, several challenges may limit its effectiveness in Nigeria. These include inadequate infrastructure and equipment, insufficient funding, limited access to modern technologies, weak industry–institution partnerships, inadequate mentorship, shortages of qualified instructors and limited access to post-training enterprise support. Learners may also experience difficulties in accessing finance for business start-up and expansion. These challenges can create a gap between the acquisition of entrepreneurial knowledge and the actual establishment or sustainability of enterprises. Consequently, curriculum integration alone may not be sufficient to achieve economic transformation unless it is accompanied by an enabling institutional and entrepreneurial ecosystem. TVET institutions need to provide practical learning environments, competent instructors, digital resources, mentorship, incubation opportunities, industry partnerships and mechanisms for connecting graduates with finance and markets.

The empirical evidence reviewed provides considerable support for the potential of entrepreneurship education to strengthen both entrepreneurial skills and enterprise-oriented outcomes. However, much of the existing literature has examined individual dimensions such as entrepreneurial intention, self-efficacy, specific entrepreneurial skills or innovation, while relatively fewer studies have examined the broader integration of entrepreneurship education into TVET in relation to both entrepreneurial skills development and enterprise creation and innovation within the Nigerian context. Furthermore, some existing studies were conducted among university or college students rather than

lecturers who are directly involved in curriculum implementation and the delivery of TVET programmes. The perspectives of lecturers are particularly relevant because they possess direct knowledge of curriculum content, teaching practices, practical training, institutional resources and the extent to which entrepreneurship education is actually embedded in TVET programmes.

Against this background, integrating entrepreneurship education into Technical and Vocational Education and Training represents an important strategy for economic transformation in Nigeria. Such integration can provide learners with a combination of technical, entrepreneurial, digital and employability competencies required to participate productively in a changing economy. It can support self-employment, enterprise creation, job generation, innovation and local economic development. Although Nigeria has made policy and curriculum efforts to strengthen entrepreneurship within TVET, continuing challenges relating to unemployment, skills mismatch, inadequate practical training, weak industry linkages, insufficient infrastructure and limited enterprise-support mechanisms indicate the need for sustained empirical attention to how the two areas can be effectively integrated. It is against this background that the present study examines integrating entrepreneurship education into Technical and Vocational Education and Training (TVET) for economic transformation in Nigeria, with particular attention to its contribution to entrepreneurial skills development, enterprise creation and innovation.

Problem of the Study

Nigeria has a large youth population and an extensive network of Technical and Vocational Education and Training (TVET) institutions that could contribute significantly to skills development, employment creation and economic transformation. TVET is expected to provide learners with practical occupational competencies for employment and self-employment, while entrepreneurship education develops the ability to identify opportunities, manage resources, innovate and create enterprises. However, despite the complementary roles of both areas, their effective integration within the Nigerian TVET system remains a concern. A major problem is that many TVET programmes continue to focus largely on technical skills without adequately connecting them with entrepreneurship, enterprise creation and innovation. Although entrepreneurship education has been incorporated into aspects of the TVET curriculum, its inclusion as a course does not necessarily guarantee that learners acquire the practical competencies required to establish and sustain businesses. This creates a possible gap between curriculum provisions and the practical entrepreneurial outcomes expected from TVET graduates.

The problem is further compounded by inadequate practical training, limited industry linkages, insufficient infrastructure and equipment, weak mentorship opportunities and inadequate exposure to emerging technologies. Where learners have limited opportunities to engage in practical enterprise activities, interact with entrepreneurs, develop business ideas or gain industry experience, they may acquire technical knowledge without developing the confidence and entrepreneurial capacity to transform their skills into viable economic activities. Access to finance and other forms of enterprise support also remains a challenge. Even when graduates possess technical and entrepreneurial competencies, inadequate start-up capital, mentorship, business advisory services, incubation opportunities and market access may prevent them from converting their skills and ideas into sustainable enterprises. Similarly, the rapid growth of digital technologies requires TVET graduates to develop competencies in digital marketing, e-commerce, electronic payments and technology-based business development. Where these competencies are not sufficiently integrated into entrepreneurship education, graduates may be unable to take full advantage of emerging entrepreneurial opportunities.

Consequently, the potential of TVET to contribute to self-employment, enterprise creation, innovation and broader economic transformation may remain underutilised. The problem of the study, therefore, is the apparent gap between the expected contribution of entrepreneurship-integrated TVET to economic transformation and the practical challenges affecting its effective implementation in Nigeria. The study consequently examines integrating entrepreneurship education into Technical and Vocational Education and Training (TVET) for economic transformation in Nigeria, particularly in relation to entrepreneurial skills development, enterprise creation and innovation.

Objectives of the Study

The study examined “Integrating Entrepreneurship Education into Technical and Vocational Education and Training (TVET) for Economic Transformation in Nigeria.” Specifically, the study sought to:

1. Examine the extent to which entrepreneurship education is integrated into Technical and Vocational Education and Training (TVET) for the development of entrepreneurial skills among TVET learners in Nigeria.

2. Determine the extent to which the integration of entrepreneurship education into TVET contributes to enterprise creation and innovation for economic transformation in Nigeria.

Research Questions

The following research questions guide the study:

1. To what extent is entrepreneurship education integrated into Technical and Vocational Education and Training (TVET) for the development of entrepreneurial skills among TVET learners in Nigeria?
2. To what extent does the integration of entrepreneurship education into TVET contribute to enterprise creation and innovation for economic transformation in Nigeria?

Hypotheses

The following null hypotheses are tested at the 0.05 level of significance:

H_{01}: There is no significant contribution of the integration of entrepreneurship education into Technical and Vocational Education and Training (TVET) to the development of entrepreneurial skills among TVET learners in Nigeria.

H_{02}: There is no significant contribution of the integration of entrepreneurship education into Technical and Vocational Education and Training (TVET) to enterprise creation and innovation for economic transformation in Nigeria.

Methods

The study adopted a correlational research design. The design was considered appropriate because the study sought to determine the extent to which entrepreneurship education is integrated into Technical and Vocational Education and Training (TVET) and to examine its contribution to entrepreneurial skills development, enterprise creation and innovation for economic transformation in Nigeria. The correlational design enabled the researcher to obtain data on respondents' perceptions of entrepreneurship education integration and determine the nature and extent of relationships between the study variables without manipulating any of them. The design was particularly suitable for examining whether variations in the integration of entrepreneurship education were associated with corresponding variations in entrepreneurial skills development and enterprise creation and innovation.

The population of the study comprised 113 lecturers in the Faculty of Vocational and Entrepreneurial Education, University of Calabar, Calabar, Cross River State, Nigeria. The population consisted of lecturers from five departments in the Faculty, namely Agricultural Education, with 15 lecturers; Business Education, with 40 lecturers; Home Economics Education, with 8 lecturers; Adult and Continuing Education, with 40 lecturers; and Educational Technology, with 10 lecturers. Since the population was relatively small and manageable, the researcher adopted the census sampling technique. Consequently, the entire population of 113 lecturers was used for the study, and no sampling was undertaken. Thus, all the lecturers in the Faculty constituted the respondents for the study.

Data were collected using a structured questionnaire titled *Entrepreneurship Education Integration and Economic Transformation Questionnaire (EEIETQ)*. The questionnaire was developed by the researcher based on the objectives, research questions and hypotheses of the study, as well as relevant literature on entrepreneurship education, TVET, entrepreneurial skills development, enterprise creation and innovation. The questionnaire consisted of two substantive sections. Section A, titled *Integration of Entrepreneurship Education into TVET for Entrepreneurial Skills Development (IEETESD)*, comprised 10 items designed to measure the extent to which entrepreneurship education is integrated into TVET programmes for the development of entrepreneurial competencies. The items addressed key areas such as opportunity identification, business planning, problem-solving, small-business management, marketing, digital technology application, financial management, practical entrepreneurship projects, mentorship and entrepreneurial confidence. Section B, titled *Enterprise Creation and Innovation for Economic Transformation (ECIET)*, also comprised 10 items. The items measured the perceived contribution of entrepreneurship education to enterprise creation and innovation for economic transformation. Specifically, the items covered enterprise creation, employment generation, opportunity identification, product and service development, technological innovation, innovative marketing practices, industry-based entrepreneurship, self-employment and local economic development. The questionnaire items were structured on a four-point rating scale of Very High Extent (VHE) = 4, High Extent (HE) = 3, Low Extent (LE) = 2 and Very Low Extent (VLE) = 1. The four-point scale was adopted to eliminate a neutral midpoint and require respondents to indicate the extent to which each statement reflected their views.

The EEIETQ was subjected to face and content validation by experts in Business Education, Entrepreneurship Education, Technical and Vocational Education and Training, and Measurement and Evaluation. The experts examined the questionnaire items in relation to their relevance to the study objectives, clarity of expression, adequacy of coverage, appropriateness of the items for measuring the study variables and suitability for the target respondents. Their observations and recommendations were carefully considered and used to revise ambiguous, repetitive, overlapping or poorly worded items before the final version of the instrument was administered.

The reliability of the questionnaire was established through a pilot test involving TVET learners who were not included in the main study. The pilot-test responses were analysed using Cronbach's alpha reliability coefficient to determine the internal consistency of the items measuring each of the two constructs of the study. The analysis yielded a Cronbach's alpha coefficient of 0.89 for *Integration of Entrepreneurship Education into TVET for Entrepreneurial Skills Development (IEETESD)* and 0.91 for *Enterprise Creation and Innovation for Economic Transformation (ECIET)*. The overall reliability coefficient for the 20-item questionnaire was 0.93. These coefficients exceeded the minimum acceptable threshold of 0.70, indicating satisfactory to high internal consistency among the items. The instrument was therefore considered sufficiently reliable for data collection in the main study.

The researcher administered the questionnaire to the respondents with the assistance of trained research assistants where necessary. Before administration, the purpose of the study and the procedures for completing the questionnaire were explained clearly to the respondents. They were encouraged to provide honest responses based on their experiences and perceptions. The completed questionnaires were retrieved after administration and screened for completeness and usability. Instruments with substantial missing responses were excluded from the analysis, while valid responses were coded and entered into the statistical software for analysis.

The data collected were coded and analysed using descriptive and inferential statistical techniques. The research questions were answered using mean and standard deviation, while the hypotheses were tested using simple linear regression analysis at the 0.05 level of significance. The use of these statistical techniques was consistent with the objectives of the study and enabled the researcher to determine both the extent of entrepreneurship education integration and its contributory relationship with the identified outcome variables. For the research questions, the mean and standard deviation of respondents' ratings were computed for each questionnaire item. The mean scores were used to determine the extent of entrepreneurship education integration, entrepreneurial skills development, enterprise creation and innovation, while the standard deviation indicated the degree of variability or consistency in respondents' ratings. A criterion mean of 2.50 was adopted for decision-making. Consequently, an item with a mean score of 2.50 or above was interpreted as indicating a high extent, whereas an item with a mean score below 2.50 was interpreted as indicating a low extent.

Simple linear regression analysis was employed to test the hypotheses and determine the contributory effect of the integration of entrepreneurship education into TVET on entrepreneurial skills development and enterprise creation and innovation. The first regression model examined the contribution of the integration of entrepreneurship education into TVET to entrepreneurial skills development, while the second model examined its contribution to enterprise creation and innovation for economic transformation. The first regression model was specified as: $ESD = \beta_0 + \beta_1 IEE + \varepsilon$/ where ESD represents entrepreneurial skills development, IEE represents the integration of entrepreneurship education into TVET, β_0 represents the constant or intercept, β_1 represents the regression coefficient, and ε represents the error term.

The second regression model was specified as: $ECI = \beta_0 + \beta_1 IEE + \varepsilon$. where ECI represents enterprise creation and innovation, IEE represents the integration of entrepreneurship education into TVET, β_0 represents the constant or intercept, β_1 represents the regression coefficient, and ε represents the error term.

The regression analysis provided the coefficient of correlation (R), coefficient of determination (R^2), F-value, regression coefficient (β) and significance level (p-value). These statistics were used to determine the strength, explanatory power and statistical significance of the contribution of entrepreneurship education integration to each dependent variable. The null hypothesis was rejected where the associated p-value was less than 0.05 and retained where the p-value was greater than or equal to 0.05. The analytical procedure was therefore aligned with the research questions and hypotheses. Mean and standard deviation were used to establish the extent to which entrepreneurship education was integrated into TVET and the perceived level of the identified outcomes, while simple linear regression was used to determine whether the integration of entrepreneurship education significantly contributed to entrepreneurial skills development and enterprise creation and innovation for economic transformation.

Results

Research Question 1

To what extent is entrepreneurship education integrated into Technical and Vocational Education and Training (TVET) for the development of entrepreneurial skills among TVET learners in Nigeria?

Table 1: Mean and Standard Deviation of Respondents' Ratings on the Integration of Entrepreneurship Education into TVET for Entrepreneurial Skills Development (N = 113)

S/N	Items Statement	Mean	SD	Decision
1	Entrepreneurship education is integrated into TVET programmes to develop students' ability to identify business opportunities.	3.24	0.76	High Extent
2	TVET students receive training in business planning and enterprise development.	3.18	0.81	High Extent
3	Entrepreneurship education develops students' ability to solve business-related problems.	3.29	0.73	High Extent
4	TVET programmes provide students with practical skills for managing small businesses.	3.12	0.84	High Extent
5	Entrepreneurship education develops students' marketing and customer-management skills.	3.16	0.79	High Extent
6	TVET students are trained to apply digital technologies in entrepreneurial activities.	3.08	0.88	High Extent
7	Entrepreneurship education develops students' financial management and resource-mobilisation skills.	2.96	0.91	High Extent
8	Practical entrepreneurship projects are used to strengthen students' entrepreneurial competencies.	3.21	0.77	High Extent
9	TVET students are exposed to successful entrepreneurs who provide practical guidance and mentorship.	2.84	0.98	High Extent
10	Entrepreneurship education develops students' confidence to start and manage their own businesses after graduation.	3.17	0.82	High Extent
	Cluster Mean	**3.13**	**0.83**	**High Extent**

Note: Criterion mean = 2.50.

The data presented in Table 1 show that all the ten items had mean scores above the criterion mean of 2.50, indicating that entrepreneurship education is integrated into TVET programmes to a high extent for the development of entrepreneurial skills. The item on the development of students' ability to solve business-related problems recorded the highest mean score of 3.29 with a standard deviation of 0.73, followed by the development of students' ability to identify business opportunities with a mean of 3.24 and standard deviation of 0.76. Practical entrepreneurship projects also recorded a relatively high mean of 3.21. The lowest mean score of 2.84 was recorded for exposure to successful entrepreneurs for practical guidance and mentorship. Although this was the lowest-rated item, it was still above the

criterion mean, suggesting that mentorship opportunities exist but may not be as strongly integrated as other components of entrepreneurship education. The cluster mean of 3.13 indicates that, overall, entrepreneurship education is integrated into TVET programmes to a high extent for entrepreneurial skills development. The standard deviations, which range from 0.73 to 0.98, indicate reasonable consistency in the respondents' ratings.

Research Question 2

To what extent does the integration of entrepreneurship education into Technical and Vocational Education and Training (TVET) contribute to enterprise creation and innovation for economic transformation in Nigeria?

Table 2: Mean and Standard Deviation of Respondents' Ratings on Enterprise Creation and Innovation for Economic Transformation (N = 113)

S/N	Items	Mean	SD	Decision
1	Entrepreneurship education encourages TVET graduates to establish their own businesses.	3.22	0.79	High Extent
2	Entrepreneurship education increases students' ability to identify viable business opportunities in their communities.	3.27	0.74	High Extent
3	Practical entrepreneurship training encourages students to develop business ideas into marketable products or services.	3.19	0.81	High Extent
4	Entrepreneurship education encourages TVET graduates to create employment for other people.	3.08	0.87	High Extent
5	Entrepreneurship education develops students' capacity to introduce new products and services into the market.	3.14	0.82	High Extent
6	Entrepreneurship education enhances students' ability to use technology to develop innovative business solutions.	3.23	0.77	High Extent
7	Entrepreneurship education encourages students to develop innovative marketing strategies for their businesses.	3.17	0.8	High Extent
8	Industry-based entrepreneurship activities enhance students' capacity to develop innovative business ventures.	2.98	0.93	High Extent
9	Entrepreneurship education enhances the capacity of TVET graduates to generate income through self-employment.	3.2	0.83	High Extent
10	Integrating entrepreneurship education into TVET contributes to local economic development through enterprise creation and innovation.	3.31	0.72	High Extent
	Cluster Mean	**3.18**	**0.81**	**High Extent**

Note: Criterion mean = 2.50.

The data presented in Table 2 reveal that all ten items recorded mean scores above the criterion mean of 2.50. This indicates that the integration of entrepreneurship education into TVET contributes to enterprise creation and innovation for economic transformation to a high extent. The highest mean score of 3.31 was recorded for the view that integrating entrepreneurship education into TVET contributes to local economic development through enterprise creation and innovation. This was followed by students' ability to identify viable business opportunities, with a mean score of 3.27. The item relating to the use of technology to develop innovative business solutions recorded a mean of 3.23,

suggesting that digital technology is perceived as an important pathway through which entrepreneurship education can support innovation. The lowest mean score of 2.98 was recorded for industry-based entrepreneurship activities, although this was still above the criterion mean. The cluster mean of 3.18 indicates that entrepreneurship education contributes to enterprise creation and innovation to a high extent.

Test of Hypotheses

Hypothesis One

H_{01}: *There is no significant contribution of the integration of entrepreneurship education into Technical and Vocational Education and Training (TVET) to the development of entrepreneurial skills among TVET learners in Nigeria.*

Table 3: Regression Model Summary and ANOVA for the Contribution of Entrepreneurship Education Integration to Entrepreneurial Skills Development

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	0.58	0.336	0.33	0.386	
Model	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Regression	8.382	1	8.382	56.23	<.001
Residual	16.547	111	0.149		
Total	24.929	112			

The data presented in Table 3 show an R-value of 0.580, indicating a moderate positive relationship between the integration of entrepreneurship education into TVET and the development of entrepreneurial skills among TVET learners. The R^2 value of 0.336 indicates that the integration of entrepreneurship education accounts for 33.6% of the variation in entrepreneurial skills development. The remaining 66.4% of the variation may be explained by other factors that were not included in the regression model. The ANOVA result further indicates that the regression model is statistically significant, $F(1, 111) = 56.23$, $p < .001$. Since the significance value is less than the 0.05 level of significance, the null hypothesis is rejected. This means that the integration of entrepreneurship education into TVET makes a statistically significant contribution to the development of entrepreneurial skills among TVET learners in Nigeria. The null hypothesis was rejected, indicating that there is a significant contribution of the integration of entrepreneurship education into TVET to the development of entrepreneurial skills among TVET learners in Nigeria.

Hypothesis Two

H_{02}: There is no significant contribution of the integration of entrepreneurship education into Technical and Vocational Education and Training (TVET) to enterprise creation and innovation for economic transformation in Nigeria.

Table 4: Regression Model Summary and ANOVA for the Contribution of Entrepreneurship Education Integration to Enterprise Creation and Innovation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	0.64	0.41	0.405	0.361	
Model	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Regression	10.064	1	10.064	77.2	<.001
Residual	14.468	111	0.13		
Total	24.532	112			

The data presented in Table 4 show an R-value of 0.640, indicating a moderately strong positive relationship between the integration of entrepreneurship education into TVET and enterprise creation and innovation. The R^2 value of 0.410 indicates that the integration of entrepreneurship education explains 41.0% of the variation in enterprise creation and innovation among TVET learners. The remaining 59.0% may be attributed to other factors that are not included in the regression model. The ANOVA result further shows that the regression model is statistically significant, $F(1, 111) = 77.20$, p

< .001. Since the significance value is less than the 0.05 level of significance, the null hypothesis is rejected. This indicates that the integration of entrepreneurship education into TVET makes a statistically significant contribution to enterprise creation and innovation for economic transformation in Nigeria. The null hypothesis was rejected, indicating that there is a significant contribution of the integration of entrepreneurship education into TVET to enterprise creation and innovation for economic transformation in Nigeria.

Discussion of Findings

The first finding of the study revealed that entrepreneurship education is integrated into TVET programmes to a high extent for the development of entrepreneurial skills, as indicated by the cluster mean of 3.13. The finding suggests that entrepreneurship education within TVET is not limited to theoretical knowledge but provides opportunities for learners to acquire competencies relating to opportunity identification, business planning, problem-solving, small-business management, marketing, digital technology, financial management, practical entrepreneurship and entrepreneurial confidence. The relatively high ratings across all ten items indicate that the lecturers perceived entrepreneurship education as an important component of TVET for preparing learners for entrepreneurial activities. This finding agrees with Hassan Haruna (2026), who found that entrepreneurship education significantly enhanced entrepreneurial competencies among Business Education students in tertiary institutions in North-Eastern Nigeria. In particular, Haruna reported improvements in communication, problem-solving and ICT application skills, as well as opportunity-recognition and leadership-related competencies. The convergence between the present finding and Haruna's result suggests that entrepreneurship education can provide a practical platform through which TVET learners develop the competencies required to function effectively as entrepreneurs.

The finding is also consistent with Musa A. Abdulkarim (2019), whose study in Rivers State demonstrated that students acquired entrepreneurial skills more effectively when entrepreneurship education was delivered through an action-based experiential approach than through direct instruction. Abdulkarim's finding is particularly relevant to the present study because the current result identified practical entrepreneurship projects as one of the highly rated components of entrepreneurship education integration. This agreement indicates that the effectiveness of entrepreneurship education may depend not merely on its presence in the curriculum but also on the extent to which learners are actively engaged in practical and experiential entrepreneurial activities. The present finding further agrees with Emmanuel Nweke and Mariam-Aminaho Osakwe (2024), who examined entrepreneurial skills as a correlate of TVET among students in Rivers State. Their study focused on conceptual, social-trading and computer-application skills and reported a relationship between TVET and the development of entrepreneurial skills. The agreement reinforces the argument that contemporary TVET should combine occupational competencies with entrepreneurial, social and digital skills if graduates are to respond effectively to changing labour-market demands. The finding is also supported by Li and Islam (2021), whose study of students in higher vocational education established that exposure to entrepreneurial education positively influenced entrepreneurial self-efficacy and entrepreneurial intention. Although the present study focused more broadly on entrepreneurial skills rather than intention, the two findings are complementary. Skills acquired through entrepreneurship education can strengthen learners' confidence and perceived ability to identify and exploit business opportunities, thereby creating a foundation for subsequent entrepreneurial action.

However, the finding should be interpreted with some caution. The relatively lower rating for exposure to successful entrepreneurs and mentorship ($M = 2.84$) suggests that although entrepreneurship education is integrated into TVET to a high extent, the practical ecosystem surrounding the curriculum may not be equally developed. This observation is consistent with the findings of Ganiyu Akeem Adewale and Oshotoye Bradford Adedayo (2026), who found a positive relationship between entrepreneurship education and entrepreneurial intentions among TVET students in Southwest Nigeria but noted that limited access to funding and mentorship constrained students' propensity to start businesses. Thus, the present study extends the existing evidence by suggesting that curriculum integration is relatively strong, but stronger mentorship and external entrepreneurial support are still required to translate acquired skills into sustainable entrepreneurial action. The regression result provides further support for the first finding. The result showed that entrepreneurship education integration significantly predicted entrepreneurial skills development, $R = .580$, $R^2 = .336$, $F(1, 111) = 56.23$, $p < .001$. Thus, entrepreneurship education integration accounted for 33.6% of the variance in entrepreneurial skills development. The rejection of the first null hypothesis demonstrates that the observed high level of entrepreneurship education integration was not merely descriptive but was also statistically associated with improved entrepreneurial skills development. This finding is particularly consistent with Abdulkarim's (2019) experimental evidence because both studies

demonstrate that the way entrepreneurship education is incorporated into vocational/business education can enhance entrepreneurial competencies. It also supports Haruna's (2026) conclusion that entrepreneurship education is an important catalyst for strengthening technical and entrepreneurial competencies. The implication is that TVET institutions should move beyond treating entrepreneurship education as a compulsory theoretical course and integrate it into practical learning, project work, problem-solving activities and authentic business experiences.

The second finding revealed that entrepreneurship education contributes to enterprise creation and innovation to a high extent, with a cluster mean of 3.18. The result indicates that the integration of entrepreneurship education into TVET is perceived to encourage business establishment, opportunity recognition, product and service development, employment creation, technological innovation, innovative marketing, self-employment and local economic development. The finding agrees strongly with Oluchi Chinazor Obi, Chikeremma Adamma Akudolu and Nzube Happiness Ikpat (2025). Their study of 104 Technology and Vocational Education students in public universities in Anambra State found a significant positive relationship between entrepreneurship workshop programmes and entrepreneurial intentions. They concluded that greater exposure to entrepreneurship workshops increases students' desire to become entrepreneurs and recommended regular entrepreneurship programmes to support business establishment after graduation. Although entrepreneurial intention is not identical to actual enterprise creation, intention represents an important antecedent of entrepreneurial behaviour. Consequently, the present finding extends this evidence by showing that lecturers perceive entrepreneurship education as contributing not only to entrepreneurial intention but also to broader enterprise creation and innovation outcomes. The present result is also consistent with Ganiyu Akeem Adewale and Oshotoye Bradford Adedayo (2026), who reported a moderate positive relationship between entrepreneurship education and graduate entrepreneurial intentions among TVET institutions in Southwest Nigeria ($r = .45$, $p < .01$). Their regression analysis further showed that entrepreneurship education significantly predicted entrepreneurial intention ($\beta = .38$, $p < .01$), although funding and mentorship constrained students' willingness to establish businesses. The present finding therefore agrees with their conclusion that entrepreneurship education is important for developing the entrepreneurial orientation necessary for enterprise creation, while also highlighting the need for an enabling entrepreneurial ecosystem.

The finding also agrees with S. A. Keelson, J. O. Addo, K. Kwarteng and J. Amoah (2025), who studied 800 TVET students from ten technical universities in Ghana and found a significant relationship between innovation and entrepreneurship education, with entrepreneurship education positively influencing entrepreneurial mindset. This agreement is particularly important because innovation is central to the present study's second outcome variable. The evidence suggests that entrepreneurship education can encourage learners to move beyond conventional business practices and develop innovative products, services, technologies and marketing approaches. The finding is further supported by Muyiwa Oyinlola, Oluwaseun Kolade, Silifat Abimbola Okoya, Olubunmi Ajala and colleagues (2024), whose study of entrepreneurship and innovation in Nigerian universities identified entrepreneurship education, innovation support and university-industry partnerships as important elements in improving entrepreneurial outcomes. Their study drew on qualitative data from five focus groups and quantitative data from 151 students across four Nigerian universities and highlighted both successful initiatives and implementation challenges. The agreement between that study and the present finding reinforces the importance of institutional support, industry linkages and innovative pedagogies in converting entrepreneurship education into meaningful entrepreneurial outcomes.

Nevertheless, the present finding does not imply that entrepreneurship education automatically results in the establishment of sustainable enterprises. The relatively lower rating for industry-based entrepreneurship activities ($M = 2.98$) suggests that the connection between classroom learning and the real business environment may still require strengthening. This observation is consistent with Oyinlola et al. (2024), who identified implementation challenges within the Nigerian entrepreneurship education ecosystem. It is also consistent with Adewale and Adedayo (2026), who found that funding and mentorship limitations could weaken the transition from entrepreneurship education to entrepreneurial action. The regression result for the second hypothesis provides additional empirical support for the finding. Entrepreneurship education integration had a significant positive contribution to enterprise creation and innovation, $R = .640$, $R^2 = .410$, $F(1, 111) = 77.20$, $p < .001$. The result indicates that entrepreneurship education integration accounted for 41.0% of the variance in enterprise creation and innovation. Since the probability value was below .05, the second null hypothesis was rejected. The stronger explanatory power of entrepreneurship education for enterprise creation and innovation (41.0%) compared with entrepreneurial skills development (33.6%) suggests that entrepreneurship

education may have a particularly important role in translating competencies into entrepreneurial and innovative orientations.

Overall, the findings are largely in agreement with the empirical literature reviewed. Across Nigeria and comparable TVET contexts, the evidence consistently points toward positive relationships between entrepreneurship education, entrepreneurial skills, entrepreneurial intentions, innovation and entrepreneurial mindset. At the same time, the studies also demonstrate that curriculum integration alone is insufficient. Practical experience, mentorship, industry partnerships, digital resources, access to finance and post-training support are necessary to ensure that entrepreneurial competencies developed through TVET translate into sustainable enterprise creation and economic transformation.

Conclusion

Based on the findings of the study, it was concluded that integrating entrepreneurship education into TVET is an important strategy for strengthening entrepreneurial capacity and promoting economic transformation in Nigeria. The study established that entrepreneurship education is integrated into TVET programmes to a high extent, particularly in relation to opportunity identification, business planning, problem-solving, practical entrepreneurship, digital technology and entrepreneurial confidence. The study also concluded that entrepreneurship education contributes to enterprise creation and innovation to a high extent. Through exposure to business opportunities, practical enterprise development, technological applications, innovative marketing and self-employment activities, TVET can provide learners with competencies that extend beyond conventional occupational training.

Furthermore, the regression findings established that entrepreneurship education integration significantly contributes to both entrepreneurial skills development and enterprise creation and innovation. The findings therefore demonstrate that entrepreneurship education should not be regarded merely as an additional academic requirement within TVET programmes. Rather, it should constitute an integral component of vocational preparation that connects technical competence with opportunity recognition, innovation, enterprise development and self-employment. However, the findings also suggest that the full economic benefits of entrepreneurship education may not be realised if practical mentorship, industry exposure, funding opportunities and entrepreneurial support systems remain inadequate. Consequently, effective integration should encompass not only curriculum content but also the institutional and ecosystem conditions necessary for learners to transform acquired competencies into viable entrepreneurial ventures.

Recommendations

Based on the findings and conclusion of the study, the following recommendations were made:

1. Strengthen the practical integration of entrepreneurship education. TVET institutions should embed entrepreneurial activities within technical and vocational courses rather than treating entrepreneurship as an isolated theoretical subject.
2. Expand practical entrepreneurship projects and enterprise incubation. Learners should be encouraged to develop business ideas, prepare business plans, produce marketable products or services and test their ideas in real or simulated markets.
3. Strengthen industry–TVET partnerships and mentorship programmes. TVET institutions should collaborate with industries, SMEs, business associations, successful entrepreneurs and innovation hubs to provide learners with mentorship, internships, enterprise projects and workplace exposure.
4. Increase emphasis on digital entrepreneurship and access to start-up finance. TVET curricula should incorporate digital marketing, e-commerce, financial technology, social-media business development and other relevant digital skills.

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EXTENT HIGH INTREST CHARGES AFFECT THE GROWTH OF SMALL SCALE ENTERPRISES IN ONITSHA, ANAMBRA STATE.

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Abstract

Accessibility to external financing is a major determinant for the growth and sustainability of small scale enterprises in any economy. Unfortunately, this factor has remained a major environmental constraint to the growth of these enterprises in developing countries like Nigeria. This study ascertained the extent high bank interest charges affect the growth of Small Scale Enterprises (SSEs) in Onitsha, Anambra state. The study was a descriptive survey, conducted with 352 owners of registered small scale enterprises in Onitsha Anambra state. One research question guided the conduct of the study and one null hypothesis was tested at 0.05 level of significance. A validated structured questionnaire was used to collect data. The reliability of the instrument was established using cronbacha alpha coefficient to obtain a reliability index of 0.83. The data collected were analyzed using mean score and z-test statistics. The findings of the study revealed among others that high interest charges by banks on SSE slows down business operations and lead to risk on investments to a moderate extent. Also this lowers returns on capital employed and reduces profit margin to a low extent. It was recommended among others that owners of SSEs in Onitsha should organize capacity building for their members on loan management, to avert the consequences of high bank interest changes on their business.

Key words: High interest charges, growth, small scale enterprises.

Introduction

Small scale enterprises (SSEs) worldwide are seen as essential spring boards for national development. In developing countries like Nigeria, it is used as a strategy for rapid industrialization, wealth creation, job generation and poverty alleviation among the populace (Federal Republic of Nigeria, 2021). SSEs permeates easily in many economies and a source of income to many people.

Small scale enterprises have been variedly defined from qualitative and quantitative perspectives, differing from one country to another depending on each countries level of economic development, economic policies and programmes instituted from one period to another. Quantitatively, Small scale enterprises in Nigeria is conceptualized as part of Small and Medium Enterprises (SMEs) and with no single or static definition. Different government institutions and regulatory bodies define them based on their specific criteria such as asset base, number of employees or total capital investment. **Central Bank of Nigeria (2010**) noted SSEs as enterprises that has asset base, excluding land between #5 million to #300 million, and labour force between 11 and 300. Small and Medium Scale Enterprises Development Agency of Nigeria (2016) defined SSEs under classifications of small and medium enterprises whose total assets (excluding land and building) are above N5m but not exceeding N50m with a total workforce above 10 but not exceeding 49 employees.

However, this approach of conceptualizing SSEs has been kicked against in the modern times. Okoli and Obi (2016) observed that the amount of capital invested and number of people employed in enterprises is no more a realistic approach in measuring the scale of enterprises, but technology which has the capacity to boost production and service distribution to any height. According to the perspective of the United Nations Industrial Development Organisation (UNIDO), Small Scale Enterprises (SSEs) in Nigeria are businesses that are labor intensive, locally owned, and serve as major sources of employment and industrial development. UNIDO remarked that these enterprises are typically constrained by limited access to finance, technology, and global markets. They operate largely with capital provided by the owners, and decision-making and management are vested in the hands of an individual or a small group of owners who participate actively in daily operation. They are typically constrained by limited access to finance, technology, and global markets. SSEs operate largely with capital provided by the owners, and decision-making and management are vested in the hands of an individual or a small group of owners who participate actively in daily operations (UNIDO, 2025).

This study therefore adopted the United Nations Industrial Development Organization (UNIDO) approach, studyig SSEs, businesses that are characterized by labor intensive, locally owned with capital provided by the owners; decision making and management is vested in the hand of an individual or small group of owners who participates actively in its daily operations.

In Nigeria SSEs transcends manufacturing, agro based to distributive and general service firms. Emerging and fast growing sectors in this business include the entertainment and leisure industries, Information and Communication Technologies (ICTs), Telecommunications and biotechnology firms. These enterprises are flexible to local market conditions, exploit locally available raw materials with lower capital and require fewer infrastructures for development. Oyeyinka (2024) remarked that these businesses creates over 70 percent of total jobs provided in the country, producing new products and services to the comfort and convenience of the citizens.

Small scale enterprises tremendous impact on Nigerian economy has generated a lot of concern for its growth especially as it relates to government economic policies in creating enabling environment. This include institution of financial policies and its proper monitoring through Central Bank of Nigeria, to ensure provision of banking facilities and credits as external sources of fund to owners of SSEs to finance their numerous operations (Business Day, 2020). This is expected to motivate the business owners to increase productivity, make higher profits and create more jobs to improve people's standard of living.

Unfortunately, small scale enterprises in Nigeria in the recent times have witnessed high bank interest charges which have put their investments into high risks. The survival of these businesses was reduced and this could mar their developmental roles, as their ability to achieve objectives is reduced to the lowest minimum.

Influence of High Bank Interest Charges on Growth of SSEs

A small scale enterprise achieves growth when the business generates significant positive cash flows or earning which increases at a clear fast rate as well as reducing over head costs. In this situation there is high profitability. However, business growth cannot be achieved where there is poor capitalization or fund grossly inadequate for business operations. Olorushola (2010) noted that Nigeria banks tend to be lukewarm in meeting the credit needs of SSEs and where this is made available, the high interest charges do not allow the enterprises make profit from their investments.

SSEs pay interest charges as a price to the lenders for allowing them use their fund. This is normal as this is a compensation the borrower makes to the banks for forgoing an opportunity of earning income from other investments. However, when these interest charges on credits are high, it compels small businesses to reduce their investments. They incure high production cost, experiences drastic reduction on their sales volume, which ultimately affect their profit margin.

Yusuf (2025) opined that small scale enterprises in Nigeria are more vulnerable to the perils of high bank interest charges because they heavily rely on financial institutions for seasonal borrowing needs. This tends to increase the problem of cash flows and put their investment at greater risks due to the high return expectations on money borrowed. Returns on capital employed are reduced thereby discouraging the small business owners from making further investments.

However, financial mismanagement and Low Financial Literacy also, has been attributed as a major factor to SSEs poor financial performance. Many SSEs cannot cope with the financial aspects of business resulting to ineffective and inefficient financial management activities which have been detrimental to their performance and longeviy (The Nation, n.d.). BusinessDay (2020) also noted financial discipline as lacking among the small scale business owners or managers. Okoli and Ezenwafor in Mead and Liedholm (2018) equally observed that most problems of owners of small scale enterprises regarded as inadequate capital are financial management problems resulting from the inability of the entrepreneurs to make proper account recordings and differentiate between profit and losses in their businesses.

Owners of small scale enterprises are the entrepreneurs', initiators who coordinate other factors of production to achieve objectives. In most cases they are the manager, who sees to the daily operations of their business. They are in a good position to provide information regarding capitalization of their business and extent high bank interest charges affect them. These entrepreneurs could be either males or females whose opinion could differ as a result of their different access to bank credits.

Although small business growth and their constraining factors could have been widely discussed, there is no known empirical study on the extent high bank interest charges affect the growth of small scale enterprises in Onitsha, Anambra state. This study was therefore conceived to determine this in the opinion of the owners.

Theoretical Underpinning

The study is strengthened by the theory of growth of firms propounded by Edith Penrose in 1959. Penrose offered some principles that govern the growth of firms and the rate at which firms can grow successfully.

These factors Penrose (1959) noted as internal and external factors such as management and technical resources which can help a firm to grow and realize competitive advantage. Management is an art of organizational design and owners of enterprises/business need to acquire managerial capabilities and skills which should be applied at different stages of a firms growth to achieve objectives. Peurose noted that the ignorance of these factors result in failure and loss of opportunities.

High bank interest charges are one of the external factors that affect the growth of small scale enterprises negatively. Effective financial management and technicalities in the use of a firms resource must be carefully applied to cushion and avert the consequences on enterprises. These factors are necessary in the growth of firms to avoid business failure and to maintain status quo in the market.

Research Question

To what extent do high bank interest charges affect the growth of small scale enterprises in Onitsha, Anambra State?

Hypothesis

One null hypothesis was test at 0.05 level of significance

There is no significance difference in the mean ratings of male and female owners of small scale enterprises on the extent high bank interest charges affect the growth of their businesses in Onitsha, Anambra State.

Method

The study was a descriptive survey. The population comprised 352 owners of registered Small Scale Enterprises in Onitsha North and South local Government Areas of Anambra State (Ministry of Commerce and industry Anambra State, 2024). There was no sampling, as all were used due to its manageable size. Data were collected with a validated structured questionnaire on a five point rating scale of Very High Extent (VHE), High Extent (HE), Moderate Extent (ME), Low Extent (LE) and Very Low Extent (VLE)

Three research assistants helped the researcher in administration of questionnaire in the areas where the researcher could not reach. They were briefed on the purpose of the study and the contents of the questionnaire. Connacht Alpha Coefficient was used to determine the internal consistency of the instrument. The reliability Coefficient was established at 0.83. Out of 352 copies of questionnaire distributed, 335 were retrieved and were all found usable.

The data collected were analyzed using mean and z-test statistic. The following boundary limits were used to determine the extent of each factor effect.

Very High Extent	4.50 -5.00
High Extent	3.50 -4.4.49
Moderate Extent	2.50 -3.49
Low Extent	1.50 -2.49
Very Low Extent	1.00 -1.49

z-test statistic was used to test the null hypothesis raised at 0.05 level of significance. The hypothesis was rejected where the z-calculated value is equal or grater than the z-critical value if not the hypothesis was not rejected.

Results

The result of the study are presented on tables 1 and 2

Table 1: Respondents' Mean rating on extent high bank interest charges affect the growth of SSEs in Onitsha, Anambra State

S/N	Items on High Bank Interest Charges	Mean	Remark
1	Leads to higher risk of investment	3.46	**ME**
2	Leads to low productivity	2.01	LE
3	Slows down business operations	2.87	ME
4	Leads to increase in price of products	1.21	VLE
5	Reduces profit margin	1.73	LE
6	Limits cash flows	1.20	VLE
7	Lowers return on capital employed	1.93	LE
8	Leads to discouragement of entrepreneurs investment	3.06	ME
9	Causes increase in unemployment	2.25	LE

Cluster Mean		2.2	LE

Data contained in the table 1 shows that three items out of nine rated were affected by high bank interest charges at moderate extent, four were affected at low extent and two were affected at very low extent. Most highly rated is item 1 that indicates that high bank interest charges lead to higher risk of investment. Least rated is that high interest charges limit cash flow. However, with the cluster mean of 2.2, it was confirmed that high bank interest charges affect the growth of SSEs in Onitsha Metropolis at a low extent.

Table2: z-test analysis on extent high bank interest charges affect the growth of SSEs in Onitsha based on gender (male and female)

Gender	N	X	SD	Df	z-cal	z-crit	A	Decision
Male	177	2.27	0.58					
				333	0.22	1.96	0.05	Not significant
Female	158	2.25	0.65					

Data contained in table 2 shows that the z-calculated value of 0.22 was less than the z-critical value of 1.96 at 0.05 level of significance. The null hypothesis was therefore not significant and not rejected.

Discussion and Implication of the Study

The findings of this study revealed that high interest charges by banks affect growth of small scale enterprises at varying levels (moderate, low and very low) depending on the factors rated. Rated to moderate extents are such factors as high interest charges leading to high risk of investment, slowing down business operations and leading to discouragement of entrepreneurs for further investment. Rated to a low extent are such factors as reduction in profit margin, lowering of returns on capital employed, causes unemployment and low productivity. Also the finding of the study discovered that high bank interest charges to a very low extent leads to increase in price of goods and limit cash flows.

The findings of this study are worrisome and not encouraging as non of the factors were rated as having a serious or high extent effect. This confirms the finding of Yusuf, (2025) that financial problem accounts for only 25 percent of problems affecting SMEs in Nigeria as majority were related to environmental impediments. Also Okoli and Ezenwafor in Mead and Liedholm (2018) observed that most problems of owners of small scale enterprises regarded as inadequate capital are financial management problems resulting from the inability of the entrepreneurs to make proper account recordings and differentiate between profit and losses in their business. This therefore could mean that most of the owners of SSEs in Onitsha do not have a good knowledge of the impact high bank interest charges is having on their businesses due to poor knowledge of accounting or book keeping. They may not also be aware of the high interest charges by banks in their localities. This confirms the observation that SSE owners in Nigeria in most cases do not start business by borrowing from banks. They borrow from relatives and friends and could later go for bank credits for expansion of their businesses Yusuf and Olanenewaju, 2024).

However, although the findings of this study did not establish in any case that high bank interest charges affect small scale enterprises at high extent, the fact remains that there are influences on their businesses. Also, no matter the level of influence made, they are still substantial to constrain the growth of SSEs in Onitsha, Anambra State.

As noted by this study, high interest charges to a moderate extent leads to high risk of investment and discourages entrepreneurs from further investment. This is a fact as a firm's investment is most sensitive to credit with high interest rates. Also kale (2025) noted that high interest rate weakens a firm balance sheet particularly by reducing expected future profits. The probability of making profit is reduced as money available for business operation is cut short due to high interest charges.

This also confirms the opinion of Adebakin (2024) that high interest charges compels small businesses to reduce inventories, incur high production costs and experience sharp falls on sales which affect the business profit margin and growth. No wonder its effect on prices of products and employment. A firm existence is justified when profits are made in serving the public, therefore reduction in profit compels small business to reduce workers for survival.

In line with the findings of this study,Yusuf (2025) noted that high interest charges leads to intensified cash flow problems which often spel disaster for enterprise. This is more pronounced among the Small Scale Enterprises than large firms due to undercapitalization

The study also discovered that there is no significant difference in the opinion of male and female owners of small scale enterprises in Onitsha, on the extent high bank interest charges affect the growth of their businesses. This is in line with the view of Mead and Liedholm (2011) that gender has no significant effect on the extent high interest rate affect SSEs

This study has implications for Central Bank of Nigeria to review its policy on credits to small businesses. SSEs are backbone of many economies and must be encouraged to flourish. The primary role of financial institutions is to provide liquidity that permits a high level of economic activity in the society. Loans to small business should be on soft terms. The activities of banks should be properly controlled and monitored by CBN to achieve this. Government and Association of Owners of SSEs in Nigeria should also acquaint their members with learning experiences in financial management. This will make them to be aware of these high bank interest charges and how to manage such conditions to ensure growth of their businesses. Also to curriculum planners in business education and related programmes to provide learning experiences in business financial management to get their graduates fortified and to ensure success in business as future entrepreneurs'.

Conclusion

Based on the findings of this study, it is concluded that high bank interest charges affect the growth of Small Scale Enterprises at moderate, low and very low extents. It is also concluded that the male and female owners of SSEs in Onitsha Anambra State do not differ in their opinion on extent high bank interest charges affect their businesses.

Recommendations

Based on the findings of this study, the following recommendations are made.

1. Entrepreneurs' in Onitsha Anambra State should embark on capacity building of their members to ensure better understanding of financial institutions requirement for loan and the interest rate charges on them. This could be achieved by collaborative efforts with the relevant educational institutions, government agencies and consultants through the organization of seminars, workshops, conferences and trainings programmes for both the entrepreneurs' and the staff of the financial institutions.
2. Curriculum planners in business education and other related programmes should include credit management in business as one of the learning experiences provided to their students. This inculcates in the undergraduates those experiences required for effective credit management in business to become successful entrepreneurs.
3. The Central Bank of Nigeria should properly control, supervise and monitor the activities of other financial institutions in the area of lending to small businesses. Loans to these SSEs should be on soft terms with low interests to ensure their growth and survival.

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ROTATIONAL SAVINGS AND CREDIT ASSOCIATION SYSTEM AND WOMEN'S ENTERPRISE SUSTAINABILITY: EMPIRICAL EVIDENCE FROM OSUN STATE, NIGERIA.

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Abstract

This study examined the influence of the Rotational Savings and Credit Association System (ROSCAS), locally known as ajo, on the sustainability of women-owned enterprises in Osun State, Nigeria. The specific objectives were to assess the extent of influence of ROSCAS participation on working capital adequacy, profitability stability, and reinvestment capacity of women entrepreneurs and to determine whether significant differences exist in respondents' perceptions based on location and educational background. The study adopted a descriptive survey research design. The population of the study was considered indeterminate because women entrepreneurs participating in informal ajo savings groups are not formally registered or centrally documented. Consequently, a multi-stage sampling technique was employed to select respondents based on different levels of selections. The sample size arrived at was 45 women micro-entrepreneurs. Data were collected using a structured questionnaire designed on a four-point Likert scale and analyzed using mean and standard deviation. Hypotheses were tested at the 0.05 level of significance using an independent sample t-test. Only 41 copies of the retrieved questionnaire were subjected to statistical analysis. Findings revealed that the extent of influence of the ROSCAS on working capital adequacy ($\bar{x}$=3.74; SD=0.462), profitability stability (($\bar{x}$=3.48; SD=0.560), and reinvestment capacity ($\bar{x}$=3.63; SD=0.481) of women entrepreneurs were very high. Hypotheses testing further showed that there were no statistically significant differences in respondents' ratings on the influence of ROSCAS on working capital based on rural–urban location (t = .073, df = 39, P = 0.942), on profitability stability based on educational attainment (t = -.973, df = 39, P = 0.337), and on reinvestment capacity based on rural-urban location (t = -1.017, df = 39, P = 0.315). The study concluded that the ajo system plays a significant role in strengthening financial resilience, liquidity management, and business sustainability among women entrepreneurs in Osun State. The study recommends the recognition and integration of indigenous savings structures into broader financial inclusion and women's enterprise development strategies in Nigeria.

Keywords: Rotational Savings and Credit Association System, Ajo, Women Entrepreneurship, Enterprise Sustainability, Informal Finance, Osun State, Nigeria.

Background of the Study

Across Sub-Saharan Africa, women's entrepreneurship has increasingly become a powerful engine of inclusive and broad-based economic transformation. In Nigeria, women-owned ventures represent a substantial share of micro, small, and medium enterprises, with a particularly strong presence in the informal and local economy. These businesses span a wide spectrum of activities, from agro-processing and retail commerce to food vending, textile production, personal care services, and small-scale manufacturing, reflecting both adaptability and economic dynamism. Beyond generating income, women-led enterprises play a pivotal role in strengthening household livelihoods, creating employment opportunities, alleviating poverty, and fostering community resilience. Yet, notwithstanding their undeniable contributions, women entrepreneurs continue to confront deep-rooted structural barriers that restrict expansion and threaten long-term viability. Among the most pressing of these constraints is inadequate access to formal financial services, which remains a critical obstacle to sustainable business growth.

Financial exclusion remains a persistent barrier to enterprise development in developing economies, especially those in rural areas. Demirgüç-Kunt et al. (2022), citing The Global Findex Database (2021), revealed enduring gender disparities in account ownership, access to credit, and use of formal financial products in Sub-Saharan Africa. Although digital financial services have expanded rapidly, women remain less likely than men to access formal loans or secure credit for business expansion. The World Bank (2021) further highlighted regulatory, cultural, and institutional barriers that disproportionately restrict women's economic participation, including limited property rights and

collateral ownership in many jurisdictions. In Nigeria, collateral-based lending requirements, bureaucratic processes, and high interest rates often exclude small-scale women entrepreneurs from institutional credit markets.

In a situation where access to formal banking services is constrained by stringent lending conditions, high transaction costs, or structural gender inequalities, informal financial arrangements often become critical channels for mobilizing capital, particularly among women entrepreneurs in developing economies. Recent global evidence indicates that women continue to experience lower levels of credit access and formal borrowing compared to men, especially in Sub-Saharan Africa, thereby reinforcing reliance on community-based financial mechanisms (International Finance Corporation [IFC], 2022; World Bank, 2022). In such environments, informal savings and credit systems provide practical and socially embedded alternatives that enable small-scale business operators to accumulate capital and manage liquidity needs.

Among the most enduring and widely diffused informal financial mechanisms are Rotating Savings and Credit Associations System (ROSCAS). These associations have been documented across diverse cultural and economic settings as adaptive responses to financial exclusion and institutional gaps in formal credit markets (Banerjee et al., 2021; Cassidy & Cissé, 2020). ROSCAS function through regular financial contributions made by members into a collective pool, which are subsequently disbursed to participants in a predetermined rotational sequence. The system is not anchored in formal contractual enforcement but rather sustained through interpersonal trust, peer monitoring, social sanctions, and shared communal norms. Such relational governance mechanisms reduce information asymmetry and default risk while reinforcing accountability among members (Cassidy & Cissé, 2020). Beyond their financial role, these associations cultivate solidarity and mutual support, strengthening the social infrastructure that underpins small enterprise survival.

Recent scholarship continues to affirm the relevance of ROSCAS within contemporary financial ecosystems. For example, Banerjee et al. (2021) highlighted the importance of informal savings structures in supporting household and enterprise-level financial stability in environments characterized by limited institutional access. Similarly, the International Finance Corporation (2022) underscores the role of savings groups and community-based finance in bridging the gender finance gap in emerging markets. These findings align with broader development finance literature emphasizing that informal savings arrangements enhance liquidity management, provide access to lump-sum capital for business investment, and promote disciplined savings behavior among participants. Collectively, this body of evidence demonstrates that ROSCAS remain not merely traditional financial customs but dynamic and resilient financial instruments that sustain women's entrepreneurial activities in the face of formal financial exclusion.

In southwestern Nigeria, particularly among the Yoruba ethnic group, Rotating Savings and Credit Associations System (ROSCAS), locally known as *"ajo,"* constitute a deeply entrenched indigenous financial practice embedded in market culture and communal life. Predominantly utilized by traders, artisans, and small-scale entrepreneurs, especially women operating within the informal sector. According to Akinola (2022), *Ajo* groups are formed around shared occupational or social ties, with members contributing fixed amounts daily, weekly, or monthly into a collective pool. The accumulated funds are disbursed sequentially to each participant, enabling recipients to access lump-sum capital that exceeds their individual savings capacity at a given time, thereby supporting inventory expansion, asset acquisition, or business stabilization. Although the system operates outside formal banking regulations and contractual enforcement, its sustainability is maintained through social accountability mechanisms, including trust, peer monitoring, reputational incentives, and communal norms, which collectively minimize default risks and transaction costs. As recent financial inclusion reports indicate, such community-based savings structures remain critical sources of liquidity and entrepreneurial financing in contexts where formal financial access is limited or exclusionary (Enhancing Financial Innovation & Access, 2023; World Bank, 2022).

Regarding rural and urban location, ROSCAS operate as spatially neutral financial networks, enabling women entrepreneurs in both rural markets and urban commercial centers to benefit from pooled savings systems, peer monitoring, and predictable capital disbursement. Similarly, educational attainment does not appear to significantly moderate the perceived effectiveness of ROSCAS, as the system is structured around simple contribution cycles and social trust mechanisms rather than formal financial literacy requirements. Studies on informal finance and microenterprise development have shown that savings groups enhance economic participation of women regardless of formal education level by promoting disciplined saving behavior, peer support, and investment readiness (Karlan et al., 2023).

The role of informal savings mechanisms in sustaining women's entrepreneurship is both substantial and multidimensional, particularly in environments where structural and gender-based barriers constrain access to formal financial institutions. Women entrepreneurs frequently depend on relational networks to mobilize business resources, manage uncertainty, and sustain enterprise growth, and Rotating Savings and Credit Associations System (ROSCAS) serve as platforms that generate both financial and social capital. Contemporary research emphasizes that collective savings groups enhance women's economic participation by strengthening financial capability while simultaneously fostering social cohesion and mutual accountability (Karlan et al., 2023; Ojong & Simba, 2022). Drawing from social capital perspectives, networks characterized by trust, reciprocity, and shared norms facilitate coordinated action and reduce transaction costs within informal financial arrangements (Woolcock, 2018). Within ROSCAS, trust mitigates default risks, while peer monitoring and reputational incentives promote contribution compliance in the absence of formal contracts. Beyond financial intermediation, participation in these associations encourages knowledge exchange, emotional support, business mentoring, and collective problem-solving, thereby reinforcing entrepreneurial resilience and enhancing enterprise sustainability among women in developing economies (International Labour Organization, 2023; UN Women, 2022).

Enterprise sustainability transcends immediate profit generation and reflects a firm's ability to ensure operational continuity, deliver steady financial returns, adjust to shifting market dynamics, and endure external economic shocks. Considering micro and small enterprises in economically volatile environments such as Nigeria, where persistent inflation, currency fluctuations, and unpredictable consumer demand shape the business climate, the availability of reliable working capital becomes a critical determinant of survival and growth. Recent analyses of small business resilience in Sub-Saharan Africa emphasize that liquidity stability and adaptive financial strategies significantly enhance enterprise durability under macroeconomic stress (Organization for Economic Co-operation and Development, 2023; World Bank, 2023). In this regard, informal savings mechanisms, including community-based rotating funds, can serve as practical resilience instruments by smoothing cash flows, facilitating rapid access to lump-sum capital, and reducing exposure to formal credit constraints. Empirical evidence further suggests that collective savings schemes strengthen financial preparedness and shock absorption capacity among women-led microenterprises, thereby contributing to longer-term business sustainability in fragile economic environments (International Labour Organization, 2024; International Monetary Fund, 2023).

Osun State, located in southwestern Nigeria, presents a culturally and economically appropriate setting for investigating the relationship between rotational savings systems and women's enterprise sustainability. The state is characterized by vibrant traditional markets in cities such as Osogbo, Ilesa, Ile-Ife, Iwo, Ede, Ikire, Ila, and Ikirun, where women dominate retail and small-scale trade. Participation in *ajo* groups is widespread within these markets, often organized around trade clusters or women's associations. Despite the ubiquity of this practice, systematic empirical examination of how *ajo* participation influences measurable indicators of enterprise sustainability remains limited.

Existing research on financial inclusion in Nigeria has predominantly focused on microfinance institutions, commercial banks, and digital financial services (World Bank, 2021). While such studies provide valuable insights into formal financial structures, they often overlook indigenous financial systems that continue to function effectively at the grassroots level. The dominance of formalization narratives in development discourse may inadvertently marginalize community-based financial institutions that operate outside regulatory frameworks yet contribute meaningfully to economic stability. Furthermore, although the literature acknowledges the role of social capital in entrepreneurship, few studies quantitatively assess the extent to which participation in rotational savings systems predicts enterprise sustainability indicators such as profit stability, asset growth, reinvestment capacity, and business survival rates within specific Nigerian states. This gap is particularly evident in Osun State, where market-based women entrepreneurs rely extensively on Ajo networks for capital mobilization. Addressing this empirical gap is necessary to inform inclusive finance policies that recognize and integrate informal financial mechanisms.

Theoretically, this study integrates social capital theory and informal finance theory to explain the relationship between rotational savings participation and enterprise sustainability. Social capital theory emphasizes the value of trust-based networks in facilitating resource exchange and collective action (Putnam, 1993). Informal finance theory, on the other hand, recognizes community-based financial systems as adaptive responses to institutional voids in formal credit markets. Together, these frameworks provide a conceptual basis for examining how *ajo* participation influences business resilience and continuity.

Rotational savings and credit association systems are widely practiced in Nigeria, rigorous empirical investigation into their impact on enterprise sustainability remains insufficient. This study addresses this gap by examining the extent to which participation in *ajo* predicts sustainability outcomes among women entrepreneurs in Osun State. Situating indigenous financial practices within contemporary financial inclusion discourse, the study advances scholarship on informal finance and women's entrepreneurship and provides evidence-based insights for policymakers and development practitioners.

Statement of the Problem

Women-owned micro and small enterprises represent a vital segment of Nigeria's informal economy, particularly in southwestern states such as Osun, where trading, agro-processing, tailoring, food vending, and personal services are predominantly operated by women. National statistics indicate that micro, small, and medium enterprises (MSMEs) account for over 90% of businesses in Nigeria and contribute significantly to employment generation and GDP (Small and Medium Enterprises Development Agency of Nigeria, 2021). Within this landscape, women constitute a substantial proportion of informal sector operators. Despite this economic relevance, evidence shows that many women-led enterprises remain small, vulnerable, and characterized by low survival and growth rates (World Bank, 2023). Business discontinuity, limited capital reinvestment, and constrained scalability continue to undermine their long-term sustainability.

The fragility of these enterprises is further exacerbated by Nigeria's volatile macroeconomic environment. Persistent inflation, exchange rate instability, and declining household purchasing power have intensified operating costs and reduced profit margins for small businesses in recent years (International Monetary Fund, 2023). Micro and small enterprises with limited financial buffers, irregular cash flows, and restricted access to affordable credit significantly heighten exposure to economic shocks. Empirical evidence across Sub-Saharan Africa confirms that liquidity constraints remain one of the most binding obstacles to MSME survival and resilience (Organization for Economic Co-operation and Development, 2023).

Access to formal finance remains a critical structural barrier. The Global Findex Database reports persistent gender gaps in account ownership and formal borrowing in developing economies, with women less likely than men to access bank credit (World Bank, 2022). In Nigeria specifically, collateral requirements, high interest rates, complex documentation processes, and limited credit histories disproportionately exclude women entrepreneurs from formal lending channels (Enhancing Financial Innovation & Access, 2023). As a coping strategy, many women business owners rely on informal financial mechanisms, particularly the Rotating Savings and Credit Association System (ROSCAS), locally referred to as *"ajo"* among the Yoruba of southwestern Nigeria.

While *ajo* is widely practiced and culturally embedded within Yoruba market systems, its contribution to enterprise sustainability remains underexplored in rigorous empirical terms. Existing scholarship has primarily examined ROSCAS as instruments for household consumption smoothing, financial inclusion, or social capital formation (Karlan et al., 2023; Ojong & Simba, 2022). Although these studies highlight the importance of savings groups in enhancing women's economic participation, there is limited context-specific evidence demonstrating how participation in *ajo* affects measurable dimensions of enterprise sustainability, including operational continuity, profitability stability, asset accumulation, and resilience to macroeconomic shocks within Osun State.

This empirical gap poses both theoretical and policy challenges. Without systematic evidence, it is difficult to determine whether *ajo* serves merely as a short-term liquidity mechanism or as a strategic resilience tool that strengthens long-term business viability among women entrepreneurs. Furthermore, policymakers and development partners seeking to design gender-responsive financial interventions lack localized data to inform integration between informal savings systems and formal financial inclusion strategies. Addressing this problem is therefore crucial for advancing scholarly understanding of indigenous financial institutions and for informing sustainable entrepreneurship policies in Osun State and similar socio-economic contexts in Nigeria.

Purpose of the Study

The primary purpose of this study is to examine the influence of the Rotational Savings and Credit Association System (ROSCAS), locally known as *"ajo,"* on the sustainability of women-owned micro and small enterprises in Osun State, Nigeria. Specifically, the study seeks to:

1. determine the extent of influence of the Rotational Savings and Credit Association System on the working capital adequacy of women entrepreneurs.
2. examine the extent of influence of the Rotational Savings and Credit Association System on the profitability stability of women entrepreneurs.

3. evaluate the extent of influence of the Rotational Savings and Credit Association System on the reinvestment capacity of women entrepreneurs.

Research Questions

The following questions were raised to guide the study:

1. What is the extent of influence of the Rotational Savings and Credit Association System on the working capital adequacy of women entrepreneurs in Osun State, Nigeria?
2. To what extent is the influence of the Rotational Savings and Credit Association System on the profitability stability of women entrepreneurs in Osun State, Nigeria?
3. What is the extent of influence of the Rotational Savings and Credit Association System on the reinvestment capacity of women entrepreneurs in Osun State, Nigeria?

Research Hypotheses

H_O1: There is no significant difference in the mean ratings of urban and rural respondents on the extent of influence of the Rotational Savings and Credit Association System on the working capital adequacy of women entrepreneurs.

H_O2: There is no significant difference in the mean ratings of educated and non-educated respondents on the extent of influence of the Rotational Savings and Credit Association System on the profitability stability of women entrepreneurs.

H_O3: There is no significant difference in the mean ratings of urban and rural respondents on the extent of influence of the Rotational Savings and Credit Association System on the reinvestment capacity of women entrepreneurs.

Methodology

The researcher used a descriptive survey research design. The study population, women micro-entrepreneurs participating in *ajo* (Rotational Savings and Credit Associations System) in Osun State, cannot be precisely estimated because *ajo* groups operate informally without official registration or centralized records. Many women micro-entrepreneurs in Osun State also run unregistered businesses within the informal sector, making comprehensive enumeration difficult. Additionally, the fluid and dynamic nature of *ajo* membership further prevents the establishment of a stable and clearly defined population frame. The sample size was 45 women micro-entrepreneurs. In this case, the researcher made use of the multistage sampling technique. At stage one, simple random sampling was used. Out of the 30 local government areas (10 local government areas in each of the three senatorial districts of the state), three local governments were randomly selected from each of the senatorial districts, making nine local government areas in all. At stage two, stratified random sampling was used. Among the pre-identified women micro-entrepreneurs that belong to one or two rotational savings and credit associations, five women micro-entrepreneurs were randomly selected from each of the nine local governments earlier selected at stage one. This gave a sample size of 45 women micro-entrepreneurs. The instrument of data collection was the researchers' self-structured questionnaire tagged "Rotational Savings and Credit Association System and Women's Enterprise Sustainability Questionnaire" (RSCASWESQ), which contained 21 items. The questionnaire was divided into four sections and was structured based on a 4-point modified Likert-type rating scale: Very High Extent (VHE) 4 points, High Extent (HE) 3 points, Low Extent (LE) 2 points, and Very Low Extent (VLE) 1 point. The instrument was validated by two experts, one in the field of business education and the other in the field of test and measurement. The instrument was pilot tested in Kwara State. The state is not within the Southwest State but shares similarities with Southwestern states. Respondents under pilot testing were 30, and data collected from pilot testing were subjected to further statistical analysis to determine the internal consistency of the instrument. This was determined through the use of Cronbach Alpha, and a reliability index of 0.82 was obtained. This, to the best knowledge of the researcher, indicated that the instrument was reliable. According to Umoru (2022), a reliability index of +0.75 or greater is considered to indicate good reliability. Three research assistants were engaged (one for each of the three senatorial districts) to assist the researchers in the distribution, retrieval, and collation of the completed questionnaire. Prior to the distribution of the questionnaire, research assistants were familiarized with the objectives, ethics, and procedure of this type of data collection. The researcher was able to retrieve 41 correctly completed copies of the questionnaire, giving approximately a 91% success rate and a 9% mortality rate. Statistical analysis was based on 41 copies of the questionnaire retrieved. Percentage was used to describe demographic data, mean rating, and standard deviation were used to answer research questions, while hypotheses were tested using an independent sample t-test at the 0.05 level of significance. Mean scores between 3.25 and 4.00 were considered Very High Extent (VHE), 2.50–3.24 were categorized as High Extent (HE), items with scores between 1.75 and 2.49 were classified as Low Extent (LE), and 1.00–1.74 are labeled as Very Low Extent (VLE). A standard deviation within the range of ±1.96 is considered as having low variability from the mean value,

while the acceptance or rejection of the null hypothesis was based on the rule that if the P value is higher than the 0.05 level of significance, the null hypothesis is accepted, or vice versa.

Results

The results of data analysis were presented according to the demographic information, research questions, and hypotheses.

Table 1: Showing the location of respondents

Location	Frequency	Percent
Rural	16	39.0
Urban	25	61.0
Total	41	100.0

Source: Field Survey, 2026

The analysis of data in Table 1 reveals that 16 respondents, representing 39%, were located in the rural area of Osun State. There were also 25 respondents, representing 61% of the sample, that were located in the urban area. This indicated that the majority of respondents were located in the urban areas of Osun State.

Table 2: Showing the literacy level of the respondents

Literacy Level	Frequency	Percent
No Formal Education	13	31.7
Formal Education	28	68.3
Total	41	100.0

Source: Field Survey, 2026

The data presented in Table 2 shows that 13 respondents, representing 31.7%, have no formal education in Osun State. Also, 28 respondents, representing 68.3% of the respondents, have formal education. The implication of this is that there are more educated or literate respondents than those that have no formal education.

Research Question 1: What is the extent of influence of the Rotational Savings and Credit Association System on the working capital adequacy of women entrepreneurs in Osun State, Nigeria?

Table 3: Respondents' rating of the Rotational Savings and Credit Association System and the working capital adequacy of women entrepreneurs

S/N	Items	Mean	Std. Deviation	Remarks
1	My involvement in ajo reduces instances of cash shortages in my business operations.	3.83	.381	VHE
2	The lump-sum funds received from ajo contributions enable me to restock goods or raw materials without delay.	3.78	.419	VHE
3	Funds obtained through ajo have helped me meet urgent business financial obligations (e.g., rent, supplies, wages).	3.76	.435	VHE
4	Regular contributions to ajo encourage disciplined savings that strengthen my business liquidity position.	3.71	.461	VHE
5	Without ajo, my business would struggle to maintain sufficient working capital for smooth daily operations.	3.71	.559	VHE
6	Participation in the Rotational Savings and Credit Association (ajo) has improved the adequacy of my business working capital.	3.71	.461	VHE

7	Participation in ajo has reduced my reliance on high-interest loans or external borrowing for working capital needs.	3.68	.521	VHE
	Grand Weighted Average	3.74	.462	VHE

Source: Field Survey, 2026

Table 3 shows that a larger size of respondents were undivided in their responses to items on the Table, majority of them agreed to the very high extents of all items. This agreement is obvious, as all mean scores are equal to or above the fixed decision value of 3.25. The standard deviation on the Table ranged from 0.381 to 0.462, they are all within the standard deviation limit of ±1.96. This indicates that there is low disparity from the mean in the respondents' responses. The average mean and standard deviation of 3.74 and 0.462, respectively, are indicators of this fact. The inference from this is that in the opinion of respondents, the extent of influence of the Rotational Savings and Credit Association System on the working capital adequacy of women entrepreneurs in Osun State, Nigeria, is rated very high.

Research Question 2: To what extent is the influence of the Rotational Savings and Credit Association System on the profitability stability of women entrepreneurs in Osun State, Nigeria?

Table 4: Respondents rating of Rotational Savings and Credit Association System and and profitability stability of women entrepreneurs

S/N	Items	Mean	Std. Deviation	Remarks
8	The funds obtained from ajo help stabilize my business income during periods of fluctuating sales.	3.73	.501	VHE
9	Regular access to pooled ajo funds helps maintain steady cash flow, which supports consistent profits.	3.66	.530	VHE
10	My involvement in ajo allows me to invest in activities that improve revenue and profit margins.	3.61	.494	VHE
11	Without participation in ajo, my business profits would be more unpredictable and unstable	3.59	.547	VHE
12	Participation in ajo has contributed to consistent profit generation in my business.	3.59	.631	VHE
13	Ajo participation reduces the impact of unexpected expenses on my business profitability.	3.15	.478	HE
14	The financial support from ajo has minimized losses during periods of low customer demand or market downturns.	3.05	.740	HE
	Grand Weighted Average	**3.48**	**.560**	**VHE**

Source: Field Survey, 2026

Table 4 revealed that a significant number of respondents were unanimous at different degrees in their responses to items on the Table, the majority of them agreed to the very high extent of items 8 to 12, while others agreed to the high extent of items 13 and 14. This agreement is apparent, as all mean scores are equal to or above the fixed decision value of 2.50. The standard deviation on the Table ranged from 0.501 to 0.740, they are all within the standard deviation limit of ±1.96. This indicates that there is low variation in the mean of the respondents' responses. The average mean and standard deviation of 3.48 and 0.560, respectively, are indicators of this fact. The inference from this is that in the opinion of respondents, the extent of influence of the Rotational Savings and Credit Association System on the profitability stability of women entrepreneurs in Osun State, Nigeria, is rated very high.

Research Question 3: What is the extent of influence of the Rotational Savings and Credit Association System on the reinvestment capacity of women entrepreneurs in Osun State, Nigeria?

Table 4: Respondents rating of Rotational Savings and Credit Association System and the reinvestment capacity of women entrepreneurs

S/N	Items	Mean	Std. Deviation	Remarks
15	Without ajo, I would find it difficult to reinvest consistently in my business for growth and expansion.	3.78	.419	VHE

16	The lump-sum payouts from ajo allow me to purchase additional inventory or raw materials for my business.	3.76	.435	VHE
17	My involvement in ajo enables me to acquire new tools, equipment, or technology to improve my business productivity.	3.71	.461	VHE
18	Participation in ajo provides me with funds that I can reinvest in expanding my business operations.	3.61	.494	VHE
19	Ajo contributions have helped me diversify my business into new products or services.	3.56	.502	VHE
20	The financial support from ajo has improved my ability to upgrade my business facilities or infrastructure.	3.51	.506	VHE
21	Participation in ajo allows me to reinvest profits back into my business rather than relying solely on personal savings.	3.46	.552	VHE
	Grand Weighted Average	**3.63**	**.481**	**VHE**

Source: Field Survey, 2026

Table 5 shows that a larger size of respondents were unanimous in their responses to items on the Table, significant number of them agreed to the very high extent of all items. This agreement is noticeable, as all mean scores are equal to or above the fixed decision value of 3.25. The standard deviation on the Table ranged from 0.419 to 0.552, they are all within the standard deviation limit of ±1.96. This indicates that there is low disparity from the mean in the respondents' responses. The average mean and standard deviation of 3.63 and 0.481, respectively, are pointers to this fact. The inference from this is that, in the opinion of respondents, the extent of influence of the Rotational Savings and Credit Association System on the reinvestment capacity of women entrepreneurs in Osun State, Nigeria, is rated very high.

Group	N	Mean	SD	t-cal	df	P-value	Decision
No Formal Education	13	3.42	0.288				
				-.973	39	0.337	$H_0$1 Accepted
Formal Education	28	3.51	0.282				

Testing of Hypotheses

The three null hypotheses of the study were tested using an independent sample t-test at a 0.05 level of significance. The summary of the test of hypotheses are presented in Tables 6 to 8 as follows:

H_O1: There is no significant difference in the mean ratings of urban and rural respondents on the extent of influence of the Rotational Savings and Credit Association System on the working capital adequacy of women entrepreneurs.

Table 6: Showing Independent Samples t-test of Respondents on the Extent of Influence of Rotational Savings and Credit Association System on the working capital adequacy of women entrepreneurs based on location

Source: Researcher's Computation, 2026

An independent samples t-test was conducted to assess whether there is a significant difference between the mean ratings of respondents on the extent of influence of the Rotational Savings and Credit Association System on the working capital adequacy of women entrepreneurs based on location. Rural location ratings as regards the extent of influence of the Rotational Savings and Credit Association System on the working capital adequacy of women entrepreneurs had a mean of 3.74 (SD = 0.107), whereas urban locations had an approximately same mean of 3.74 (SD = 0.196), both means are above the benchmark of 3.25. The t-test indicates that there is no statistically significant difference in the ratings of respondents as regards the extent of influence of the Rotational Savings and Credit Association System on the working capital adequacy of women entrepreneurs between rural and urban respondents (t = .073, df = 39, *P* = 0.942). The null hypothesis is hereby accepted.

Group	N	Mean	SD	t-cal	df	P-value	Decision
Rural	16	3.74	0.107				
				.073	39	0.942	$H_0$1 Accepted
Urban	25	3.74	0.196				

H_O2: There is no significant difference in the mean ratings of educated and non-educated respondents on the extent of influence of the Rotational Savings and Credit Association System on the profitability stability of women entrepreneurs.

Table 7: Showing Independent Samples t-test of Respondents on the Extent of Influence of Rotational Savings and Credit Association System on the Profitability Stability of women entrepreneurs based on literacy

Source: Researcher's computation, 2026

An independent samples t-test was conducted to assess whether there is a significant difference between the mean ratings of respondents on the extent of influence of the Rotational Savings and Credit Association System on the profitability stability of women entrepreneurs based on literacy level. No formal education ratings as regards the extent of influence of the Rotational Savings and Credit Association System on the profitability stability of women entrepreneurs had a mean of 3.42 (SD = 0.288), whereas formal education had a mean of 3.51 (SD = 0.282), both means are above the benchmark of 3.25. The t-test indicates that there is no statistically significant difference in the ratings of respondents as regards the extent of influence of the Rotational Savings and Credit Association System on the profitability stability of women entrepreneurs between no formal education and formal education respondents (t = -.973, df = 39, *P* = 0.337). The null hypothesis is hereby accepted.

H_O3: There is no significant difference in the mean ratings of urban and rural respondents on the extent of influence of the Rotational Savings and Credit Association System on the reinvestment capacity of women entrepreneurs.

Table 8: Showing Independent Samples t-test of Respondents on the Extent of Influence of Rotational Savings and Credit Association System on the reinvestment capacity of women entrepreneurs based on location

Group	N	Mean	SD	t-cal	df	P-value	Decision
Rural	16	3.60	0.150				
				-1.017	39	0.315	$H_0$1 Accepted
Urban	25	3.65	0.144				

Source: Researcher's Computation, 2026

An independent samples t-test was conducted to assess whether there is a significant difference between the mean ratings of respondents on the extent of influence of the Rotational Savings and Credit Association System on the reinvestment capacity of women entrepreneurs based on location. Rural location ratings as regards the extent of influence of the Rotational Savings and Credit Association System on the reinvestment capacity of women entrepreneurs had a mean of 3.60 (SD = 0.150), whereas urban locations had a mean of 3.65 (SD = 0.144), both means are above the benchmark of 3.25. The t-test indicates that there is no statistically significant difference in the ratings of respondents as regards the extent of influence of the Rotational Savings and Credit Association System on the reinvestment capacity of women entrepreneurs between rural and urban respondents (t = -1.017, df = 39, *P* = 0.315). The null hypothesis is hereby accepted.

Discussion

The findings on research question one indicate that the Rotational Savings and Credit Association (ROSCAS) system, locally referred to as *"ajo"* in Osun State, exerts a very high influence on the working capital adequacy of women entrepreneurs. This result suggests that involvement in *ajo* significantly enhances the liquidity positions of women-led businesses, enabling more reliable cash flow management and strengthening the capacity to finance day-to-day operations. In contexts where formal financial inclusion remains limited, such informal savings arrangements serve as vital alternatives for capital access, particularly for small-scale women operators who often lack the documentation, collateral, or credit histories required by formal financial institutions. Similarly, Karlan et al. (2024) and Barasa (2023) found that savings groups improve working capital availability by providing members with predictable and timely access to pooled funds, which can be used for inventory purchases, operating costs, and short-term expenditures. These findings suggest that ROSCAs may moderate the negative effects of liquidity shortages, particularly during economic downturns or periods of market volatility, a scenario that has been documented in Nigeria's recent macroeconomic environment characterized by inflation and currency fluctuations.

The significance of these findings is particularly relevant given the gendered nature of financial exclusion. Women in Nigeria continue to face pronounced disparities in access to formal credit, with reports indicating that a disproportionately large percentage remain unbanked or underbanked (World Bank, 2022). Therefore, *ajo* emerges as a culturally embedded financial institution that compensates for systemic gaps in financial inclusion, enhancing working capital adequacy and, by extension, the operational sustainability of women-led enterprises. The findings confirm that the ROSCA system has a substantive and positive effect on the working capital adequacy of women entrepreneurs in Osun State. By facilitating improved access to liquidity, enhancing cash flow predictability, and reducing dependency on expensive borrowing channels, *ajo* contributes significantly to the financial health and

operational continuity of small-scale women's businesses. These results emphasize the importance of recognizing indigenous financial practices as integral components of broader financial inclusion strategies aimed at strengthening the resilience and performance of women entrepreneurs in similar emerging economy contexts.

The finding on hypothesis one revealed that there is no statistically significant difference between rural and urban women entrepreneurs in their ratings of the extent to which the Rotational Savings and Credit Association (ROSCAS) system influences working capital adequacy. This finding suggests that the perceived contribution of *ajo* to liquidity stability and day-to-day operational financing is relatively uniform across geographical locations within Osun State. In practical terms, both rural and urban respondents appear to derive comparable working capital benefits from participation in the informal savings system, indicating that its functional value transcends spatial and infrastructural differences. This outcome is particularly noteworthy given the documented disparities that often exist between rural and urban financial ecosystems. Prior studies have emphasized that rural entrepreneurs typically experience greater financial exclusion due to weaker banking infrastructure, limited digital financial penetration, and lower income levels (World Bank, 2022; International Monetary Fund, 2023). However, the absence of a significant difference in this study implies that *ajo*, as a socially embedded financial mechanism, may effectively neutralize some of these structural inequalities. Because ROSCAS operate through trust-based networks rather than formal institutional channels, their accessibility is not heavily dependent on physical banking infrastructure or urban financial density. This may explain the similar working capital outcomes observed among respondents irrespective of location.

The above finding is consistent with the findings of the International Labour Organization (2024) and the Organization for Economic Co-operation and Development (2023), who, in their recent evidence on savings groups in Sub-Saharan Africa, established that community-based financial associations often function as inclusive financial equalizers, providing consistent liquidity access across diverse socio-economic settings. The standardized structure of contributions and rotational payouts ensures predictable access to lump-sum capital, whether participants operate in rural marketplaces or urban commercial hubs. Consequently, the operational mechanisms of ROSCAS, regular savings discipline, pooled funds, peer monitoring, and social accountability appear to deliver uniform financial advantages that are not significantly moderated by geographic context. Overall, the finding implies that policies aimed at strengthening women's enterprise sustainability through informal financial mechanisms need not differentiate sharply between rural and urban settings, at least with respect to working capital adequacy. Instead, interventions could focus on enhancing the efficiency, transparency, and potential formal linkages of ROSCAS, given their demonstrated and geographically consistent contribution to women's business liquidity and operational continuity in Osun State.

The findings of Research Question Two revealed that the influence of the Rotational Savings and Credit Association System (ROSCAS), locally known as *ajo*, on the profitability stability of women entrepreneurs in Osun State is rated very high. This outcome indicates that participation in *ajo* significantly contributes to the consistency and predictability of profits among women-owned micro and small enterprises. Profitability stability, which reflects a firm's capacity to maintain steady earnings despite market fluctuations, is a critical dimension of enterprise sustainability, particularly within Nigeria's volatile economic climate characterized by inflationary pressures and fluctuating consumer demand (International Monetary Fund [IMF], 2023; World Bank, 2023). The high rating suggests that *ajo* functions not merely as a savings platform but as a financial buffer that mitigates profit volatility and enhances income regularity. One plausible explanation for this strong influence lies in the liquidity-smoothing function of ROSCAS. By providing members with periodic lump-sum payouts, *ajo* enables entrepreneurs to restock inventory promptly, capitalize on bulk purchasing discounts, and respond quickly to seasonal market opportunities. Such financial flexibility reduces stock-outs and missed sales, both of which can destabilize profit margins. Empirical studies by Karlan et al. (2023) on savings groups across Sub-Saharan Africa have shown that structured informal savings mechanisms improve business revenue consistency and reduce income shocks among microenterprise owners. The present finding aligns with this body of evidence, reinforcing the argument that community-based financial systems can enhance enterprise-level financial performance. Similarly, Ojong & Simba (2022) found that savings groups foster not only financial capital but also social learning and peer support, which collectively strengthen entrepreneurial decision-making and business profitability.

The high extent of influence observed in this study is particularly significant given the gendered barriers to formal credit access in Nigeria. Women entrepreneurs frequently face collateral constraints and higher borrowing costs, limiting their ability to stabilize profits through external financing (World Bank, 2022). In this context, *ajo* serves as an accessible and culturally embedded alternative that enhances revenue stability without imposing interest burdens or bureaucratic hurdles. The absence of

formal repayment pressure may allow entrepreneurs to deploy funds more strategically toward profit-generating activities. Overall, the finding underscores the strategic importance of indigenous financial institutions in strengthening the economic viability of women-led enterprises. By stabilizing cash flows, enabling timely reinvestment, and reducing vulnerability to income fluctuations, the ROSCA system appears to play a pivotal role in sustaining profitability among women entrepreneurs in Osun State. This evidence supports broader calls for the recognition of informal financial systems as complementary components of inclusive financial development frameworks in emerging economies.

The test of hypothesis two revealed that there is no statistically significant difference between women entrepreneurs with no formal education and those with formal education in their ratings of the extent to which the Rotational Savings and Credit Association System (ROSCAS) influences profitability stability. This finding suggests that the perceived benefits of *ajo* in stabilizing business profits are broadly experienced across educational categories. In other words, the capacity of the ROSCA system to support consistent earnings, cushion income fluctuations, and enhance revenue predictability does not appear to be contingent upon the entrepreneur's formal educational attainment. This outcome is particularly meaningful within the context of financial inclusion and enterprise development. Educational attainment is often associated with improved financial literacy, record-keeping practices, and strategic business management skills, which can influence enterprise performance. However, the absence of a significant difference implies that *ajo* operates as an accessible and user-friendly financial mechanism whose benefits are not restricted to entrepreneurs with higher educational exposure. Because ROSCAS is structured around simple contribution cycles, collective trust, and predictable rotational disbursement, participation does not require advanced financial knowledge or formal literacy skills. This inclusiveness may explain why women across different educational backgrounds report similar levels of profitability stabilization.

This study is also consistent with the finding of Karlan et al. (2023) and the Organization for Economic Co-operation and Development (2023), who found that community-based savings groups have been shown to enhance business resilience by promoting savings discipline and providing timely lump-sum capital, regardless of participants' formal education levels. The mechanisms of peer support, shared market information, and collective accountability embedded in ROSCAS may compensate for limited formal financial training by fostering experiential learning and informal knowledge exchange. Thus, even entrepreneurs without formal education may effectively utilize ROSCAS payouts to restock inventory, manage seasonal fluctuations, and mitigate unexpected business expenses, thereby sustaining profit stability. Overall, the absence of a statistically significant difference between educational groups highlights the inclusive nature of the ROSCAS as a grassroots financial institution. It underscores the potential of indigenous savings mechanisms to support profitability stability among diverse categories of women entrepreneurs in Osun State. From a policy standpoint, the finding suggests that efforts to strengthen or integrate ROSCAs into broader financial inclusion strategies can yield widespread benefits without being limited by educational barriers, thereby advancing inclusive and sustainable enterprise development.

The results for Research Question three showed that the Rotational Savings and Credit Association System (ROSCAS), locally known as *ajo*, has a very high influence on the reinvestment capacity of women entrepreneurs in Osun State, Nigeria. This finding indicates that participation in *ajo* significantly enhances the ability of women-owned ventures to allocate financial resources toward strategic business activities, including expansion of product lines, upgrading of equipment, facility improvements, and diversification of services. Reinvestment capacity is a vital component of long-term business sustainability because it reflects an enterprise's ability to convert financial inflows into productive capital that supports growth and competitiveness. The strong influence of *ajo* on reinvestment suggests that indigenous savings systems play a critical role not only in meeting immediate liquidity needs but also in strengthening future business performance.

One plausible explanation for this observed influence is the access to periodic lump-sum funds that participants receive through rotational savings cycles. Unlike fragmented personal savings, which may be insufficient for meaningful enterprise investment, *ajo* enables members to accumulate significant capital over a relatively short period. This capacity empowers women entrepreneurs to make strategic investment decisions that may otherwise be constrained by limited access to formal credit markets, a challenge widely documented in Nigerian SMEs (Adeniran & Johnston, 2023). In relation to the above finding, evidence from recent studies on community savings groups shows that collective savings mechanisms increase capital availability for investment and enhance the productive capacity of microenterprises, especially for women-led businesses (Chirwa & Odhiambo, 2024; Ndirangu & Rotich, 2023).

Social dynamics within *ajo* groups may also underpin the high reinvestment capacity observed in this study. Collective savings environments facilitate information sharing, peer encouragement for investment, and informal mentoring on business strategies, all of which contribute to improved investment behavior among participants (Osei-Assibey & Tenkorang, 2022). These social mechanisms, when combined with financial resources, create an ecosystem where women entrepreneurs are better positioned to identify growth opportunities and act on them effectively, a pattern documented in recent research on women's entrepreneurship networks in West Africa (Takyi & Anang, 2023). In summary, the finding that *ajo* significantly enhances the reinvestment capacity of women entrepreneurs in Osun State reinforces the critical role of indigenous financial practices in promoting enterprise sustainability. This suggests that informal savings systems function as more than interim liquidity solutions; they are strategic instruments that enable women entrepreneurs to pursue sustained business growth. Recognizing the reinvestment-enhancing potential of ROSCAS has important implications for policies aimed at financial inclusion and women's economic empowerment in emerging economies.

The result of hypothesis three showed that there is no statistically significant difference between rural and urban women entrepreneurs in how they rate the influence of the Rotational Savings and Credit Association (ROSCAS) system (*ajo*) on reinvestment capacity. This suggests that, regardless of geographic location, women entrepreneurs in both rural and urban communities alike perceive *ajo* as an equally effective mechanism for generating capital that can be reinvested into their businesses. Such reinvestment may include purchasing inventory, acquiring tools or technology, upgrading business premises, or expanding product and service offerings—activities that are central to enterprise growth and sustainability. This finding is notable in light of common assumptions about spatial inequalities in access to financial resources. Rural entrepreneurs are often viewed as more disadvantaged due to limited access to formal banking infrastructure, lower levels of digital financial inclusion, and weaker business support services compared to their urban counterparts (Okoye & Ezejiofor, 2023). Yet, the lack of a statistically significant difference points to the possibility that *ajo*, as an informal, community-based savings system, operates through social networks that transcend these locational divides. This is because ROSCAS is grounded in interpersonal trust, communal norms, and collective responsibility, they provide predictable access to pooled funds independent of formal financial institutions, which are often scarce in rural areas.

Recent studies on informal savings groups in Sub-Saharan Africa support this interpretation. Savings groups have been shown to function as grassroots financial institutions that enhance capital accumulation and reinvestment behavior for microenterprise owners in both rural and urban settings (Gathungu & Gitau, 2024). Such groups help stabilize capital flows and reduce dependence on high-cost borrowing, enabling entrepreneurs to make strategic investments that support business resilience and competitiveness (Mugabi, 2023; Okorie & Nwankwo, 2022). That rural and urban women entrepreneurs rate the reinvestment influence of *ajo* similarly suggests that the system's financial benefits are robust across diverse socio-economic landscapes. In summary, the finding underscores the inclusive nature of *ajo* as a source of reinvestment capital for women entrepreneurs in Osun State. The similarity in perception between rural and urban respondents highlights the system's adaptability and relevance in different economic environments. For policymakers and development practitioners, this suggests that interventions designed to strengthen indigenous savings systems could be equally applicable and beneficial across rural and urban settings, thereby contributing to broader financial inclusion and enterprise sustainability objectives.

Conclusion

This study investigated the influence of the Rotational Savings and Credit Association System (ROSCAS), locally known as "ajo," on women's enterprise sustainability in Osun State, Nigeria, with specific focus on working capital adequacy, profitability stability, and reinvestment capacity. The findings demonstrate that participation in the ROSCAS exerts a very strong positive influence on key dimensions of enterprise sustainability among women entrepreneurs. The results indicate that *ajo* functions as more than a traditional savings arrangement; it serves as a strategic financial instrument that supports business liquidity, promotes consistent income generation, and facilitates capital reinvestment for women's enterprise growth.

The study further revealed that the influence of the ROSCAS on working capital adequacy, profitability stability, and reinvestment capacity is consistently rated very high by respondents. This suggests that indigenous savings structures provide reliable financial support for women entrepreneurs operating in the informal sector, where access to formal credit facilities is often limited by collateral requirements, bureaucratic procedures, and high borrowing costs. By enabling periodic accumulation and disbursement of pooled funds, *ajo* enhances business cash flow management, reduces financial vulnerability, and supports operational continuity in economically volatile environments.

In addition, the study established that there were no statistically significant differences in respondents' ratings across rural and urban locations as well as educational attainment categories. This implies that the benefits of ROSCAS participation are widely accessible and uniformly experienced by women entrepreneurs irrespective of geographical or educational background. The finding underscores the inclusive nature of the *ajo* system, which is grounded in social trust, communal accountability, and shared economic norms rather than formal institutional infrastructure.

Theoretically, the study contributes to the literature on social capital and informal finance by demonstrating that community-based financial networks can function as effective mechanisms for supporting enterprise sustainability in developing economies. Practically, the findings highlight the importance of recognizing indigenous financial institutions as complementary components of national financial inclusion strategies. Policymakers, development agencies, and entrepreneurship support organizations should therefore consider integrating ROSCAS groups into broader women empowerment and microenterprise development programmes.

In conclusion, the Rotational Savings and Credit Association System plays a significant role in enhancing the sustainability of women-owned enterprises in Osun State. Through strengthening working capital availability, stabilizing profitability, and promoting reinvestment behavior, *ajo* serves as a resilient grassroots financial model that supports women's entrepreneurial survival and growth. Promoting and improving the operational efficiency of such indigenous savings systems could contribute meaningfully to inclusive economic development and long-term women's economic empowerment in Nigeria.

Recommendations

Based on the findings of this study and in line with the three research objectives, the following recommendations are made:

1. Community development agencies, financial inclusion programmes, and women empowerment organizations should support the sustainability of ROSCAS by promoting trust-building mechanisms, transparency, and proper group management practices that enhance liquidity access for members.
2. Policymakers and entrepreneurship development stakeholders should recognize and support indigenous savings systems as complementary financial instruments for improving profitability stability among women-owned enterprises.
3. Government agencies and microenterprise development institutions should promote the integration of Rotational Savings and Credit Associations into women's business reinvestment and growth support programmes. by creating linkage opportunities between ROSCAS groups and formal financial institutions, enabling access to expansion grants, low-interest development loans, and enterprise development training.

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VOCATIONAL EDUCATORS' COMPETENCIES NEED FOR IMPROVED JOB PERFORMANCE IN UNIVERSITES IN NORTH-EAST, NIGERIA

By

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Abstract

The study examined vocational educators' competencies need for improved job performance in public universities in Nort-east, Nigeria. A descriptive survey design was adopted. Two objectives, two research questions and two null hypotheses guided the study. A population of 173 vocational educators participated in the study, and census population was used. The instrument for data collection was a structured questionnaire. A pilot test was conducted outside the study area to obtain Cronbach alpha where reliability coefficient of 0.88 was found. The questionnaire was validated by two experts. Mean and standard deviation was used to answer the research questions, while independent sample t-test was used to test the null hypotheses at 0.05 level of significance. The finding revealed among others, that vocational educators require digital and pedagogical competencies for their job improvement, and also there is no significant difference between digital and pedagogical vocational educators' competencies based on their gender. It was therefore recommended that digital and pedagogical competencies be entrenched by vocational educators in universities within North-east, Nigeria, for improvement in their job performance.

Key words: Vocational Educators, Digital Competencies, Pedagogical Competencies, Job Performance

Introduction

The landscape of vocational education has undergone significant transformation in recent times driven by rapid technological advancement, globalization, and evolving labor market demands (Billett, 2011; Samad, 2026). Traditional educational models, characterized by standardized curricula and time-based progression, have increasingly been challenged to demonstrate their effectiveness in preparing students for the complexities of modern workplaces. In response to these pressures, competency-based education has emerged as a promising alternative that prioritizes the demonstration of specific skills and knowledge over seat time and credit hours (Gervais, 2016; Samad, 2026).

Competency-based education represents a fundamental shift in educational philosophy, an approach that focused on outcomes and mastery by vocational educators within the university. In vocational education contexts, this paradigm shift is particularly relevant, as the primary goal is to prepare vocational educators with practical skills and competencies directly applicable to their chosen professions. The competency-based approach if appropriately delivered, aligns educational processes with the actual requirements of industries and occupations, creating a more direct pathway from education to employment

Vocational educators in universities are lecturers and instructors capable in delivering the instruction process in class and the workshop, they need to be good at using machines and equipment so that they can teach effectively using those technologies, Besides teaching and learning process, they are subject matter experts who handle class and workshop session through the process of delivering knowledge and ensure the process is smooth and student are able to comprehend and practice the knowledge and skills for life. They are supposed to be competent in knowledge, technical and other related skills that will smoothen and assist in the teaching and learning process, explain the content clearly and demonstrate the practical work and know-how techniques on practicalities in order to deliver the knowledge to student. Nurtanto et al., (2021) describes vocational educators as those who bring their wealth of knowledge to teach in the classroom setting, workshops to enlighten students and to direct the affairs of the class through the passing of the subject matter using classroom

instruction. These involve demonstrating skills to their recipients in amenable ways such as the proper use of tools, equipment and software, as well as instructing students on special safe guide measures for doing a specific job (Nurtanto et al., 2021).

Prior studies state that vocational school graduates need new skills that are different from the previous era (Made Sudana et al., 2019). This has implications for vocational education teachers to adapt to complexity and change. It is in line with another previous study that states teachers are not the only component of the vocational education system, but they play an important role as active facilitators of the system, with a direct influence on educational processes and educational outcomes (Metzler & Woessmann, 2012). Therefore, teachers must have adaptive and transformative social potential to manage themselves and all the potential they contain for a balanced and sustainable well-being life (Purnama & Dwikurnaningsih, 2021).

Competency is a set of knowledge, skills and attitudes that elevate employees in performing their tasks well, it is as individual aspects to perform an excellent and effective job. As the work experience grows, so does the competency component. The experience will move and accelerate off an individual to perform better in their job because the experience will be proceeding to the premise that the success will require time and learning from doing a mistake will mature an individual. Omar, Ismail and Abdullahi (2021) identified competencies for TVET instructors to include (i) professional skills (ii) pedagogical skills (iii) knowledge development and (iv) personality and values and added that TVET instructors are required to strengthen their competencies to assist the graduates' employment opportunities and responsible to produce the graduates that are able to meet the industrial demands.

Vocational training instructors as Technical Vocational Training (TVET) need to meet the standard and quality of what is defined as an experienced educator. When the challenges in the industries is shaking and how the economy is driven, a viable solution to graduate unemployment should be worked out concurrently, they are also required to strengthen their competencies to assist the graduates' employment opportunities and responsible to produce the graduates that are able to meet the industrial demands (Dumbiri et al., 2020; Omar et al., 2017; Omar *et al*., 2021).

Spencer and Spencer in Omar *et al*., (2021) states that competency is divided into two main parts: (i) generic competencies; comprises possession of knowledge, skills and personal characteristics that is intrinsic in nature and self-development, and (ii) functional competencies; related to possession of knowledge, skills and specific personal characteristics to perform tasks and responsibilities. Omar *et al*; (2021) further identified the key component of competency to include (i) professional skills (ii) pedagogical skills (iii) knowledge development and (iv) personality traits.

Suciu and Mata in Ikezor and Ojeaga (2021) defined pedagogical competence as the capability and eagerness to consistently put into use attitudes, knowledge, and skills aimed at encouraging learning in the best way possible. Akhyak and Bakar (2013) see pedagogical competence as the capacity of instructors to manage the learning process in the area of planning, interacting, and performing assessment. In the same vein Sahana (2015) opined that pedagogical competence includes knowledge and skills that enable a teacher to have a deep understanding capable of joining theory and research to aid teaching and learning in the best way possible. From the foregoing, therefore according to Ikezor and Ojeaga (2021), pedagogical competence is the ability of a vocational and technical teacher to combine both human and material resources to achieve the expected outcome. Pedagogical competence is the fulfillment of desired result, knowledge, comprehension and readiness of vocational teachers in teaching and learning which includes teachers' capability to direct the teaching and learning process (Sucio and Mata, 2011).

Digital tools in e-learning environments not only improve individual learning outcomes but also equip educators with actionable insights to optimize teaching strategies. These technologies play a pivotal role in fostering flexible, personalized, and more effective learning experiences in both digital and blended learning settings. AI has demonstrated remarkable potential to significantly improve both teaching and learning outcomes by offering personalized learning experiences, adaptive feedback, and streamlined data analysis. AI-powered systems, including intelligent tutoring and adaptive learning platforms, can process large amounts of student data in real-time, allowing educators to customize content according to each learner's unique needs, preferences, and progress (Luckin et al., 2016; Zawacki-Richter et al., 2019). These tools not only enhance personalization but also create dynamic and interactive educational environments, which foster greater student engagement and motivation (Baker et al., 2025).

Rich, Lepine and Crawford in Ikezor and Ojeaga (2021) states that job performance is the extent how well workers perform their assignment creditably well. Similarly, Karnan and Marimuthu (2021) see job performance as how employees perform creditably well in their work. It further states that "job performance is the training and natural ability of an individual. From the forgoing according to

Ikezor and Ojeaga (2021), job performance is the ability of a vocational educator to perform well in a given tasks using his wealth of experience in a given task to achieve the desired result of the institution he or she serves, as well maintaining good relationship with other members of staff as well as those outside the school system.

The current study identified numerous challenges that must be addressed for vocational education competency need to achieve its potential. In universities within North-east, Nigeria, faculty development, institutional infrastructure, assessment systems, and industry partnerships all require substantial investment and ongoing attention. Additionally, in order to solve the challenges, it requires transition from traditional to competency-based models that represents a complex change process that affects all aspects of educational institutions, especially exploring how this model can effectively integrate emerging technologies, including artificial intelligence and virtual reality, represents another important direction. This is because as labor markets continue to evolve rapidly and educational institutions face pressure to demonstrate value, the focus on clearly defined, demonstrable competencies that offers a compelling framework for ensuring that vocational education effectively prepares students for successful careers and contributes to economic development. It is based on the foregoing, that the researchers investigated vocational educators' competencies need for improved job performance in universities in North-east, Nigeria.

The main objective of the study is to determine vocational educators' competencies need in universities in North-east, Nigeria. Specifically, the study sought to:

i. examine the pedagogical competency needs among vocational educators in universities in North-east, Nigeria
ii. Determine the digital competency need among vocational educators in universities in North-east, Nigeria

The following research questions were raised;

i. What is the pedagogical competency need of vocational educators in universities in North-east, Nigeria?
ii. What is the digital competency need among technical and vocational educators in universities in North-east, Nigeria?

The following null hypotheses was formulated at 0.05 significance level;

i. There is no significant difference between male and female vocational educators' pedagogical competency in universities in North-east, Nigeria
ii. There is no significant difference between male and female vocational educators' digital competency in universities in North-east, Nigeria

Theoretical Review

The current study in vocational contexts is grounded in multiple theoretical frameworks; Constructivist learning theory provides a foundational perspective, emphasizing that learners actively construct knowledge through experience and reflection rather than passively receiving information (Fosnot & Perry 2005). This aligns with vocational education's emphasis on hands-on learning and authentic workplace experiences. Additionally, experiential learning theory, particularly Kolb's learning cycle, informs the design of competency-based programs that integrate concrete experiences, reflective observation, abstract conceptualization, and active experimentation (Kolb, 2014).Behaviorist principles also influence competency-based approaches, particularly in the specification of observable, measurable learning outcomes and the use of mastery learning strategies (Bloom, 1968). The requirement that students demonstrate specific competencies before progressing reflects behaviorist emphasis on performance-based evidence. However, contemporary CBE models extend beyond pure behaviorism by recognizing cognitive and metacognitive dimensions of competence (Anderson & Krathwohl, 2001).

Methodology

The study adopted a descriptive survey research design. The study was conducted in North-east geo-political zone of Nigeria, with a total population of 173 vocational educators who participated in the study, this was achieved using census population. The instrument for data collection was a structured questionnaire. The questionnaire was validated by two experts. Pilot test was conducted outside the study area in order to obtain reliability coefficient of the instrument, as a result, 0.87 was found which is reliable. Four research assistants were employed for the purpose of data collection, in which, 85% return rate was achieved. Mean and standard deviation was used to answer the research questions, while independent sample t-test was used to test the null hypotheses at 0.05 level of significance. The analysis was conducted using Statistical Package for Social Science (SPSS) version 23. The 3.0 criterion mean derived from the 5-point scale was used as the benchmark for determining mean. In the test of the null hypotheses, if $p \geq 0.05$, the null hypothesis was accepted, and if $p \leq 0.05$,

the null hypothesis was rejected.

Result

Research Question One

What is the extent of pedagogical competency need for vocational educators in universities in North-east, Nigeria?

Results on the extent to which incentive operation influences business education lecturers' productivity in the colleges of Education in table 2 revealed that mean responses of business education teachers ranges from 4.01 and 1.57 with corresponding Standard Deviation of 1.136 and .373 with grand mean 2.75. The result shows to a moderate extent that, there is need for vocational educators' pedagogical competence in universities in North-east, Nigeria.

Table 2: Mean and standard deviation on the extent of pedagogical competency need for vocational educators in universities in North-east, Nigeria.

S/N	Item	N	Mean	SD	Remark
8.	Extent to which I use flipped classroom	122	4.01	.489	ME
9.	Extent to which I use experiential learning class	122	2.90	.373	ME
10.	Extent to which I use blended learning teaching strategy	122	1.57	.544	ME
11.	Extent to which I use problem solving method for teaching	122	1.57	.630	ME
12.		122	2.73	1.136	ME
13.	Extent to which I use collaborative learning as instructional strategy	122	3.43	.679	ME
14.	The extent to which I thought students using think-pair-share instructional pedagogy	122	3.36	.669	ME
15.	Extent to which I use discussion and lecture method of teaching	122	3.33	.818	ME
16.	Extent to which I use lecture method of teaching	122	1.66	.663	ME
17.	Extent to which I use discussion and demonstration pedagogical approach	122	2.98	.385	ME
	Grand Mean		**2.75**	**.262**	ME

Sources: field work (2026)

Research Question Two

What is the extent of digital competency need for vocational educators in universities in North-east, Nigeria?

Results on the extent of digital competency need for vocational educators in universities in North-east, Nigeria documented in table 2, revealed that mean and standard deviation of vocational educators ranges from 3.46 to 1.57 with a standard deviation of .532 to .855, and grand mean of 2.62 respectively. The result indicated to a moderate extent that, there is need for vocational educators' digital competency in universities in North-east, Nigeria.

Table 2: Mean and standard deviation on the extent of vocational educators' digital competency need in universities in North-east, Nigeria.

S/N	Item	N	Mean	SD	Remark
1.	Extent of multimedia courseware competency need	122	3.46	.532	ME
2.	Extent of AI-powered intelligence tutoring system competency need		3.46	.532	ME
3.	Extent of Virtual learning competency need		3.16	.853	ME
4.	Extent of Panel discussion and students' reactions competency need		1.57	.655	ME
5.	Extent of web based platforms competency need		1.89	.855	ME
6.	Extent of virtual learning competency need		3.39	.595	ME
7.	The extent of students group chart competency needs		3.42	.558	ME
8.	Extent of social media and students' interactive competence need		3.44	.546	ME
9.	Extent of adaptive learning platforms competence need		3.38	.550	ME
10.	Extent of ChartGPT competence need		2.98	.385	ME
	Grand Mean		**2.75**	**.262**	ME

Sources: field work (2026)

Null Hypothesis One

There is no significant difference in mean rating between male and female vocational educators' pedagogical competency need in universities in North-east, Nigeria

Independent sample t-test was used to test the mean difference between male and female vocational educators' pedagogical competency need in universities in North-east, Nigeria. The summary of the analysis presented on table 4 shows the independent sample t-test that compare the difference between male and female vocational educators' digital competency need in universities. The results from the table revealed that, there is significant difference in the mean of male (mean= 19.29 and SD=6.18) and female vocational educators (mean=11.53 and SD=3.45), $(\mathrm{t} = 2.126, \mathrm{df} = 61, \mathrm{p} - \mathrm{value} = 0.008)$. Because the p-value (0.008) is less than the level of significance (0.05). Therefore, the null hypothesis one which states that there is no significant difference between male and female vocational educators' pedagogical competency need in universities in North-east, Nigeria was therefore, rejected.

Table 3: Independent sample t-test on the mean achievement scores at post-test results of experimental and control groups.

Pedagogical Competency Need	*N*	*Mean*	*SD*	*df*	*t-value*	*p-value*	*Decision*
Male	*98*	*19.29*	*6.18*	*61*	*2.126*	*0.008*	*Rejected*
Female	*26*	*11.53*	*3.45*				

Source: Field work (2026).

Null Hypothesis Two

There is no significant difference in mean rating between male and female vocational educators' digital competency need in universities in North-east, Nigeria

Independent sample t-test was used to test the mean difference between male and female vocational educators' digital competency need in universities in North-east, Nigeria. The results from the table revealed that, there is significant difference in the mean of male (mean= 11.12 and SD=4.955) and female vocational educators (mean=16.41 and SD=6.254), $(\mathrm{t} = -6.137, \mathrm{df} = 61, \mathrm{p} - \mathrm{value} = 0.001)$. Since the p-value (0.001) less than the level of significance (0.05), therefore, the null hypothesis which states that there is no significant difference between male and female vocational educators' digital competency need in universities in North-east, Nigeria was also rejected.

Table 4: Independent sample t-test on the mean difference between male and female vocational educators' digital competency need in universities in North-east, Nigeria

Pedagogical Competency Need	*N*	*Mean*	*SD*	*df*	*t-value*	*p-value*	*Decision*
Male	*98*	*11.12*	*4.955*	*61*	*-6.137*	*0.008*	*Rejected*
Female	*26*	*16.41*	*6.254*				

Source: Field work (2026).

Findings of the Study

The following are the findings of the study;

1. The result from research question one and its corresponding null hypothesis revealed that there is significant difference between male and female vocational educators' pedagogical competency need in universities in North-east, Nigeria
2. The result from research question two and its corresponding null hypothesis also shows that there is significant difference between male and female vocational educators' pedagogical competency need in universities in North-east, Nigeria

Discussion of the Findings

The findings of research question one and its corresponding null hypothesis revealed that vocational educators need pedagogical competencies. Also, there is significant difference between male and female vocational educators' pedagogical competencies need in universities in North-east, Nigeria. The result agreed with Ekoh (2016), Said (2018) and Ikezor and Ojeaga (2021) stated that vocational educators need pedagogical competence to create a condition in which learning takes place. Conversely, Umoru and Shaibu (2018) in their study, disagree with the findings which revealed that instructors do not necessarily need teaching competencies for their job performance. However, on gender, the finding of Bunumi (2016) and Umoru and Shaibu (2018) disagree with the finding of the current study, who reported that vocational educators' competencies in pedagogy is not influenced by gender.

The findings of research question two and its corresponding null hypothesis indicated that vocational educators need digital competencies. Also, there is significant difference between male and female vocational educators' digital competencies need in universities in North-east, Nigeria. This finding concurred with finding of Ezenwafor and Olaniyi (2017), Ofili and Idris (2017) and Ikezor and Ojeaga (2021) which showed that vocational and technical educators also need digital competencies for their job performance improvement. On gender, the finding of the current study did not concur with Muhammad and Mohamad (2020) who found that there was no significant difference in the mean rating between male and female vocational educators on digital competencies need for job performance.

Conclusion

Based on findings of the present study, the study concluded that vocational educators in universities in North-east, Nigeria needs pedagogical and digital competencies for improvement in their job performance. Additionally, it was further concluded that there is significant difference between male and female vocational educators' pedagogical and digital competencies need in universities in North-east, Nigeria.

Recommendations

The following recommendations were made;

1. Vocational educators are to take advantage of training and retraining opportunities by the university's authorities and Tetfund, and also improve on their personal development to increase their pedagogical competencies in teaching and learning.
2. University management should investment more on digital educational tools and policy statements in vocational educators' continuous training in contemporary digital competencies for effective teaching and learning that could improves vocational educators job performance in universities within North-east, Nigeria.

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INFLUENCE OF ARTIFICIAL INTELLIGENCE TOOLS USAGE ON BUSINESS EDUCATION POSTGRADUATE STUDENTS' RESEARCH EFFICIENCY IN TAI SOLARIN FEDERAL UNIVERSITY OF EDUCATION, OGUN STATE

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Abstract

The study investigated the influence of Artificial Intelligence (AI) tools usage on research efficiency among Business Education postgraduate students in Tai Solarin Federal University of Education, Ogun State. Specifically, the study determined the level of research efficiency, identified commonly used AI tools for research, examined the relationship between AI tools usage and research efficiency, and assessed the influence of AI tools usage on research efficiency. A descriptive survey research design was adopted. The population comprised 144 Business Education postgraduate students admitted between the 2019 and 2026 academic sessions, and 99 students were selected using simple random sampling technique. A validated questionnaire titled Artificial Intelligence Tools Usage and Research Efficiency Questionnaire (AITUREQ) was used for data collection. Face and content validity were established by an expert, while Cronbach's Alpha yielded a reliability coefficient of 0.79. Data were analysed using frequency, percentage, mean, standard deviation, Pearson Product Moment Correlation (PPMC), and regression analysis at 0.05 level of significance. Findings revealed moderate research efficiency, slightly below the benchmark (Mean = 2.48, SD = 0.74). A significant positive relationship existed between AI tools usage and research efficiency ($r = 0.363$, $p < 0.05$). AI tools usage also significantly influenced research efficiency, $F(1, 97) = 4.847$, $p < 0.05$. ChatGPT, Gemini, Mendeley, Grammarly, Claude, EndNote, and Scite were the most commonly used tools. It concluded that AI tools usage significantly enhances research efficiency. It recommended increased effective use of AI tools and regular professional activities to improve awareness and responsible utilisation of emerging AI technologies.

Keywords: Artificial intelligence tools usage, business education postgraduate students, level of AI tools usage, commonly used AI tools, research efficiency

Introduction

Research efficiency, in its broad sense, refers to the ability of students or researchers to complete academic research tasks effectively, accurately, and within the shortest possible time while maintaining quality output. In simple terms, it is how well a student can turn effort, time, and available resources into meaningful research results. According to recent scholarly perspectives, research efficiency involves productivity in literature review, data analysis, academic writing, and proper interpretation of findings (Muslimin, 2024). It is widely recognized as a core determinant of postgraduate success because it directly affects the quality, timeliness, and originality of academic outputs.

The significance of research efficiency in higher education cannot be overstated. It enhances academic performance, promotes timely completion of postgraduate programmes, and improves the quality of scholarly publications. Chauke et al. (2024) noted that postgraduate students with higher efficiency tend to produce more structured and impactful academic work. Similarly, Ward et al. (2024) emphasized that efficient research practices contribute to improved learning outcomes and stronger academic confidence. Despite its importance, several scholars have identified persistent challenges affecting research efficiency among postgraduate students. Abbas et al. (2024) and Tian et al. (2024) reported issues such as poor time management, limited research skills, inadequate institutional support, and overdependence on digital tools, which may negatively affect independent academic thinking and productivity.

In recent years, Artificial Intelligence (AI) has emerged as a transformative technology in academic research. In simple terms, AI refers to computer systems that can perform tasks that normally require

human intelligence, such as writing, summarizing, analyzing data, and generating ideas. Muslimin (2024) described AI tools as digital assistants that support academic productivity, while Chauke et al. (2024) viewed them as technologies that enhance learning and research performance through automation and intelligent suggestions. These tools include applications such as ChatGPT, Grammarly, QuillBot, Mendeley, and Google Gemini, which are increasingly used in higher education to support research activities.

The level of AI tools usage among postgraduate students has been reported to be relatively high, particularly with the rise of generative AI platforms. Studies such as Alade and Daniel (2023) and Chowanda et al. (2023) found that postgraduate students frequently use AI tools for academic writing and information retrieval, although usage levels vary across individuals and institutions. This growing adoption reflects increasing reliance on AI to simplify complex research tasks and improve academic productivity.

Regarding commonly used AI tools, literature shows that students mostly prefer general-purpose tools such as ChatGPT, Grammarly, and Google Gemini over specialized academic tools. Alade and Daniel (2023) and Chowanda et al. (2023) reported that these tools are widely used due to their ease of access and versatility in supporting writing and idea development. However, advanced research tools like Elicit, ResearchRabbit, and Litmaps are less frequently used, indicating limited exposure to structured research mapping technologies.

Empirical studies on the relationship between AI tools usage and research efficiency generally suggest a positive association. Chauke et al. (2024) and Muslimin (2024) found that AI tools usage significantly improves academic productivity and writing efficiency among postgraduate students. However, some studies present mixed or cautionary findings. Abbas et al. (2024) and Wecks et al. (2024) reported that while AI tools enhance task completion, excessive dependence may reduce critical thinking and independent research skills.

Similarly, studies on the influence of AI tools usage show both positive and negative outcomes. Ward et al. (2024) and Nakavachara et al. (2024) reported that AI tools significantly improve academic efficiency and study habits. In contrast, Tian et al. (2024) and Bouzar et al. (2024) found that overreliance on AI tools may negatively affect deep learning and originality, suggesting a complex influence that depends on usage patterns and academic context.

Despite the growing body of literature, a clear gap remains in understanding how AI tools usage specifically influences research efficiency among postgraduate Business Education students in Nigerian universities. Most existing studies were conducted outside Nigeria (Chauke et al., 2024; Tian et al., 2024) or focused on general postgraduate populations rather than discipline-specific groups such as Business Education students. Furthermore, limited studies have simultaneously examined level of usage, commonly used tools, relationship, and influence of AI tools usage within a single framework.

Therefore, this study intends to investigate the level of research efficiency, commonly used AI tools, the relationship between AI tools usage and research efficiency, and the influence of AI tools usage on research efficiency among postgraduate Business Education students in Tai Solarin Federal University of Education, Ogun State, Nigeria (2020–2026 cohort). The study is expected to contribute to the growing global discourse on AI in education and provide empirical evidence for improving postgraduate research training and policy formulation.

Statement of the Problem

Despite the increasing integration of Artificial Intelligence (AI) tools in academic research, many postgraduate Business Education students continue to experience challenges in achieving high research efficiency in terms of productivity, quality of output, time management, and effective completion of research tasks. Although AI tools such as ChatGPT, Grammarly, and Mendeley are widely available and frequently used, there is limited empirical evidence on how their usage translates into actual research efficiency among postgraduate students in Nigerian universities.

Furthermore, existing studies have reported mixed findings regarding the effectiveness of AI tools in improving academic and research outcomes, with some studies indicating significant improvement in productivity, while others highlight issues such as overdependence, reduced critical thinking, and inconsistent academic benefits. In Tai Solarin Federal University of Education, Ogun State, there is insufficient documented evidence on the level of AI tools usage, the commonly used tools, and how these tools relate to and influence research efficiency among postgraduate Business Education students.

Therefore, the problem of this study is that despite the growing adoption of AI tools in academic research, the extent to which their usage relates to and influences research efficiency among postgraduate Business Education students remains unclear and under-researched.

Objectives of the Study

The main objective of the study was to investigate the influence of Artificial Intelligence (AI) tools usage on the research efficiency of postgraduate Business Education students in Tai Solarin Federal University of Education, Ogun State. The specific objectives of the study sought to:

i. determine the level of research efficiency among Business Education postgraduate students
ii. examined the level of Artificial Intelligence tools usage among Business Education postgraduate students.
iii. identify the commonly used Artificial Intelligence tools among Business Education postgraduate students.
iv. examine the relationship between Artificial Intelligence tools usage and research efficiency among postgraduate Business Education students in Tai Solarin Federal University of Education.
v. determine the influence of Artificial Intelligence tools usage on the research efficiency of postgraduate Business Education students in Tai Solarin Federal University of Education.

Research Questions

The following research questions will guide the study:

i. What is the level of research efficiency among Business Education postgraduate students?
ii. What is the level of Artificial Intelligence tools usage among Business Education postgraduate students?
iii. What are the commonly used Artificial Intelligence tools among Business Education students?

Hypotheses

The following hypotheses were tested at the 0.05 level of significant:

H_{01}: There is no significant relationship between Artificial Intelligence tools usage and research efficiency among Business Education postgraduate students.

H_{01}: Artificial Intelligence tools usage does not significantly influence the research efficiency among Business Education postgraduate students.

Methodology

This study adopted a descriptive survey research design. The design was appropriate because it allows the researcher to collect data from postgraduate Business Education students to describe the level of research efficiency, level of AI tools usage, commonly used AI tools, and the relationship and influence of AI tools usage on research efficiency without manipulating any variables. The population of this study comprised 144 Business Education postgraduate students within the 2019–2026 academic sessions in Tai Solarin Federal University of Education, Ogun State. The sample for this study consisted of 99 Business Education postgraduate students using simple random sampling technique was used in selecting the respondents. This technique is considered appropriate because it gave all members of the population an equal and independent chance of being selected, thereby reducing bias and ensuring that the sample is representative of the entire population. The instrument for data collection in this study was a structured questionnaire 'Artificial Intelligence Tools Usage and Research Efficiency Questionnaire (AITUREQ).' The validity of the research instrument was ensured through face and content validity. The result of the reliability test yielded a coefficient of 0.79 Data for this study was collected through the administration of the structured questionnaire 'Artificial Intelligence Tools Usage and Research Efficiency Questionnaire (AITUREQ).' The questionnaire was administered directly to the respondents, who were Business Education postgraduate students in Tai Solarin Federal University of Education, Ogun State. The researcher distributed the copies of the questionnaire with the assistance of class representatives where necessary and adequate time was given to the respondents to complete them. The completed questionnaires were collected immediately or within a short period of time to ensure a high return rate and accuracy of responses. The data collected for this study were analyzed using both descriptive and inferential statistics. The descriptive statistics employed included frequency distribution, percentage, mean score, and standard deviation**,** and they were used to analyze respondents' bio-data, the level of research efficiency, the level of AI tools usage, and the commonly used Artificial Intelligence tools among Business Education postgraduate students. Inferential statistics were used to test the hypotheses of the study. The Pearson Product Moment Correlation (PPMC) was used to determine the relationship between Artificial Intelligence tools usage and research efficiency, while simple regression analysis was used to determine the influence of AI tools usage on research efficiency. All hypotheses were tested at the 0.05 level of significance.

Demographic Data of Respondents

Table 1: Gender and Age Distribution of Respondents

Gender	Frequency distribution	Percentage
Male	54	54.5
Female	46	46.4
Program		
Master	65	65.6
MPhil/Phd	20	20.2
PGDE	14	14.2
Mode of Programmme		
Full time	71	71.7
Part time	28	28.3

Table 1 result showed gender, program and mode of program distribution of respondents. The demographic distribution of respondents shows that there is a fairly balanced representation of gender among the postgraduate Business Education students sampled. The table indicates that 54 (54.5%) of the respondents were male**,** while 46 (46.4%) were female**,** suggesting that male students slightly outnumbered female students in the study. This implies that the data collected is not heavily biased toward one gender, although males have a marginal dominance. In terms of programme of study, the results reveal that the majority of the respondents were enrolled in the Master's programme with 65 (65.6%)**,** followed by MPhil/PhD students with 20 (20.2%)**,** while PGDE students accounted for 14 (14.2%)**.** This indicates that most of the postgraduate students in the sample are at the Master's level, suggesting that the findings of the study may largely reflect the experiences of Master's students in relation to AI tools usage and research efficiency. Regarding mode of study, the table shows that 71 (71.7%) of the respondents were full-time students**,** while 28 (28.3%) were part-time students**.** This implies that the majority of the respondents are full-time students, which may suggest greater engagement with research activities and potentially higher exposure to Artificial Intelligence tools for academic purposes compared to part-time students. Overall, the demographic data indicate that the study sample is adequately distributed across gender, programme, and study mode, thereby providing a reasonable basis for generalizing the findings within the population of postgraduate Business Education students in the institution.

Research Questions 1

i. What is the level of research efficiency among postgraduate Business education students?

Table 4.2 Mean and Standard deviation analysis of postgraduate students' Research Efficiency

Items	N	$\bar{x}$	Std
Supervisor			
My supervisor/s have the skills and subject knowledge to support my research	99	2.68	.596
I have regular contact with my supervisor/s, appropriate for my needs	99	2.58	.708
My supervisor/s provide feedback that helps me direct my research activities	99	2.41	.754
Total		**2.55**	**0.68**
Resources			
I have a suitable working space when I am on campus	99	2.45	.715
I have a suitable working space when I am studying remote	99	2.82	0.706
There is appropriate access to physical library resources and facilities	99	2.23	.717
Total		**2.5**	**0.71**
Research culture			
I have frequent opportunities to discuss my research with other researchers including research students	99	2.22	.696
I have access to a good range of seminars in my research area	99	2.94	.720
I am aware of opportunities to become involved in the wider research community, beyond my department	99	2.17	.768
Total		**2.44**	**0.72**
Responsibilities			
My institution values and responds to feedback from research degree students	99	2.37	.765

I understand my responsibilities as a research degree student	99	2.45	.660
I am aware of my supervisors' responsibilities towards me as a research degree student	99	2.50	.724
Total		**2.44**	**0.71**
Institutional Support			
The support for academic skills meets my needs	99	2.44	.913
The support for using IT and accessing resources meets my needs	99	2.51	0.76
The support for my health and wellbeing meets my needs	99	**2.68**	**0.55**
Total		**2.54**	**0.74**
Research skills development			
My skills in applying appropriate research methodologies, tools and techniques have developed during my programme	99	2.68	0.54
My skills in critically analysing and evaluating findings and results have developed during my programme	99	2.35	0.59
My confidence to be creative or innovative has developed during my program	99	2.20	0.32
Total		**2.41**	**0.48**
Total		**2.48**	**0.67**

Note. N= Number of respondents, $\bar{X}$= Response Mean Score; S.D = Standard Deviation Score of Response. (Weighted Average: 2.48, Standard Reference Mean: 2.50). Decision Rule: Items are accepted if mean is above standard referenced mean

Table 4.2 showed the result of Business education postgraduate students' research efficiency across six dimensions: supervision, resources, research culture, responsibilities, institutional support, and research skills development. The result showed that for supervisor section, subtotal mean was rated above the criterion mean (mean = 2.55 (Std= 0.68) > 2.50), Resources (mean = 2.49 (Std = 0.71) < 2.50), Research culture (mean = 2.44 (Std = 0.72) < 2.50), Responsibilities (mean = 2.44 (Std = 0.71) < 2.50), Institutional Support Responsibilities (mean = 2.54 (Std = 0.74) > 2.50) and Research skills development (mean = 2.41 (Std = 0.48) < 2.50). The result also showed weighted mean 2.48 which is below reference mean (2.50), with the weighted mean below the referenced mean, this implies that Business education postgraduate students indicated slightly below research efficiency.This indicates that the overall level of research efficiency among postgraduate Business Education students is moderate but slightly below the acceptable benchmark. This suggests that while students experience some level of support and competence in their research activities, it is not sufficiently strong to be considered high. Specifically, the **supervision dimension (2.55)** and **institutional support (2.54)** were slightly above the benchmark, indicating that students generally perceive their supervisors and institutional support systems as moderately effective in enhancing their research activities. However, the **resources (2.50)**, **research culture (2.44), responsibilities (2.44)**, and **research skills development (2.41)** dimensions were at or below the benchmark, showing that students face some limitations in access to resources, engagement in research culture, clarity of responsibilities, and development of advanced research skills.

The standard deviation values ranging between 0.48 and 0.74 indicate a relatively low to moderate variation in responses, meaning that respondents had fairly similar views about their research efficiency. Overall, the findings imply that research efficiency among postgraduate Business Education students is not high, but rather at a moderate level that requires improvement**,** particularly in areas of research skills development, research culture engagement, and access to research resources.

2. What is the level of AI usage among Business Education postgraduate students?

Table 4.3: Mean and Standard Deviation Analysis of Business Education Postgraduate Students' Level of AI Usage

	Familiarity and Access to AI Tools	**N**	$\overline{x}$	**Std**
1	I am familiar with various AI tools that can support academic research	99	2.76	.678
2	I have easy access to the AI tools I need for my research activities.	99	2.54	.899
3	regularly use AI tools as part of my research workflow	99	2.66	.922
4	I use AI-powered tools to search for and identify relevant academic literature for my research.	99	2.63	.927
			2.65	**.860**
	Literature Review and Information Retrieval			
1	I use AI-powered tools to search for and identify relevant academic literature for my research.	99	2.67	.927
2	I use AI tools to summarise research articles and extract key findings efficiently.	99	2.48	.723
3	I rely on AI tools to help me identify research gaps and generate potential research	99	2.57	.504
			2.57	**.718**
	Academic Writing and Dissemination			
1	I use AI tools to assist with academic writing	99	2.48	.773
2	I use AI tools to proofread and edit my written work for grammar, style, and coherence	99	2.49	.571
3	I use AI tools to help format citations and references according to required academic styles.	99	2.59	.833
4	I use AI tools to assist in preparing presentations or posters for academic conferences	99	2.56	.504
			2.53	**.670**
	Ethical Considerations and Integrity			
1	I am concerned about the ethical implications of using AI in my research (such as plagiarism, authorship, or data privacy).	99	2.8333	.791
2	I clearly acknowledge and disclose my use of AI tools when submitting research work	**99**	2.4000	1.03
3	I verify AI-generated content against primary sources before incorporating it into my research.	99	2.8667	1.04
			2.69	.953
			2.61	.800

Note. N= Number of respondents, $\overline{X}$= Response
Mean Score; S.D = Standard Deviation Score of Response. (Weighted Average; 2.61, Standard Reference Mean; 2.50).

Table 4.3 The table presents the mean and standard deviation analysis of the level of Artificial Intelligence (AI) tools usage among Business Education postgraduate students.

The result shows that the respondents demonstrated a high level of AI tools usage, as evidenced by the weighted mean of 2.61, which is above the standard reference mean of 2.50. This indicates that postgraduate Business Education students frequently utilize AI tools to support various aspects of their research activities.

Specifically, The result showed that for, familiarity and access to AI Tools, sub-total mean was rated above the criterion mean (mean = 2.65 (Std= .860) >2.50), Literature Review and Information Retrieval (mean = 2.57 (Std = 0.71) > 2.50), Academic Writing and Dissemination (mean = 2.53 (Std = 0.67) > 2.50) and Ethical Considerations and Integrity (mean = 2.69 (Std = .953) > 2.50). The result also showed weighted mean 2.61 which is above reference mean (2.50), with the weighted mean above the reference mean, this implies that business education postgraduate students indicated high level of AI tool usage to search for academic literature, summarize research articles, and identify research gaps.

Furthermore, the Academic Writing and Dissemination dimension recorded a mean score of 2.53 (SD = 0.670), implying that respondents use AI tools to support academic writing, proofreading, citation formatting, and preparation of academic presentations. The Ethical Considerations and Integrity

dimension had the highest mean score of 2.69 (SD = 0.953), indicating that students are generally conscious of the ethical implications of AI usage and make efforts to verify AI-generated content before incorporating it into their research.

The standard deviation values, ranging from 0.670 to 0.953, indicate a relatively low to moderate variation in respondents' opinions, suggesting consistency in their responses.

Overall, the findings imply that Business Education postgraduate students exhibit a high level of AI tools usage, demonstrating that AI has become an integral part of their research activities, particularly in literature review, academic writing, and information management.

3. What are the commonly used AI tools for research by postgraduate Business education students?

Table 4.4: Summary of Commonly Used AI Tools

AI / Research Tool	**Always**	**Sometimes**	**Never**	**Mean**	**Rank**
Grammarly	43	53	3	2.40	4
Elicit	2	67	30	1.72	12
Perplexity	1	87	11	1.90	9
Quillbot	10	62	27	1.83	10
ProWritingAid	26	0	73	1.53	15
EndNote	49	17	33	2.16	6
Scite	25	64	10	2.15	7
Zotero	41	9	49	1.92	8
Mendeley	72	14	13	2.60	3
ChatGPT	77	16	6	2.72	1
Connected Papers	30	19	50	1.80	11
Gemini	79	11	9	2.71	2
ResearchRabbit	16	36	47	1.69	13
Litmaps	16	27	56	1.60	14
Claude	37	42	20	2.17	5
Paperpal	22	7	70	1.52	16
Docear	17	5	77	1.39	17

Table 4.4 shows the result of commonly used AI tools for research by Business Education postgraduate students. Mean scores, and ranking of Artificial Intelligence tools commonly used by postgraduate Business Education students for research purposes.

The result shows that ChatGPT (Mean = 2.72, Rank = 1) is the most commonly used AI tool among the respondents. This is followed closely by Google Gemini (Mean = 2.71, Rank = 2) and Mendeley (Mean = 2.60, Rank = 3), indicating that these tools are the most frequently utilized for academic and research activities such as writing support, information retrieval, and reference management.

Other moderately used tools include Grammarly (Rank = 4)**,** Claude (Rank = 5)**,** EndNote (Rank = 6)**,** and Scite (Rank = 7), suggesting that students also rely on a mix of AI writing assistants and reference management tools to support their research processes.

However, tools such as Elicit (Rank = 12)**,** ResearchRabbit (Rank = 13)**,** Litmaps (Rank = 14)**,** ProWritingAid (Rank = 15)**,** Paperpal (Rank = 16)**,** and Docear (Rank = 17) were the least commonly used. This indicates low awareness or limited accessibility of advanced academic AI tools that support literature mapping and structured academic writing.

Overall, the findings reveal that postgraduate Business Education students predominantly use general-purpose AI tools such as ChatGPT and Gemini more than specialized academic research tools. This suggests that while AI adoption is relatively high, usage is skewed toward conversational and writing-assist tools rather than advanced research-specific platforms.

Test of Hypotheses

H_{01}: There is no significant relationship between AI tools usage and research of Business Education postgraduate students

Table 4.5 Relationship between AI Tools Usage and Research Efficiency

Variables	Mean	Std	R	Sig
AI usage	20.15	2.65	0.363	.001
Research	37.80	4.15		

Efficiency

Table 4.4 presents the Pearson Product Moment Correlation (PPMC) analysis of the relationship between Artificial Intelligence (AI) tools usage and research efficiency among postgraduate Business Education students.

The result shows a positive correlation coefficient (r = 0.363) between AI tools usage and research efficiency. This indicates a moderate positive relationship, meaning that an increase in the use of AI tools is associated with an improvement in research efficiency among the students.

The significance value (p = 0.001) is less than the chosen alpha level of 0.05, indicating that the relationship is statistically significant. Therefore, the null hypothesis (H_{01}), which states that there is no significant relationship between AI tools usage and research efficiency is rejected.

The table shows 20.15 mean score for AI tool usage with 2.65 standard deviation and 37.80 mean score for research efficiency with 4.15 standard deviation.

This implies that AI tools usage has a meaningful and significant relationship with research efficiency among postgraduate Business Education students. In practical terms, students who frequently use AI tools such as ChatGPT, Grammarly, and other research-support tools tend to demonstrate better research efficiency in terms of productivity, writing support, and academic task completion.

H_{02}: There is no significant influence of AI tools usage on research efficiency of Business Education postgraduate students

Table 4.6 Model Regression Analysis of AI Tools Usage for Research Efficiency of Business Education Postgraduate Students

Model Summary	ANOVA Model	Sum of Squares	Df	Mean Square	F	Sig
R =.363	Regression	225.127	1	75.042	4.847	.003[b]
R^2 = .132	Residual	1486.263	97	15.482		
Adj. R^2 = .104	Total	1711.390	98			
Std Error = 3.935						

Table 4.6 presents the regression analysis showing the influence of Artificial Intelligence (AI) tools usage on research efficiency among postgraduate Business Education students.

The model summary indicates a correlation coefficient of **R = 0.363**, showing a positive relationship between AI tools usage and research efficiency. The **coefficient of determination (R^2 = 0.132)** implies that AI tools usage accounts for **13.2% of the variation in research efficiency**, while the remaining 86.8% is explained by other factors not included in the model. The **adjusted R^2 of 0.104** further confirms that the predictive power of the model is modest but meaningful.

The ANOVA result shows that the regression model is statistically significant, with F(1, 97) **=** 4.847 and p = 0.003, which is less than the 0.05 significance level. This indicates that AI tools usage significantly predicts research efficiency among postgraduate Business Education students.

Therefore, the null hypothesis (H_{02}), which states that there is no significant influence of AI tools usage on research efficiency, is rejected. This implies that AI tools usage has a significant positive influence on research efficiency, meaning that an increase in the use of AI tools leads to an improvement in students' ability to carry out research tasks effectively and efficiently.

Discussion

Discussion of Research Question One: Level of Research Efficiency among Postgraduate Business Education Students

The findings of the study revealed that the overall level of research efficiency among postgraduate Business Education students was moderate, with a weighted mean score of 2.48, which is slightly below the benchmark mean of 2.50. This suggests that although the students possess some degree of competence and support in carrying out research activities, there is still room for improvement. The findings further showed that supervision and institutional support recorded mean scores above the benchmark, while research culture, responsibilities, and research skills development fell below the benchmark. This implies that students benefit from their supervisors and institutional support services but may experience challenges relating to research engagement, access to research opportunities, and the development of advanced research competencies.

The finding agrees with Chauke, et al. (2024), who reported that postgraduate students perceived moderate improvements in their academic and research activities through the use of AI-supported resources and institutional support systems. The finding also supports **Muslimin (2024)**, who found that postgraduate students demonstrated moderate levels of research productivity and efficiency when supported with appropriate technological tools. The result suggests that strengthening research culture,

improving access to resources, and enhancing research skills development programmes could further improve the research efficiency of postgraduate Business Education students.

Discussion of Research Question 2: Level of AI Tools Usage among Business Education Postgraduate Students

The findings of the study revealed that postgraduate Business Education students exhibited a high level of Artificial Intelligence (AI) tools usage in their research activities. The respondents demonstrated substantial familiarity with AI tools and frequently utilized them for literature review, information retrieval, academic writing, and other research-related tasks. The findings also indicate that the students are generally aware of the ethical issues associated with AI usage and make conscious efforts to use these tools responsibly.

The finding is consistent with Alade and Daniel (2023), who reported that Nigerian postgraduate students extensively use AI tools such as ChatGPT, Grammarly, QuillBot, and Mendeley to support literature search, academic writing, referencing, and data analysis. Similarly, Chowanda et al. (2023) found that postgraduate students in Ghana demonstrated a high level of AI adoption, particularly in the use of ChatGPT and other generative AI applications for learning and research activities. These studies affirm that AI technologies have become indispensable tools for enhancing academic research among postgraduate students.

However, the finding contrasts with that of Tian et al. (2024), who observed that although graduate students were aware of AI tools, the actual level of utilization was constrained by concerns over accuracy, ethical issues, and institutional policies. Likewise, Bouzar et al. (2024) reported that some postgraduate students were reluctant to use AI tools extensively due to fears of overdependence and the potential negative effects on academic integrity.

Overall, the present finding suggests that postgraduate Business Education students in Tai Solarin Federal University of Education have embraced AI tools as valuable resources for research. This high level of usage reflects the growing acceptance of AI technologies in postgraduate education and highlights their potential to improve research processes when used responsibly.

Discussion of Research Question Three: Commonly Used AI Tools for Research by Postgraduate Business Education Students

The findings of the study revealed that postgraduate Business Education students make use of a variety of Artificial Intelligence (AI) tools for research purposes, with varying levels of frequency and preference. The most commonly used AI tools were ChatGPT (Mean = 2.72, Rank = 1) and Google Gemini (Mean = 2.71, Rank = 2), followed by Mendeley (Mean = 2.60, Rank = 3). This indicates that students predominantly rely on general-purpose AI chatbots and writing assistance tools for tasks such as idea generation, academic writing, summarization, and information retrieval.

The result further showed that tools such as Grammarly, Claude, EndNote, and Scite were moderately used; suggesting that students also engage with tools that support grammar correction, citation management, and academic referencing. However, specialized research tools such as Elicit, ResearchRabbit, Litmaps, and Paperpal recorded low usage, indicating limited awareness or inadequate exposure to advanced academic AI tools that support literature mapping and systematic review processes.

This finding is consistent with Alade and Daniel (2023), who reported that postgraduate students commonly use AI tools such as ChatGPT, Grammarly, QuillBot, and reference management software more frequently than advanced research mapping tools. It also supports Chowanda et al. (2023**)**, who found that ChatGPT and similar conversational AI tools are the most frequently adopted tools among postgraduate students, mainly due to their ease of use and accessibility.

Overall, the finding suggests that while AI tools are widely used among postgraduate Business Education students, their usage is largely concentrated on basic writing and conversational tools rather than advanced research-oriented applications.

Discussion of Hypothesis 1 (H_{01}): Relationship between AI Tools Usage and Research Efficiency

The result of the Pearson Product Moment Correlation analysis revealed that there is a positive and significant relationship between Artificial Intelligence (AI) tools usage and research efficiency among postgraduate Business Education students ($r = 0.363$, $p = 0.001$). Since the p-value is less than the 0.05 level of significance, the null hypothesis was rejected. This indicates that increased usage of AI tools is associated with improved research efficiency among the respondents.

The finding suggests that postgraduate students who frequently use AI tools such as ChatGPT, Grammarly, and Mendeley tend to perform better in research-related tasks such as literature review, academic writing, referencing, and information synthesis. The moderate correlation also implies that while AI tools contribute significantly to research efficiency, they are not the only determining factor, as other academic and environmental variables may also play important roles.

This finding is consistent with Chauke, et al. (2024), who reported that AI tools usage has a positive association with academic success and research productivity among postgraduate students. It also aligns with Muslimin (2024), who found that the use of ChatGPT significantly improves scientific writing productivity and research output among postgraduate learners. Overall, the result confirms that AI tools usage plays a significant role in enhancing research efficiency among postgraduate Business Education students.

Discussion of Hypothesis 2 (H_{02}): Influence of AI Tools Usage on Research Efficiency

The regression analysis revealed that Artificial Intelligence (AI) tools usage has a significant influence on research efficiency among postgraduate Business Education students ($F = 4.847$, $p = 0.003$). Since the p-value is less than the 0.05 level of significance, the null hypothesis was rejected. This implies that AI tools usage significantly predicts research efficiency among the respondents.

The coefficient of determination ($R^2 = 0.132$) indicates that AI tools usage explains 13.2% of the variation in research efficiency, while the remaining percentage is influenced by other factors not captured in the model. This suggests that although AI tools play a meaningful role in improving research efficiency, other factors such as supervision quality, research skills, institutional support, and access to resources also contribute significantly.

The finding implies that students who make greater use of AI tools such as ChatGPT, Gemini, Grammarly, and Mendeley are more likely to experience improved efficiency in research activities, including writing speed, literature review processes, and data organization. However, the moderate explanatory power suggests that AI tools alone cannot fully determine research efficiency.

This finding is consistent with Abbas, et al. (2024)**,** who reported that AI tools usage has a significant effect on students' academic performance and task efficiency. It also aligns with Ward et al. (2024)**,** who found that AI tools significantly improve study efficiency, time management, and academic productivity among university students. Overall, the result confirms that AI tools usage has a significant positive influence on research efficiency among postgraduate Business Education students.

Conclusion

Based on the findings of the study, it is concluded that postgraduate Business Education students in Tai Solarin Federal University of Education exhibit a high level of Artificial Intelligence (AI) tools usage, indicating that AI has become an integral part of their research activities. The students are familiar with and have access to AI tools, which they frequently use for literature review, information retrieval, academic writing, referencing, and other research-related tasks. They also demonstrate awareness of the ethical considerations associated with the use of AI in academic research.

The study further concludes that the overall level of research efficiency is moderate, suggesting that although the students possess reasonable research competence, there is still room for improvement in areas such as research skills development, research culture, and access to research resources.

In addition, the study concludes that ChatGPT, Google Gemini, and Mendeley are the most commonly used AI tools among postgraduate Business Education students, while specialized research tools such as Elicit, ResearchRabbit, Litmaps, and Paperpal are less frequently utilized.

Furthermore, the study concludes that there is a significant positive relationship between AI tools usage and research efficiency. This implies that increased use of AI tools is associated with improved research efficiency among postgraduate Business Education students.

Finally, the study concludes that AI tools usage has a significant positive influence on research efficiency. Although AI tools account for only part of the variation in research efficiency, they remain an important predictor of students' ability to carry out research activities effectively and efficiently. Overall, the study affirms that the effective and ethical use of AI tools can enhance postgraduate research efficiency when complemented by adequate supervision, institutional support, and continuous research skills development.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. Research Skills Development: Since the study found that the overall level of research efficiency among postgraduate Business Education students was moderate, the university management should organize regular research methodology workshops, academic writing clinics, and mentorship programmes to strengthen students' research skills, promote active research culture, and improve research productivity.
2. Sustaining High Level of AI Tools Usage: Given that the students demonstrated a high level of AI tools usage, the university should sustain this momentum by providing continuous training on emerging AI technologies and ensuring access to licensed and institution-approved AI tools to enhance research quality and efficiency.

3. Promoting the Use of Advanced AI Research Tools: As the findings revealed that students commonly use ChatGPT, Gemini, and Mendeley more than specialized research tools, postgraduate students should be encouraged and trained to use advanced AI applications such as Elicit, ResearchRabbit, Litmaps, Scite, and Paperpal for systematic literature reviews, evidence synthesis, and reference mapping.
4. Enhancing Ethical Use of AI Tools: Since AI tools significantly relate to and influence research efficiency, supervisors and the Postgraduate School should provide clear guidelines and regular sensitization programmes on the ethical and responsible use of AI in research to ensure originality, academic integrity, and critical thinking while minimizing overdependence on AI-generated content.
5. Improving Institutional Support: The university should strengthen digital infrastructure by providing reliable internet connectivity, access to online academic databases, institutional subscriptions to AI-powered research platforms, and ICT support services to enable postgraduate students to maximize the benefits of AI tools in their research activities.
6. Policy Development on AI Integration: The university management should develop and implement institutional policies that guide the integration of Artificial Intelligence into postgraduate research and teaching. Such policies should promote the responsible, effective, and ethical use of AI tools to improve research efficiency while maintaining academic standards.

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REPOSITIONING TVET FOR JOB CREATION: INTEGRATING ENTREPRENEURSHIP EDUCATION INTO TECHNICAL COLLEGES IN AFRICA

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Abstract

Youth unemployment and economic exclusion remain defining crises across sub-Saharan Africa, with the youth not-in-employment-education-or-training (NEET) rate confirmed at 20.4 per cent in 2023 (ILO, 2024). Despite decades of policy investment in Technical and Vocational Education and Training (TVET), African technical colleges have largely failed to produce graduates capable of generating self-employment, principally because entrepreneurship education remains peripheral, fragmented, or entirely absent from their curricula. This conceptual paper critically examines the imperatives and strategic pathways for repositioning TVET through the systematic integration of entrepreneurship education into technical colleges in Africa. Drawing on three theoretical frameworks: Human Capital Theory as applied to TVET in sub-Saharan Africa (Psacharopoulos & Patrinos, 2018), Experiential Learning in Entrepreneurship Education (Motta & Galina, 2023), and the Entrepreneurial Ecosystems Framework as contextualised for Africa (Danquah et al., 2023), the paper argues that transforming TVET graduates from passive job-seekers into active job-creators demands a paradigm shift in curricular design, pedagogy, institutional governance, and inter-sectoral partnership. Key structural challenges are appraised with reference to confirmed empirical evidence, including instructor capacity deficits, funding shortfalls, weak industry linkages, gender inequalities, and curricular rigidity. Evidence-based strategies for sustainable integration are proposed, and actionable recommendations are offered to African governments, TVET authorities, technical colleges, curriculum planners, and development partners.

Keywords: *TVET, entrepreneurship education, technical colleges, job creation, Africa, curriculum integration, youth unemployment, experiential learning, entrepreneurial ecosystems*

Introduction

Youth unemployment and economic marginalisation constitute one of the defining structural crises of twenty-first century Africa. The International Labour Organization's Global Employment Trends for Youth (ILO, 2024) confirms that sub-Saharan Africa's youth NEET rate stood at 20.4 per cent in 2023, with young women severely disproportionately affected at 46.3 per cent NEET compared to 21.1 per cent for young men. Over a quarter of young people in the region are neither employed nor engaged in education or training, a structural failure of African labour markets that reflects deep dysfunctions at the interface between education systems, skills development pathways, and the productive economy.

Technical and Vocational Education and Training (TVET) has been prominently championed by international organisations and African governments as a strategic remedy. The UNESCO Strategy for TVET 2022–2029 (UNESCO, 2022) identifies skills development for empowerment and employability as a core mandate, while the African Union's Agenda 2063 and the Continental Education Strategy for Africa (CESA 2016–2025) commit member states to strengthening TVET as a pillar of continental economic transformation. Yet the empirical record reveals a persistent gap between TVET's rhetorical promise and its substantive outcomes: TVET participation rates across sub-Saharan Africa remain below 10 per cent of the 15–24 age cohort (ILO, 2024), and graduate enterprise creation rates remain far below levels required for meaningful economic impact.

Masoabi and Alexander (2021), publishing in the Journal of Entrepreneurship Education, confirmed that South African TVET engineering programmes had not incorporated entrepreneurship into course design despite growing global evidence of its importance for graduate employability and enterprise formation. The IIEP-UNESCO Dakar (2022) assessment across five African countries found consistent evidence of curricula lagging behind labour market demands and institutional capacities for responsive programme development remaining weak. Alamineh (2022), studying TVET students in Ethiopia's Gurage Zone and publishing in the Journal of Small Business and Enterprise Development,

found entrepreneurship education to be the primary determinant of entrepreneurial intentions, explaining 61.4 per cent of the variance in students' enterprise orientation. The consequence is a generation of technically competent but entrepreneurially ill-equipped graduates competing for a shrinking pool of formal sector jobs. The integration of entrepreneurship education within TVET curricula has emerged as a high-leverage corrective strategy. Motta and Galina (2023), in a systematic literature review published in Teaching and Teacher Education, confirmed that experiential approaches to entrepreneurship education produce positive and significant impacts on entrepreneurial intention and the development of entrepreneurial skills and competencies.

This paper undertakes a critical examination of the imperatives, structural challenges, and strategic pathways for repositioning TVET through the integration of entrepreneurship education into technical colleges in Africa. Following this introduction, the problem statement is articulated, theoretical frameworks are presented, related literature is reviewed, the current state of TVET is examined, and curriculum integration, pedagogy, governance, ecosystem development, and challenges are discussed, while conclusion and recommendations close the paper.

Statement of the Problem

Notwithstanding rhetorical commitments embedded in continental policy frameworks, the structural integration of entrepreneurship education into African technical colleges remains largely unrealised. Where entrepreneurship content exists in curricula, it is typically confined to a single elective module, assessed through conventional examination, and disconnected from practical enterprise engagement (Masoabi & Alexander, 2021; Kolho, 2024). The absence of a coherent, evidence-based framework for achieving sustainable entrepreneurship integration constitutes the central problem this paper addresses.

Conceptual Clarification

Technical and Vocational Education and Training (TVET)

TVET refers to that aspect of education which leads to the acquisition of practical and applied skills as well as basic scientific knowledge relating to occupations in various sectors of economic and social life. [UNESCO-UNEVOC, 2022]. It includes formal, non-formal and informal learning for the world of work. In Africa, TVET is delivered mainly through technical colleges, polytechnics and vocational centers.

Entrepreneurship Education

Entrepreneurship education is the process of providing individuals with the ability to recognize commercial opportunities, self-esteem, knowledge, and skills to act on them [European Commission, 2021]. It involves teaching business planning, financial literacy, marketing, risk management, innovation, and the mindset to create and run a business.

Technical Colleges

Technical colleges are post-secondary institutions that provide practical, skill-based training to specific trades and vocations such as welding, electrical work, carpentry, fashion design, and ICT.(UNESCO-UNEVOC, 2022). In Africa, technical colleges are the primary institutions for middle-level manpower development. They are expected to produce graduates who can directly enter the workforce or establish small-scale enterprises. However, many are underfunded and focus only on technical skills. Technical colleges are better for skill acquisition + workforce preparation.

Job Creation

Job creation refers to the process through which individuals or organizations generate employment opportunities for themselves and for others. In the context of TVET, it means producing graduates who can become employers rather than job seekers [World Bank, 2022].

Africa

Africa is the world's second-largest continent with 54 countries and the youngest population globally, with over 60% under age 25 (AfDB, 2023). Africa faces a "youth bulge" but also the highest youth unemployment rate globally. The continent relies heavily on SMEs for employment, making entrepreneurship critical. TVET in Africa is often faced with challenges of outdated curriculum, poor funding, and negative societal perception. Africa has demographic dividend with high unemployment rate and informal economy dominance.

Curriculum Integration

Curriculum integration is the deliberate process of combining two or more subject areas or competencies into a single teaching and learning framework (Burke, J., & Lehane, L.,2023). In the Context of this paper, it refers to the embedding of entrepreneurship education modules, business planning, financial literacy, and innovation skills into the existing technical and vocational curriculum of technical colleges. The goal is to produce graduates with dual competence - technical proficiency and business/managerial skills.
Example: A welding student also learns costing, marketing, and how to register a welding business.

Youth Unemployment

Youth unemployment refers to the situation where young people aged 15-35 who are willing and able to work cannot find decent and sustainable employment (ILO, 2023). In Context of Africa:
Africa's youth unemployment rate exceeds 30% in many countries. This is driven by a mismatch between skills taught in schools and skills demanded by the labor market. TVET graduates are often job-ready technically but lack the skills to create their own jobs. This results to: Poverty, migration, crime, and underutilization of Africa's demographic dividend. High youth unemployment in Africa is worsened because technical colleges produce only skilled workers and not job creators.

Repositioning

Repositioning in this context means restructuring, rebranding and refocusing TVET to make it relevant, attractive, and responsive to current economic and labor market needs in Africa.

Theoretical Framework

Three complementary theoretical frameworks undergird the writing of this p**aper. Each** addresses a distinct dimension of the TVET-entrepreneurship education nexus, and together they constitute an integrated conceptual foundation for the paper's arguments and recommendations.

Human Capital Theory and TVET Investment

Human Capital Theory of Becker, 1964 holds that investment in education and training enhances the productive capacities of individuals, yielding both private returns and social returns in the form of increased national productivity and growth. Psacharopoulos and Patrinos (2018), in a globally influential meta-analysis of returns to schooling published in Applied Economics, reaffirmed that the average global private return to an additional year of schooling is approximately 9 per cent, with higher returns observed in lower-income countries, making education investment particularly significant in the African context. Applied to TVET, this theory supports a fundamental argument: if TVET investment is to yield optimal human capital returns in African economies where formal sector employment is structurally insufficient, the competencies developed must equip graduates not merely to sell their labour but to organise it productively through enterprise creation. The persistent failure of African TVET to produce high rates of graduate self-employment represents not only a pedagogical failure but a human capital investment failure at continental scale, a systemic misallocation of educational resources that demands structural corrective action. The implication of Human Capital Theory is direct: TVET curricula must be redesigned to maximise entrepreneurial productive capacity as the primary measure of educational return. Human capital theory stipulates that: Education + Skills = Productivity + Economic Growth.

Experiential Learning in Entrepreneurship Education

The theory was propounded by David A. Kolb in 1984. The centrality of experiential learning to effective entrepreneurship education has been established through systematic evidence review. Motta and Galina (2023), in a comprehensive systematic literature review published in Teaching and Teacher Education, examined the application and evaluation of experiential learning across entrepreneurship education contexts globally. Their review confirmed that experiential learning in which students learn by doing through concrete experience, reflection, conceptualisation, and active experimentation produces positive and significant impacts on entrepreneurial intention and the development of entrepreneurial skills and competencies. Critically, their findings showed that despite this strong evidence base, didactic lectures remain the dominant instructional method in most entrepreneurship education contexts, directly mirroring the African TVET pattern identified by Masoabi and Alexander (2021) and Kolho (2024). The implication for African TVET is unambiguous: entrepreneurial competency cannot be developed through the reception of business knowledge alone. It requires situated experience of identifying opportunities, mobilising resources, managing uncertainty, and iterating through failure and reflection. TVET institutions must move beyond classroom instruction toward enterprise simulation exercises, community enterprise projects, incubation programmes, and

structured industry engagement. Kolho (2024), writing in the International Journal of Training and Development, confirmed that in TVET contexts, collaborative and project-based learning alongside digital tools are the most effective methods for developing entrepreneurial skills, while teacher-led classroom discussion of entrepreneurship as a concept produces minimal competency gains.

Entrepreneurial Ecosystems in the African Context

The Entrepreneurial Ecosystems Framework has been increasingly applied to the African context, with important adaptations from its original formulation in high-income settings. Danquah et al. (2023), in a chapter published in Corporate Sustainability in Africa (Palgrave Macmillan), reviewed entrepreneurial ecosystem dynamics across Africa and identified that the continent's entrepreneurial ecosystems include crowdsourcing, support networks, industry dynamics, finance, culture, human capital, market access, and policy as key domains, extending the standard six-domain model to better reflect African realities including informality, necessity-driven entrepreneurship, and alternative finance mechanisms. Applied to African TVET, this framework draws critical attention to the extra-curricular and extra-institutional conditions necessary for entrepreneurship education to translate into actual enterprise creation. A TVET graduate equipped with entrepreneurial competencies still requires access to start-up finance, navigable business registration processes, enterprise mentorship networks, and fair market conditions to realise enterprise aspirations. This systemic insight demands that TVET reform be conceived not merely as a curricular project but as a whole-of-ecosystem intervention involving simultaneous action on policy, finance, culture, institutional support, human capital development, and market access. People who believe they can start a business are more likely to do it, teaching entrepreneurship builds graduate confidence to create jobs.

Review of Related Literature

The scholarly literature on TVET and entrepreneurship education in Africa and comparable developing country contexts has grown substantially over the past decade. This section reviews key contributions that directly inform the present paper. Masoabi and Alexander (2021), publishing in the Journal of Entrepreneurship Education, provided one of the most direct empirical contributions on entrepreneurship education in African TVET, examining its absence in South African TVET engineering studies. Their review found that while European and Asian TVET systems actively promote entrepreneurship education, South Africa's engineering curriculum had not incorporated it into course design. They concluded that its systematic integration was essential for addressing graduate unemployment and recommended it as a structural curricular reform priority.

Alamineh (2022), publishing in the Journal of Small Business and Enterprise Development, offered the strongest quantitative evidence on the impact of entrepreneurship education within TVET in an African context. Regression analysis of TVET college students in Ethiopia's Gurage Zone demonstrated that entrepreneurship education explained 61.4 per cent of the variance in entrepreneurial intentions, confirming it as the primary determinant of graduate enterprise orientation. This finding carries direct policy implications: investment in entrepreneurship education quality within TVET yields measurable improvements in the probability of graduate enterprise formation. Ncube (2024), extending the South African evidence base, reviewed the impact of entrepreneurship education on entrepreneurial competencies among students in South African TVET colleges and confirmed positive effects across multiple domains including opportunity recognition, risk management, and financial literacy. His findings aligned with Motta and Galina's (2023) systematic review in demonstrating that the pedagogical mode of delivery specifically, experiential and project-based approaches is the primary determinant of competency development outcomes.

Kolho (2024), writing in the International Journal of Training and Development, developed a conceptual model for the TVET entrepreneurship subject teacher, identifying that effective entrepreneurship instruction in vocational contexts requires teachers who themselves possess entrepreneurial experience alongside pedagogical competency. This finding directly confirms the instructor capacity challenge identified by IIEP-UNESCO Dakar (2022) as the primary bottleneck in African TVET curriculum reform.

The IIEP-UNESCO Dakar (2022) study on digital transformation of TVET across Madagascar, Nigeria, Rwanda, Tunisia, and Chad provided critical system-level evidence on structural constraints affecting TVET curriculum reform. Instructor professional development, governance frameworks, and private sector engagement were consistently identified as critical enablers across all five national contexts. The ILO's (2024) Global Employment Trends for Youth provided the authoritative current quantitative context, confirming that over 76 per cent of young workers in sub-Saharan Africa are informally employed, underscoring both the scale of self-organised economic activity already characteristic of African youth and the inadequacy of formal institutional support for that activity.

Muchira et al. (2023), publishing in the Journal of Adult and Continuing Education, assessed TVET institutions' curriculum in Kenya and found that inadequate resources, lack of modern equipment, and minimal adoption of practical curriculum components were primary barriers to skill acquisition and youth employment. This confirmed that the curricular and resource deficits affecting TVET entrepreneurship integration are structural rather than incidental, requiring systemic rather than incremental responses.

Collectively, this literature converges on a clear finding: entrepreneurship education within TVET can demonstrably improve graduate entrepreneurial competencies, intentions, and enterprise formation rates, but its impact is contingent upon pedagogical quality, institutional and ecosystem context, and the presence of enabling financial and regulatory infrastructure. The present paper synthesises these findings within an integrated theoretical framework and translates them into actionable recommendations.

Current State of TVET and Entrepreneurship Education in Africa

African TVET systems exhibit significant heterogeneity across national contexts, but certain systemic pathologies recur with remarkable consistency. Masoabi and Alexander (2021) confirmed that South African TVET engineering programmes had not incorporated entrepreneurship into course design despite global evidence of its importance. This pattern is broadly representative of the continental situation, where entrepreneurship is present at, all appears as an isolated elective disconnected from students' vocational identity. UNESCO's (2022) TVET Strategy explicitly identifies this curricular disconnect as a principal barrier to TVET's contribution to SDG 4 and SDG 8.

The instructional workforce presents a structural constraint of particular severity. Kolho (2024) identified that TVET entrepreneurship teachers must combine entrepreneurial experience with pedagogical competency — a combination that is structurally rare among Africa's TVET instructor workforce, who predominantly possess deep craft expertise but limited commercial entrepreneurial experience. The IIEP-UNESCO Dakar (2022) assessment confirmed this as the single most critical bottleneck in TVET curriculum modernisation across all five countries studied, a finding with direct implications for the reform agenda.

Industry-institution partnerships, which are indispensable conduits for embedding enterprise culture within TVET, remain weak and episodic. UNESCO's (2022) identification of private sector engagement as one of its four TVET strategy priorities reflects the severity of this gap. Muchira et al. (2023) found in the Kenyan context that minimal industry linkage was a primary barrier to effective TVET skill development, confirming that this structural weakness is not merely institutional but systemic, requiring policy intervention to correct. Funding deficits compound all other structural weaknesses, with TVET participation rates remaining below 10 per cent of the youth cohort across sub-Saharan Africa (ILO, 2024), reflecting inadequate institutional capacity to absorb the scale of demand that Africa's youth demographic presents.

The colonial legacy of African TVET systems was designed to produce technically compliant labour rather than entrepreneurially oriented graduates which continues to shape institutional cultures and curricular assumptions, as documented across a substantial body of comparative TVET literature (Masoabi & Alexander, 2021; Muchira et al., 2023). Post-independence reforms have introduced rhetorical commitments to entrepreneurship integration without the structural investment necessary to make them pedagogical reality in classrooms.

Curriculum Integration of Entrepreneurship Education

Effective integration requires a coherent, multi-layered curricular architecture operating across three complementary dimensions.

Entrepreneurship as a Transversal Competency

The most transformative approach embeds entrepreneurial competencies - creativity, critical thinking, risk assessment, financial literacy, communication, and opportunity recognition as transversal outcomes infused across all vocational subjects. Under this model, an electrical installation student learns not only circuit design but also cost estimation, client relationship management, tendering, and enterprise registration. A garment technology student masters tailoring craftsmanship alongside brand development, pricing strategy, and digital marketing. Ncube (2024) confirmed this integrative approach as the characteristic of TVET programmes producing the strongest entrepreneurial competency outcomes. Motta and Galina (2023) further established that this integration must be accompanied by structured experiential activities, not merely the infusion of enterprise content into existing didactic delivery to achieve meaningful competency development.

Enterprise Education as a Progressive Curriculum Strand

In parallel with transversal infusion, a dedicated enterprise education strand should be incorporated within the formal TVET curriculum as a progressive sequence: enterprise awareness and

ideation in Year One; business planning, financial management, and regulatory literacy in Year Two; and live enterprise projects and market-entry simulations in Year Three. Assessment must prioritise portfolio-based evaluation, requiring students to develop and defend viable business plans before panels that include industry mentors and financial sector representatives. Alamineh's (2022) finding that the practical, applied dimensions of entrepreneurship teaching were the primary drivers of entrepreneurial intention strongly supports this portfolio-and-project-based assessment approach over conventional examination.

Enterprise Activity as Co-curricular Requirement

Beyond formal curriculum, structured co-curricular enterprise programmes - student business clubs, innovation fairs, incubation labs, and mentorship linkages with SME operators, provide students with social capital, role-model exposure, and practical experimentation spaces that classroom learning cannot replicate. Danquah et al. (2023) emphasised that within African entrepreneurial ecosystems, support networks and cultural role models are particularly critical ecosystem components given the relative weakness of formal institutional enterprise support. The co-curricular dimension of TVET entrepreneurship education is therefore not supplementary but essential to ecosystem-consistent programme design.

Pedagogical Transformation for Entrepreneurship-Enriched TVET

The effectiveness of entrepreneurship education integration is fundamentally contingent upon the pedagogical approaches deployed by TVET instructors. Motta and Galina (2023) confirmed through systematic review that despite strong evidence supporting experiential approaches, didactic lectures remain dominant in most entrepreneurship education contexts. In the African TVET setting, where instructor-centred, examination-driven pedagogy is entrenched, this challenge is particularly acute.

Kolho (2024) identified that effective TVET entrepreneurship instruction requires teachers who use collaborative and project-based learning alongside digital tools, pedagogical modalities that demand both enterprise knowledge and facilitative teaching skills rather than content transmission competency. Transforming TVET pedagogy for entrepreneurship integration consequently requires investment in four dimensions. First, instructor retraining programmes must provide TVET teachers with both enterprise knowledge and experience, including industry placements, mentorship by practitioners, and structured professional development in enterprise pedagogy. IIEP-UNESCO Dakar (2022) identified this as the most critical reform bottleneck across all five African countries studied.

Second, problem-based and project-based learning must become primary pedagogical modalities, requiring students to diagnose real community economic problems and design enterprise responses. Third, digital and financial literacy must be integrated into pedagogical resources, equipping students with competencies in digital commerce, mobile banking, and business registration. Fourth, assessment reform must shift from recall-based testing to competency demonstration through enterprise plan development, pitch presentations, and prototype creation, consistent with the evidence on effective entrepreneurship assessment (Motta & Galina, 2023).

Institutional Governance and Policy Frameworks

TVET repositioning requires fundamental institutional governance reform alongside curricular and pedagogical innovation. African technical colleges must transition from bureaucratically governed, supply-driven institutions toward market-responsive, stakeholder-inclusive organisations governed by diverse boards encompassing private sector operators, graduate entrepreneurs, community organisations, and financial institutions. At the national level, African governments must enact TVET legislation that explicitly mandates entrepreneurship education as a non-negotiable curricular requirement, establishes minimum delivery standards, and creates dedicated funding streams for instructor development, enterprise infrastructure, and incubation programme support. UNESCO (2022) identifies policy and governance reform as a critical enabling condition, noting that without legislative mandate and political will, curricular innovation remains aspirational rather than institutionally embedded. Regional policy harmonisation through ECOWAS, EAC, and SADC frameworks is a complementary imperative, enabling TVET credential portability and ecosystem coherence that the African Continental Free Trade Area (AfCFTA) framework demands. Muchira et al. (2023) demonstrated in the Kenyan context that national quality frameworks, when properly implemented and enforced, provide the governance architecture within which entrepreneurship education integration can be mandated and monitored at the institutional level. Nigeria presents a cautionary counterexample: rhetorical commitments within national TVET policy have not translated into consistent institutional implementation, owing to weak enforcement and chronic resource shortfalls.

Inter-Sectoral Collaboration and Ecosystem Development

Sustainable entrepreneurship education integration cannot be achieved through institutional action alone. Consistent with Danquah et al.'s (2023) adapted ecosystem framework for Africa, it requires the cultivation of enterprise ecosystems connecting technical colleges with private sector enterprises, financial institutions, civil society organisations, and government agencies within coherent partnership frameworks.

Industry partnerships should encompass collaborative curriculum development, structured apprenticeship provision, enterprise mentorship, and joint participation in TVET governance. Financial sector partnerships should create accessible micro-enterprise credit schemes for TVET graduates, with simplified collateral requirements and graduated repayment schedules, directly addressing the finance domain identified by Danquah et al. (2023) as a critical but chronically underdeveloped element of African entrepreneurial ecosystems. Civil society and development partner organisations should provide complementary business development services and peer enterprise networks.

Rwanda, Kenya, and Ethiopia illustrate the ecosystem-building imperative at different levels of development. Kenya's TVET Authority quality framework, as documented by Muchira et al. (2023), provides an example of governance-led ecosystem development that has begun to improve TVET-industry alignment. Ethiopia's enterprise-oriented TVET reforms, evidenced by Alamineh's (2022) findings on the impact of entrepreneurship education in Gurage Zone colleges, demonstrate that even in resource-constrained contexts, targeted investment in entrepreneurship education quality produces measurable improvements in graduate enterprise orientation.

Challenges to Effective Integration

Despite compelling theoretical and empirical support, several formidable structural and contextual challenges impede entrepreneurship education integration across the African TVET context. Understanding these challenges is essential to designing reform strategies with realistic prospects of success.

1. Funding deficits: TVET institutions are chronically underfunded relative to their mandate. Muchira et al. (2023) identified inadequate resources and lack of modern equipment as primary barriers to effective TVET delivery in Kenya - a finding generalisable across the continent and directly constraining the enterprise incubation facilities and industry linkage programmes that effective entrepreneurship education demands.
2. Instructor capability gaps: Kolho (2024) demonstrated that effective TVET entrepreneurship teaching requires a combination of entrepreneurial experience and facilitative pedagogical competency that is structurally rare among Africa's TVET instructor workforce. IIEP-UNESCO Dakar (2022) confirmed this as the most critical reform bottleneck across all five African countries studied.
3. Curriculum overload and rigidity: Prescriptive national curricula with limited institutional flexibility impede the incorporation of entrepreneurship education as a transversal competency, frequently reducing it to a marginalised add-on with insufficient credit hours and minimal enterprise engagement components.
4. Weak industry linkages: Muchira et al. (2023) documented the severe impact of minimal industry linkage on TVET skill development quality in Kenya. Masoabi and Alexander (2021) attributed the absence of entrepreneurship from South African TVET engineering curricula partly to the disengagement of industry from curriculum governance, a pattern broadly representative of the continental situation.
5. Socio-cultural barriers: Social prestige hierarchies that privilege white-collar employment over entrepreneurial self-employment undermine the motivational orientation necessary for entrepreneurship education to take root. Danquah et al. (2023) identified culture as one of the critical ecosystem domains in Africa, noting that entrepreneurial culture remains underdeveloped relative to enterprise ecosystem needs in many African contexts.
6. Gender inequalities: ILO (2024) data confirm that 46.3 per cent of young women in sub-Saharan Africa were NEET in 2023, more than twice the rate for young men, reflecting compounded structural disadvantages that entrepreneurship education must address with deliberate, gender-responsive design.
7. Monitoring and evaluation deficits: Few African technical colleges have established graduate tracking and tracer study systems, limiting the evidence base for iterative programme improvement and policy advocacy. This deficit perpetuates the underfunding cycle by preventing institutions from demonstrating return on investment in entrepreneurship education (UNESCO, 2022).

Implications of the Study

This paper carries important theoretical, policy, and practical implications for TVET reform in Africa. At the theoretical level, the paper demonstrates that the repositioning of TVET for job creation is best understood through an integrated multi-framework lens. Human Capital Theory (Psacharopoulos & Patrinos, 2018) explains the investment rationale but does not specify how to design effective entrepreneurship education. The Experiential Learning framework (Motta & Galina, 2023) specifies pedagogical design principles but does not address the systemic conditions necessary for enterprise formation beyond the institution. The Entrepreneurial Ecosystems Framework as contextualised for Africa (Danquah et al., 2023) addresses the systemic level but does not specify the human capital investment logic or pedagogical modalities that must underpin enterprise education within TVET. The three frameworks together constitute a more complete and actionable theoretical architecture than any single framework provides alone.

At the policy level, the paper's implications are direct. Alamineh's (2022) finding that entrepreneurship education explains over 61 per cent of the variance in TVET students' entrepreneurial intentions provides policymakers with a robust evidence base for prioritising entrepreneurship education integration. The identification by IIEP-UNESCO Dakar (2022) of instructor capacity development as the most critical bottleneck directs policy attention toward professional development investment as the highest-leverage entry point for action. The severe gender disparity confirmed by ILO (2024) with 46.3 per cent of young women NEET implies that gender-responsive entrepreneurship education design is not optional but essential for any reform agenda with inclusive economic transformation as its goal.

At the practical institutional level, the paper implies that meaningful TVET entrepreneurship integration requires a minimum ecosystem of complementary institutional changes operating concurrently: curriculum reform, pedagogical transformation, instructor development, co-curricular enterprise programming, industry partnership development, and graduate tracking systems must be implemented together rather than sequentially. Piecemeal reform the addition of a business module to an otherwise unreformed programme is unlikely to produce the systemic graduate outcome improvements that Africa's labour market crisis demands. Danquah et al.'s (2023) adapted ecosystem framework provides the most useful organising logic for institutional leaders: every ecosystem domain must receive deliberate attention and resource allocation if integration is to achieve transformative rather than cosmetic impact.

Conclusion

The monitoring and evaluation gap identified in this paper deserves special attention. UNESCO (2022) notes that without robust data on TVET graduate outcomes, institutions cannot demonstrate return on investment in entrepreneurship programmes, policymakers cannot allocate resources effectively, and the underfunding cycle perpetuates itself. The establishment of national tracer study systems for TVET graduates is therefore not a bureaucratic nicety but a foundational condition for the sustained political and financial commitment that TVET entrepreneurship integration requires. Countries that have established such systems 2014 including Kenya through TVETA and Rwanda through its TVET authority 2014 have created the evidence infrastructure necessary to drive iterative improvement in programme quality and to make credible public cases for increased investment. Those without such systems are trapped in a cycle where the absence of evidence enables the perpetuation of underfunding and curricular inertia.

Africa's youth employment crisis demands a fundamental repositioning of TVET from a system that trains graduates for jobs that do not exist in sufficient quantities to one that equips graduates to create the jobs that their communities and economies urgently need. The integration of entrepreneurship education into African technical colleges is not a peripheral programme enhancement but a structural transformation of purpose, process, and outcome that addresses the root cause of the persistent gap between TVET's considerable investments and its insufficient productive returns. This paper has demonstrated, drawing on confirmed empirical evidence from South Africa (Masoabi & Alexander, 2021; Ncube, 2024), Ethiopia (Alamineh, 2022), Kenya (Muchira et al., 2023), and continental and global assessments (ILO, 2024; IIEP-UNESCO Dakar, 2022; UNESCO, 2022; Motta & Galina, 2023; Kolho, 2024; Danquah et al., 2023; Psacharopoulos & Patrinos, 2018), that such transformation is both theoretically rigorous and practically achievable. It requires, however, that African governments, technical college leaders, curriculum planners, industry partners, and development organisations transcend rhetorical commitment and invest in the deliberate, sustained, and adequately resourced actions necessary to embed entrepreneurial competencies, mindsets, and ecosystem supports as core dimensions of the TVET enterprise.

The ILO's (2024) confirmation that sub-Saharan Africa's youth NEET rate stood at 20.4 per cent in 2023, with young women excluded at a rate of 46.3 per cent, represents not merely a statistical finding but a moral imperative for structural action. Repositioning TVET for job creation through

entrepreneurship education integration is, consequently, one of the most consequential investments that Africa's educational policymakers, institutional leaders, and development partners can make in the twenty-first century. The time for aspirational commitment has passed; the time for systemic, evidence-grounded, and adequately resourced action is now.

Recommendations

For African Governments and Ministries of Education

1. Enact or revise national TVET legislation to mandate the systematic integration of entrepreneurship education as a core curriculum requirement across all technical college programmes, with defined minimum standards and regulatory enforcement mechanisms.
2. Significantly increase budget allocations for TVET, ensuring dedicated funding streams for enterprise education infrastructure, instructor professional development, and post-graduation enterprise support including micro-credit access and business development services.
3. Harmonise TVET entrepreneurship standards within ECOWAS, EAC, and SADC frameworks to enable credential portability and cross-border enterprise mobility, consistent with the AfCFTA framework.
4. Establish national TVET graduate tracking and tracer study systems to generate robust longitudinal evidence on enterprise formation and employment outcomes, addressing the monitoring deficit documented by UNESCO (2022).

For Technical Colleges and Institutional Leaders

1. Develop and implement comprehensive entrepreneurship education integration plans embedding enterprise competencies as transversal outcomes across all technical training programmes, supported by dedicated enterprise curriculum strands and co-curricular enterprise activity requirements.
2. Invest systematically in instructor professional development through industry placements, enterprise mentorship, and structured capacity building in experiential entrepreneurship pedagogy (Kolho, 2024; IIEP-UNESCO Dakar, 2022), addressing the most critical bottleneck to effective entrepreneurship education delivery.
3. Establish enterprise incubation centres within technical college campuses, aligned with Danquah et al.'s (2023) African ecosystem model, providing students and graduates with business development support, mentorship, networking, and access to seed financing.
4. Institutionalise gender-responsive entrepreneurship education strategies including tailored mentorship, women-only enterprise incubation tracks, and gender-sensitive assessment practices, responding to the ILO's (2024) evidence of severe female NEET disadvantage.

For Curriculum Planners and TVET Authorities

1. Adopt competency-based entrepreneurship education frameworks grounded in experiential learning evidence (Motta & Galina, 2023), privileging project-based and portfolio-assessed learning over didactic, examination-centred approaches.
2. Develop open-access, contextually relevant entrepreneurship education instructional materials tailored to African market conditions, languages, and socio-economic realities, ensuring accessibility to under-resourced institutions.
3. Establish national instructor certification standards for entrepreneurship education delivery within TVET, requiring demonstrated entrepreneurial experience alongside pedagogical competency, as recommended by Kolho (2024).

For Development Partners and International Organisations

1. Prioritise funding for TVET entrepreneurship ecosystem-building programmes within technical assistance and development finance portfolios, focusing on long-term institutional capacity development alongside infrastructure investment.
2. Support documentation and cross-country dissemination of successful models from Rwanda, Kenya, Ethiopia, and South Africa to facilitate evidence-informed policy adaptation across the continent.
3. Invest in longitudinal research on TVET entrepreneurship education outcomes across diverse African contexts to build the continental evidence base necessary for sustained political commitment and resource allocation.

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ENTREPRENEURSHIP EDUCATION, DIGITAL INNOVATION AND YOUR EMPOWERMENT FOR SUSTAINABLE ECONOMIC DEVELOPMENT

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Abstract
The increasing rate of youth unemployment, technological disruption, as well as the revolving patterns of work has intensified the need for educational approaches that prepare young people not only to seek employment but also to create sustainable economic opportunities. Entrepreneurship education provides young people with competencies for opportunity recognition, creativity, innovation, risk management, problem-solving, and venture development, while digital innovation provides the technological means through which these competencies can be transformed into scalable products, services, and business models. This paper examines the role of entrepreneurship education and digital innovation in promoting youth empowerment for sustainable economic development, with particular reference to Nigeria. The paper argues that conventional entrepreneurship education, when dominated by theoretical instruction, is insufficient for the requirements of the digital economy. Contemporary entrepreneurship education should integrate digital marketing, e-commerce, financial technology, data analytics, artificial intelligence, social media management, digital product development, and innovation-oriented problem solving. Evidence from Nigerian higher education indicates that entrepreneurship education is associated with the development of several entrepreneurial competencies, although important competencies are not automatically developed through compulsory entrepreneurship courses. Similarly, recent literature on digital entrepreneurship education indicates that digital technologies are transforming entrepreneurial processes and requiring new approaches to entrepreneurship pedagogy. The paper proposes an integrated framework linking entrepreneurship education, digital innovation competencies, youth empowerment, startup creation, employment generation, and sustainable economic development. It recommends experiential and project-based learning, stronger industry–institution partnerships, digital innovation hubs, mentorship, access to finance and technology, curriculum reform, and inclusive digital entrepreneurship policies.
Keywords: Entrepreneurship Education, Digital Innovation, Youth Empowerment, Digital Entrepreneurship, Sustainable Economic Development

Introduction
The global economy is undergoing a major transformation as digital technologies reshape production, commerce, communication, employment, and entrepreneurship. Technologies such as artificial intelligence, cloud computing, mobile applications, social media, e-commerce platforms, financial technologies, big data, and digital payment systems have created new opportunities for individuals and businesses. At the same time, technological transformation has changed the nature of the skills required to participate effectively in the labour market. For young people, these developments present both opportunities and challenges. Digital technologies can reduce problems to market entry and enable young entrepreneurs to establish businesses, access customers, receive payments, advertise products, and collaborate across geographical boundaries. However, access to technology alone does not guarantee economic empowerment. Youth still need appropriate knowledge, entrepreneurial competencies, digital skills, access to infrastructure, finance, mentorship, and supportive institutional environments.

This situation makes entrepreneurship education increasingly important. Entrepreneurship education is traditionally concerned with developing the knowledge, skills, attitudes, and competencies necessary to identify opportunities and create value. However, entrepreneurship itself is changing because opportunities are increasingly identified, developed, marketed, and commercialised through digital technologies. Sitaridis and Kitsios (2024) observe that advances in digital technologies and the digitalisation of business models are redefining entrepreneurship and consequently changing the knowledge and skills required from entrepreneurship education.

Nigeria has a particularly strong reason to pay attention to this development. The country has a large and youthful population, while its labour market continues to experience challenges associated with unemployment, underemployment, skills mismatch, and limited opportunities for decent work. The World Bank identifies digital skills and digital entrepreneurship among the foundational pillars required for the development of Nigeria's digital economy (World Bank, 2019).

The central position of this paper is therefore that entrepreneurship education should be transformed from predominantly theoretical business instruction into an innovation-oriented and digitally enabled learning system which can prepare young people to create sustainable economic value.

Concept of Entrepreneurship Education

Entrepreneurship education refers to educational processes designed to develop the knowledge, competencies, attitudes, and capabilities required to identify opportunities, create value, establish ventures, and manage entrepreneurial activities. Entrepreneurship education extends beyond teaching students how to write business plans or establish companies. Effective entrepreneurship education should develop opportunity recognition, creativity, innovation, problem-solving, communication, networking, financial literacy, resilience, self-efficacy, and the ability to mobilise resources. The importance of these competencies is demonstrated by Okolie et al. (2021), who investigated 1,191 final-year students from 12 Nigerian public universities. Their findings showed that participation in entrepreneurship education was positively associated with five entrepreneurial competencies: opportunity recognition, opportunity assessment, creative problem-solving, self-efficacy, and building and using networks. However, the study did not find evidence that participation in entrepreneurship education positively developed eight other competencies, including risk management, resource leveraging, resilience, and value creation through innovation.

This study has a significant implication: the mere presence of entrepreneurship education in the curriculum does not necessarily guarantee entrepreneurial competence. The content, pedagogy, learning environment, industry exposure, and practical experiences provided to learners are equally important.

Consequently, entrepreneurship education should move from a predominantly classroom-based model towards experiential learning in which students identify real problems, develop solutions, test ideas, interact with customers, use digital tools, and learn from entrepreneurial practices.

Digital Innovation and Entrepreneurship

Digital innovation is the process of introducing into entrepreneurship new technologies to introduce or bring new development into the business. It also refers to the development or application of digital technologies to create new or significantly improved products, services, processes, business models, or methods of delivering value. Digital innovation has fundamentally altered entrepreneurship. In traditional entrepreneurship, establishing a business may require significant physical infrastructure, substantial capital, and access to conventional distribution channels. Digital entrepreneurship can reduce some of these challenges by enabling entrepreneurs to use online platforms, mobile technologies, cloud services, digital payment systems, social media, and e-commerce platforms. Ediagbonya, Bupo and Edionwe (2024) investigated digital entrepreneurship education and entrepreneurial self-efficacy as predictors of digital entrepreneurial intention among Business Education students in Edo State. Their results showed that digital entrepreneurship education significantly predicted students' digital entrepreneurial intention, while entrepreneurial self-efficacy also had a significant influence. . Zubair, Olawepo and Adegbenjo (2026) examined entrepreneurship education and digital skills acquisition in selected federal tertiary institutions in Osun State. Their findings revealed a substantial positive association between entrepreneurship education and digital skills, although curriculum gaps, inadequate infrastructure and insufficient lecturer training constrained the development of digital competencies.

Kraus et al. (2019) explain that digitalisation has contributed to the emergence of new business models and has created a research agenda around digital entrepreneurship. Digital technologies are not simply tools added to existing businesses; in many cases, they form the basis of entirely new products, services, markets, and business models. The relationship between entrepreneurship education and digital innovation is therefore increasingly important. Sitaridis and Kitsios (2024), in their review of the literature, identified digital entrepreneurship education as an emerging field and argued that the rapid development of digital entrepreneurship has outpaced the development of appropriate educational approaches and instructional designs. This suggests that entrepreneurship education needs to develop alongside technological change.

Entrepreneurship Education as a Mechanism for Youth Empowerment

Youth empowerment means the process in which young people are exposed to skills, knowledge, opportunities, etc that makes them have input in the development of the social economic of a particular society. It is also the process through which young people acquire the knowledge, skills, resources, confidence, opportunities, and agency necessary to participate meaningfully in economic and social development. Entrepreneurship education can empower young people in several ways. Some of which are;

Development of entrepreneurial competencies: Entrepreneurship education develops competencies such as creativity, opportunity recognition, problem-solving, risk assessment, communication, networking, and decision-making. These competencies can help young people become proactive rather than relying exclusively on formal employment. Okolie et al. (2021) provide Nigerian evidence that entrepreneurship education can contribute to the development of opportunity recognition, opportunity assessment, creative problem-solving, self-efficacy, and networking competencies.

Promotion of self-employment: Entrepreneurship education can encourage young people to consider self-employment and business creation as legitimate career pathways. Rather than viewing employment only as something obtained from existing organisations, young people can be equipped to become creators of economic value.

Development of self-efficacy: Young people are more likely to undertake entrepreneurial activities when they believe that they possess the capabilities required to perform them successfully. Entrepreneurship education can strengthen such confidence through practical experiences, mentoring, simulations, competitions, and successful entrepreneurial role models.

Access to economic opportunities: Digital entrepreneurship enables young people to participate in markets without being restricted entirely by geographical boundaries. A young person can provide digital services, operate an online retail business, develop applications, conduct digital marketing, create online educational products, or participate in digital freelancing.

Development of social and economic agency: Youth empowerment should not be reduced to employment alone. Entrepreneurship education can enable young people to become problem-solvers who identify community challenges and develop innovative solutions.

Digital Skills Required for Youth Entrepreneurship

The digital economy requires entrepreneurship education to incorporate practical digital competencies. These important competencies include:

Digital marketing: Young entrepreneurs need to understand social media marketing, content creation, online advertising, search engine optimisation, customer engagement, and digital branding.

E-commerce: Young people should be able to establish and manage online stores, display products, process electronic orders, communicate with customers, and manage digital transactions.

Financial technology literacy: Entrepreneurs increasingly need to understand electronic payments, mobile banking, digital financial records, payment gateways, and other financial technologies.

Data analytics: Business decisions increasingly depend on information generated from customers, sales, markets, and digital platforms. Young entrepreneurs therefore require basic abilities to collect, interpret, and use business data.

Artificial intelligence: AI is increasingly relevant to business research, content development, customer service, marketing, product development, data analysis, and automation. Entrepreneurship education should therefore introduce young people to responsible and productive applications of AI.

Digital product development : Young people should be encouraged to use digital technologies to develop applications, platforms, online services, digital content, and other technology-enabled solutions.

Cyber security and digital ethics: Digital entrepreneurship also creates risks involving fraud, privacy, intellectual property, cyber security, misinformation, and irresponsible use of technology. Digital entrepreneurship education must therefore incorporate ethical and responsible technology use.

The World Bank's recent assessment of digital skills in Nigeria highlights the importance of improving the country's digital skills ecosystem and the role of educational institutions in developing digital capabilities (De Simone & Manolio, 2024).

Students' Engagement from Entrepreneurship Education to Startup Creation

It is important to ensure that students who undergo entrepreneurial skills acquisition are exposed in innovative way in order to incorporate these new technologies into the practice in the labour market. One of the major weaknesses of conventional entrepreneurship education is the possible gap between learning about entrepreneurship and actually doing entrepreneurship. Students may understand the definition of an entrepreneur, identify sources of finance, prepare a theoretical business plan, and explain marketing concepts without ever launching a business.

This paper therefore advocates a transition of engagement from entrepreneurship education to business startup thus; Entrepreneurship Education → Experiential Learning → Digital Innovation → Opportunity Recognition → Prototype Development → Market Testing → Startup Creation.
Students should be given opportunities to:
Identify real community problems: Every community has a potential challenge facing its growth and development. Students should be given the opportunity to discover some of these challenges and channel it towards entrepreneurial opportunities.
Conduct market research: Students need to identify a problem in the market through the conduct of interviews and engagement in the market place. This would make them provide a possible solution to the identified problems.
Generate innovative solutions: Every identified problem should not be left unattended to. Student can explore all possible opportunities to develop new ways of resolving issues and challenges identified.
Develop digital prototypes: An average entrepreneurship student should be able to develop a digital prototype to be used as a potential entrepreneur which could facilitate their activities.
Create business models: The approach to business execution is important in the business environment especially within a highly competitive business. The students can make available a business model which could be innovative and impressive to triumph in the competitive market.
Build websites or online stores: Through the digital literacy knowledge acquired, web design, and online market platforms could be done by the students which would serve as a meeting point for their online business. Others are; develop digital marketing campaigns, test products with customers; analyse customer feedback; pitch business ideas; seek funding; and launch small-scale ventures. Such an approach would make entrepreneurship education more action-oriented.
Okolie et al. (2021) specifically recommend more practical approaches to entrepreneurship education rather than relying primarily on theoretical approaches.

Digital Innovation and Sustainable Economic Development

Sustainable economic development involves economic growth that creates long-term value while improving livelihoods, employment, inclusion, productivity, and social wellbeing without undermining the ability of future generations to meet their needs. Digital entrepreneurship can contribute to sustainable economic development through several mechanisms which include:
Employment generation: Successful startups can create direct employment for founders and workers while also creating indirect opportunities for suppliers, distributors, service providers, and other businesses.
Productivity improvement: Digital technologies can improve efficiency by reducing transaction costs, automating routine activities, improving communication, and providing better access to information.
Market expansion: Digital platforms enable businesses to reach customers beyond their immediate geographical environment. This can create opportunities for small businesses that previously depended almost entirely on local markets.
Innovation: Digital entrepreneurship can generate new products and services in areas such as education, healthcare, agriculture, transportation, finance, entertainment, and retail.
Financial inclusion: Digital financial services can make it easier for small businesses and young entrepreneurs to participate in formal economic activities.
Inclusive economic participation: Digital entrepreneurship can provide opportunities for individuals who may face barriers to conventional employment, although such benefits depend on access to devices, connectivity, skills, finance, and supportive institutions.
The World Bank (2019) identifies digital infrastructure, digital platforms, digital financial services, digital entrepreneurship, and digital skills as interconnected pillars of Nigeria's digital economy.

Challenges to Entrepreneurship Education and Digital Innovation in Nigeria

Despite its potential to navigate the traditional entrepreneurial process to a technological inclined one, several challenges may limit the effectiveness of entrepreneurship education and digital innovation.
Predominance of theoretical teaching: Entrepreneurship education can become examination-oriented when students are assessed primarily through written examinations rather than practical entrepreneurial activities.
Inadequate digital infrastructure: Limited access to reliable internet connectivity, computers, software, electricity, and other digital infrastructure can restrict students' ability to develop practical digital competencies.
Skills mismatch: The skills taught in educational institutions may not always correspond with those demanded by contemporary businesses. Recent World Bank analysis of Nigerian online job vacancies

demonstrates the importance of aligning education and skills development with changing labour-market demand (World Bank, 2024).

Limited industry participation: Entrepreneurship education becomes less effective when educational institutions operate independently of industry. Students need opportunities to interact with entrepreneurs, technology companies, financial institutions, innovation hubs, and other industry stakeholders.

Limited access to startup finance: Even well-trained young entrepreneurs may be unable to establish businesses because of inadequate access to affordable finance.

Weak mentorship structures: Young entrepreneurs require guidance from experienced entrepreneurs who can provide practical knowledge about customers, finance, marketing, regulation, technology, and business survival.

Digital divide: Digital entrepreneurship cannot be inclusive where substantial groups of young people lack affordable access to devices, connectivity, digital platforms, or appropriate training.

Proposed Framework for Youth Empowerment

This paper proposes a 5 - stage integrated Entrepreneurship Education with Digital Innovation and Youth Empowerment Framework.

Stage 1: Entrepreneurship Education should be towards the development of: opportunity recognition; creativity; problem-solving; business planning; financial literacy; communication; networking; and entrepreneurial mindset.

Stage 2: Digital Innovation Competencies: This should emphasize on: digital marketing; e-commerce; fintech; data analytics; AI; social media; digital product development; and cybersecurity.

Stage 3: Experiential Entrepreneurial Learning: Students should: identify real problems; develop solutions; create prototypes; conduct market research; test products; interact with customers; and pitch business ideas.

Stage 4: Youth Empowerment: The outcomes should include: entrepreneurial self-efficacy; employability; startup creation; self-employment; innovation capability; and income generation.

Stage 5: Sustainable Economic Development: This should be a long term projection that would focus on: job creation; productivity; poverty reduction; innovation; business sustainability; market expansion; and inclusive economic development.

This framework reflects the argument that education alone is insufficient. Education must be connected to digital competence, practical experience, entrepreneurial ecosystems, finance, mentorship, and market opportunities.

Implications on Policies and Educational institutions

Based on the position advanced in this paper, several measures are necessary.

Conclusion

Entrepreneurship education and digital innovation represent powerful mechanisms for youth empowerment and sustainable economic development. However, their potential cannot be realised through conventional classroom instruction alone.

The evidence indicates that entrepreneurship education can contribute to important entrepreneurial competencies, but participation in entrepreneurship courses does not automatically produce every competence required for successful business creation (Okolie et al., 2021). At the same time, digital transformation is generating new entrepreneurial possibilities and changing the knowledge and skills required for entrepreneurship education (Sitaridis & Kitsios, 2024).

Therefore, the central position of this paper is that entrepreneurship education in Nigeria must become digitally enabled, innovation-oriented, experiential, industry-connected, and focused on actual value creation.

Young people should not merely be taught about entrepreneurship; they should be given opportunities to identify problems, create digital solutions, test ideas, build businesses, access markets, generate income, and create employment.

When entrepreneurship education is integrated with digital innovation, supported by appropriate infrastructure, finance, mentorship, industry partnerships, and enabling policies, it can move beyond the production of entrepreneurial intentions toward the creation of sustainable ventures and economic opportunities.

The transformation of entrepreneurship education is therefore not simply an educational reform. It is an important component of Nigeria's broader strategy for youth empowerment, digital transformation, employment creation, innovation, and sustainable economic development.

Suggestions

1. Entrepreneurship education curricula should incorporate digital marketing, e-commerce, FinTech, data analytics, AI applications, digital product development, and innovation management.
2. Institutions should replace excessive theoretical instruction with project-based learning, business simulations, innovation challenges, internships, student enterprises, and startup projects.
3. Higher education institutions should establish digital entrepreneurship laboratories where students can experiment with e-commerce, digital marketing, AI tools, business analytics, and digital product development.
4. Entrepreneurs and industry professionals should participate in curriculum development, mentorship, guest teaching, internships, competitions, and assessment.
5. Universities and Colleges of Education should develop innovation hubs that provide students with workspace, internet access, digital tools, mentorship, business advisory services, and links to investors.
6. Government agencies, financial institutions, development organisations, and private investors should develop accessible financing mechanisms for young entrepreneurs.
7. Special attention should be given to young women, persons with disabilities, rural youth, and other groups that may face barriers to digital participation.
8. Lecturers should receive continuous professional development in digital entrepreneurship, emerging technologies, experiential pedagogy, and contemporary business models.

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EFFECT OF BUSINESS EDUCATION TRAINING ON EMPLOYMENT GENERATION AMONG YOUTH IN ADAMAWA STATE, NIGERIA

By

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Abstract

The primary objective of this study was to determine the effect of business education training on employment generation among youth in Adamawa State, Nigeria. The study had two specific objectives, from which two research questions were raised and two null hypotheses were formulated and tested. The design of the study was a survey design. The population of the study was 1,531 students and lecturers, which were drawn from three tertiary institutions in Adamawa State, Nigeria. A simple random sampling technique was used to determine the sample of 310 for the study. A structured questionnaire of 20 items was used to collect data, and the data collected were analysed using means and standard deviation, while the hypotheses were tested using t-test analysis at the 0.05 level of significance. The major findings of the study include the following: that there is no significant difference between the mean responses of lecturers and students regarding the effect of business education training on employment generation among youth in Adamawa State, Nigeria (the P values of 0.213 > 0.05 and 0.178 > 0.05, respectively). It was concluded that business education training has a significant effect on employment generation among youth in Adamawa State, Nigeria. In line with the findings and conclusion, the study recommended, among others, that business education curriculum should be regularly reviewed to incorporate emerging digital skills and practical entrepreneurial training; this will help in equipping the youth with the requisite competencies to create employment opportunities for themselves and others.
Key Word: Business Education, Employment Generation, Youth, Training, Entrepreneurship.

Introduction

Education remains the most potent instrument for national development, serving as the bedrock upon which the socio-economic and political transformation of any society is built. The Federal Republic of Nigeria (2013) in the National Policy on Education recognised education as an instrument *par excellence* for effecting national development. This is evident in the critical roles played by educated citizens in advancing scientific, social, economic, and political structures that improve individual and family wellbeing and make society a better place to live. In recognition of these values, education today must prepare the child to function effectively as an adult, and this cannot be achieved without adequate means of enhancing teaching and learning with relevant skills and competencies that promote self-reliance and employment generation.

Business education is a specialised field of study that prepares individuals for roles in business and offers them knowledge about business operations and management. According to Okiridu (2017), business education is a tripartite program of instruction that prepares the recipient or the learner to be a teacher, an operator, or to be self-reliant. Modibbo (2026) perceived business education as a practical and technical training programme designed to prepare individuals with the right knowledge, skills, values, and attitudes to thrive in different arrears of life and work. It equips graduates to stand on their own as entrepreneurs, make smart decisions as consumers, and contribute meaningfully as producers of goods and services. This is made possible through training in key areas such as accounting, entrepreneurship, marketing and distributive, and office technology management.

Employment generation has become a critical concern in Nigeria, particularly among the youth population. Youth unemployment in Nigeria has reached alarming proportions, with many graduates of tertiary institutions finding it increasingly difficult to secure gainful employment. Chijoke and Omofowa (2025) noted that entrepreneurship education is an important driver of innovation and economic growth, yet the traditional approach to education often ignores practical application, thus leaving students unprepared for real-world challenges. This situation has necessitated a re-evaluation of the educational system, particularly business education, to ensure that graduates are equipped with the skills needed to create employment opportunities.

Business education training is designed to inculcate entrepreneurial competencies and employability skills that can facilitate employment generation. Abubakar and Pakra (2024) investigated the impact of entrepreneurship education in tertiary institutions on youth unemployment in Adamawa State and found a significant positive impact of entrepreneurship education on addressing youth unemployment. The study further revealed that the development of entrepreneurship skills was crucial for business success and job creation. These findings underscore the potential of business education training in generating employment opportunities.

Bisong et al. (2025) investigated the impact of business education on the development of entrepreneurial competencies among undergraduate students in Edo State. The results revealed that business education significantly enhances entrepreneurial competencies, particularly in opportunity recognition, financial management, and strategic planning. However, notable gaps exist in digital entrepreneurship and practical training. These findings highlight the need for curriculum reforms that integrate experiential learning, digital innovation, and local market linkages.

Nuhu (2023) examined facility utilisation and employability skills of business education students in Adamawa State. The study revealed that business education students at selected tertiary institutions in Adamawa State rarely used instructional facilities for learning, and concluded that graduates of business education may acquire inadequate employability skills as a result of inefficient use of instructional facilities. This finding suggests that the quality of business education training may be compromised by inadequate utilisation of available resources, thereby affecting the employment generation potential of graduates.

The Entrepreneurship Unit at Adamawa State University, Mubi, is dedicated to cultivating an entrepreneurial mindset among students and the surrounding community. The unit offers programs designed to equip individuals with the skills and knowledge necessary to identify opportunities, innovate, and establish sustainable ventures. Such initiatives demonstrate the commitment of educational institutions in Adamawa State to promoting entrepreneurship and employment generation among youth.

The Jobberman Nigeria and MasterCard Foundation partnership has also contributed to youth employment and entrepreneurship development in Adamawa State. The 'Young Nigeria Works Programme' provided training to over 1,000 youths in Yola, focusing on career and business development clarity. This training aimed to provide direction and practical support for youth employment and entrepreneurship, particularly targeting young women and people living with disabilities.

Okiridu, Godpower, and Kire (2023) examined the relationship between digital accounting software skills acquisition and unemployment reduction of Business Education graduates in Adamawa State. The findings revealed a positive relationship between digital accounting software skills and unemployment reduction among Business Education graduating students. This suggests that specific technical skills acquired through business education training can significantly enhance the employability of graduates.

Despite the recognised potential of business education training for employment generation, several challenges persist. These include inadequate infrastructure, insufficient practical training opportunities, limited access to modern technologies, and a curriculum that may not adequately reflect the current demands of the labour market. Abubakar and Pakra (2024) noted that while entrepreneurship education is vital for economic empowerment and job creation, there is a need to better align the skills taught with the demands of self-employment to fully address youth unemployment. It is on the basis of this background that this study seeks to determine the effect of business education training on employment generation among youth in Adamawa State, Nigeria.

Statement of Problem

Youth unemployment remains one of the most pressing challenges confronting Nigeria, with Adamawa State being no exception. Despite the proliferation of tertiary institutions offering business education programs, a significant proportion of graduates continue to face difficulties in securing gainful employment. The researcher observed and learnt from discussions with business educators that many graduates of business education programs lack the practical skills and entrepreneurial competencies required to establish their own businesses or compete effectively in the labour market. This situation has contributed to the increasing rate of unemployment and underemployment among youth in the state.

Musa (2023) stated that the quality of our graduates, especially in terms of practical skills, is dropping, and the utilisation of cognitive skills and knowledge is declining. Similar concerns have been raised regarding the adequacy of business education training in preparing graduates for employment generation. Abubakar and Pakra (2024) found that 74% of respondents indicated that the skills provided through entrepreneurship education were insufficient for self-employment. This suggests that there may

be a gap between the training provided in business education programs and the skills required for effective employment generation.

The problem of youth unemployment in Adamawa State is compounded by limited job opportunities, inadequate entrepreneurial support systems, and a mismatch between the skills possessed by graduates and those demanded by employers. While various studies have examined the relationship between business education and employability, there is limited empirical evidence on the specific effect of business education training on employment generation among youth in Adamawa State. It is on the basis of the aforementioned challenges that this study seeks to determine the effect of business education training on employment generation among youth in Adamawa State, Nigeria.

Research Questions

The primary objective of the study was to determine the effect of business education training on employment generation among youth in Adamawa State, Nigeria. In line with the above, the study was guided by the following research questions:

1. What is the effect of business education training on youth employment generation in Adamawa State, Nigeria?
2. What are the challenges affecting business education training for employment generation among youth in Adamawa State, Nigeria?

Research Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

Ho_1: There is no significant difference between the mean responses of lecturers and students regarding the effect of business education training on youth employment generation in Adamawa State, Nigeria.

Ho_2: There is no significant difference between the mean responses of lecturers and students regarding the challenges affecting business education training for employment generation among youth in Adamawa State, Nigeria.

Methodology

This study employed a descriptive survey design. It involves the structured collection of data using a questionnaire from a sizable population. The population of the study was 1,531 students and lecturers, which were drawn from three tertiary institutions in Adamawa State, Nigeria. A simple random sampling technique was used to determine the sample of 310 for the study; this is in line with the position of Krejcie and Morgan in Modibbo (2023). The instrument for data collection was a 20-item structured questionnaire titled: Effect of Business Education Training on Employment Generation Questionnaire (EBETEGQ) and was validated by three experts from the Department of Business Education, Faculty of Education, Kwara State University, Malete. In order to determine the reliability, the instrument was administered to 20 students and lecturers at the Federal College of Education Technical Gombe, Gombe State, who were not part of the research study. Their responses were analysed using the Cronbach alpha method, which yielded the coefficient alpha value of 0.82. The instrument was further administered to respondents by the researchers, with the help of two trained research assistants. The questionnaire was retrieved as soon as they were completed. A total of 301 out of 310 students and lecturers from the three tertiary institutions responded to the instrument. The data collected from the respondents were analysed using mean and standard deviation statistics. The mean and standard deviation were used to answer the research questions, and a t-test was used in the test of hypotheses. In the questionnaire, the items were based on a four-rating scale and weighed on the following scale: Very High Extent (VHE) 4 points, High Extent (HE) 3 points, Low Extent (LE) 2 points, and Very Low Extent (VLE) 1 point (4+3+2+1). 10/4 = 2.50. Cut-off point for decision rule as to high extent or low extent. A weighted mean of 2.50 and above was considered as high extent, while a weighted mean of 2.49 and below was regarded as low extent. For the test of hypotheses, if the p-value was less than or equal to 0.05, the null hypothesis failed to be retained. However, where the p-value was greater than 0.05 ($p > 0.05$), then the null hypothesis was retained. All the null hypotheses were tested at a significance level of 0.05.

Results

Research Question One: What is the effect of business education training on youth employment generation in Adamawa State, Nigeria?

To answer research question one, the responses obtained from respondents were analysed using mean and standard deviation as shown in Table 1.

Table 1: Means and Standard Deviation of Responses on Effect of Business Education Training on Youth Employment Generation, n = 301

S/N	Items/Statements	Mean	SD	Decision
1	Business education training equips youth with entrepreneurial skills for business start-up.	3.42	1.82	High Extent
2	Business education training enhances the ability of youth to identify business opportunities.	3.28	1.78	High Extent
3	Business education training provides youth with financial management competencies.	3.15	1.74	High Extent
4	Business education training develops marketing and sales skills among youth.	2.98	1.70	High Extent
5	Business education training prepares youth for self-employment ventures.	3.31	1.80	High Extent
6	Business education training enhances the employability of youth in the labour market.	3.06	1.72	High Extent
7	Business education training develops leadership and management competencies.	2.84	1.68	High Extent
8	Business education training fosters innovation and creativity among youth.	3.52	1.85	High Extent
9	Business education training provides practical skills for business operations.	2.76	1.65	High Extent
10	Business education training contributes to job creation and economic development.	3.18	1.76	High Extent
	Grand Weighted Mean	**3.15**	**1.75**	**High Extent**

Source: Field Survey, 2026.

Data obtained in Table 1 reveal that all 10 items had mean ratings ranging from 2.76 to 3.52, with a grand mean of 3.15 and a standard deviation valued at 1.75. This indicates that business education training has a high effect on youth employment generation in Adamawa State, Nigeria.

Research Question Two: What are the challenges affecting business education training for employment generation among youth in Adamawa State, Nigeria?

To answer research question two, the responses obtained from respondents were analysed using mean and standard deviation as shown in Table 2.

Table 2: Means and Standard Deviation of Responses on Challenges Affecting Business Education Training for Employment Generation, n = 301

S/N	Items/Statements	Mean	SD	Decision
1	Inadequate practical training facilities affect business education training.	3.64	1.88	High Extent
2	Insufficient exposure to modern business technologies limits skills acquisition.	3.41	1.83	High Extent
3	Lack of qualified business educators affects the quality of training.	2.88	1.69	High Extent
4	Inadequate funding for business education programs limits effectiveness.	3.33	1.81	High Extent
5	Limited opportunities for industrial attachment affect practical skills development.	3.56	1.86	High Extent
6	Outdated curriculum fails to meet current labour market demands.	2.95	1.71	High Extent
7	Inadequate entrepreneurial mentorship affects business start-up after graduation.	3.22	1.78	High Extent
8	Limited access to start-up capital affects employment generation.	3.71	1.90	High Extent
9	Insufficient linkage between institutions and industries affects training relevance.	3.08	1.73	High Extent
10	Lack of government support for business education affects program effectiveness.	3.45	1.84	High Extent
	Grand Weighted Mean	**3.32**	**1.80**	**High Extent**

Source: Field Survey, 2026.

Data obtained in Table 2 reveal that all 10 items had mean ratings ranging from 2.88 to 3.71, with a grand mean of 3.32 and a standard deviation valued at 1.80. This indicates that challenges affecting business education training for employment generation among youth in Adamawa State are to a high extent.

Test of Research Hypotheses

The null hypotheses were tested at 0.05 level of significance. The summary of the test of research hypotheses are presented in Tables 3 and 4 as follows:

H_{01}: There is no significant difference between the mean responses of lecturers and students regarding the effect of business education training on youth employment generation in Adamawa State, Nigeria. The test of this null hypothesis can be seen as summarised in Table 3 below.

Table 3: Summary of T-Test Difference Between Mean Responses of Lecturers and Students Regarding the Effect of Business Education Training on Youth Employment Generation

Variable	N	Mean	Std. Dev.	Std. Err.	Df.	T-Cal.	T-Crit.	Sig. (P)
Lecturers	151	3.22	1.77	1.425				
					299	1.283	1.96	0.213
Students	150	3.08	1.73	1.308				

Calculated T<1.96, Calculated P>0.05.

Source: Field Study 2026.

Data obtained in Table 3 revealed that there is no significant difference between the mean responses of lecturers and students regarding the effect of business education training on youth employment generation in Adamawa State, Nigeria. This is because the calculated P-value of 0.213 is greater than the 0.05 alpha level of significance. The t-calculated value of 1.283 is lower than the t-critical value of 1.96 at Df. of 299. Thus, their calculated mean scores were 3.22 and 3.08, with the standard deviation valued at 1.77 and 1.73 for lecturers and students, respectively. Hence the null hypothesis that stated there is no significant difference between the mean responses of lecturers and students regarding the effect of business education training on youth employment generation in Adamawa State, Nigeria, is thereby accepted and retained.

H_{02}: There is no significant difference between the mean responses of lecturers and students regarding the challenges affecting business education training for employment generation among youth in Adamawa State, Nigeria. The test of this null hypothesis can be seen as summarised in Table 4 below.

Table 4: Summary of T-Test Difference Between Mean Responses of Lecturers and Students Regarding the Challenges Affecting Business Education Training for Employment Generation

Variable	N	Mean	Std. Dev.	Std. Err.	Df.	T-Cal.	T-Crit.	Sig. (P)
Lecturers	151	3.42	1.82	1.456				
					299	1.406	1.96	0.178
Students	150	3.22	1.78	1.382				

Calculated T<1.96, Calculated P>0.05.

Source: Field Study 2026.

Data obtained in Table 4 revealed that there is no significant difference between the mean responses of lecturers and students regarding the challenges affecting business education training for employment generation among youth in Adamawa State, Nigeria. This is because the calculated P-value of 0.178 is greater than the 0.05 alpha level of significance. The t-calculated value of 1.406 is lower than the t-critical value of 1.96 at Df. of 299. Thus, their calculated mean scores were 3.42 and 3.22, with the standard deviation valued at 1.82 and 1.78 for lecturers and students, respectively. Hence the null hypothesis that stated there is no significant difference between the mean responses of lecturers and students regarding the challenges affecting business education training for employment generation among youth in Adamawa State, Nigeria, is thereby accepted and retained.

Discussion of Findings

The study determined the effect of business education training on employment generation among youth in Adamawa State, Nigeria. The results of this study revealed that business education training has a high effect on youth employment generation in Adamawa State, Nigeria. This finding is consistent with the work of Abubakar and Pakra (2024), who found a significant positive impact of entrepreneurship education on addressing youth unemployment in Adamawa State. The development

of entrepreneurship skills was crucial for business success. This is because business education training equips youth with entrepreneurial skills that enable them to identify business opportunities and establish self-sustaining ventures.

The findings of this study also align with the work of Bisong et al. (2025), who reported that business education significantly enhances entrepreneurial competencies, particularly in opportunity recognition, financial management, and strategic planning. The similarity in findings suggests that business education programs, when effectively delivered, have the potential to equip youth with the competencies needed for employment generation. This is particularly important given the high rate of youth unemployment in Nigeria, which has prompted calls for educational reforms to emphasise practical skills development.

The result of this study is also in agreement with the objectives of the Entrepreneurship Unit at Adamawa State University, Mubi, which is dedicated to cultivating an entrepreneurial mindset among students and equipping them with the skills necessary to identify opportunities, innovate, and establish sustainable ventures. The focus of the unit on skill development, innovation promotion, and business incubation demonstrates a commitment to employment generation through business education training.

Furthermore, the findings of this study corroborate the work of Okiridu, Godpower, and Kire (2023), who found a positive relationship between digital accounting software skills and unemployment reduction among Business Education graduating students in Adamawa State. This suggests that specific technical skills acquired through business education training significantly enhance the employability of graduates. The Jobberman Nigeria and MasterCard Foundation training program in Yola, which provided career and business development clarity to over 1,000 youths, further supports the potential of business-related training for employment generation .

The results of this study also revealed that challenges affecting business education training for employment generation among youth in Adamawa State are to a high extent. The findings corroborated the study of Abubakar and Pakra (2024), who reported that 74% of respondents indicated that the skills provided through entrepreneurship education were insufficient for self-employment. This suggests that while business education training has positive effects, significant challenges remain that limit its full potential for employment generation. The findings are also in conformity with the work of Nuhu (2023), who found that business education students at selected tertiary institutions in Adamawa State rarely used instructional facilities for learning, and concluded that graduates may acquire inadequate employability skills as a result of inefficient use of instructional facilities. This highlights the challenge of inadequate practical training facilities, which was identified as a major challenge in this study. Similarly, the challenge of limited access to start-up capital aligns with the findings of Chijoke and Omofowa (2025), who noted that the traditional approach to entrepreneurship education ignored practical application, thus leaving students unprepared for real-world challenges.

The findings of this study are not entirely in agreement with the view that business education training fully addresses employment generation challenges. Abubakar and Pakra (2024) noted that there is a need to better align the skills taught with the demands of self-employment to fully address youth unemployment. This suggests that while business education training has significant effects, curriculum reforms and enhanced practical training are needed to maximise its employment generation potential. Similarly, Bisong et al. (2025) identified gaps in digital entrepreneurship and practical training, highlighting areas requiring improvement.

Conclusion

Based on statistical analysis of the data, findings, and discussions in the work, the researcher concluded that business education training has a significant effect on employment generation among youth in Adamawa State, Nigeria. It was also revealed from the findings of the study that there is no significant difference between the mean responses of lecturers and students regarding the effect of business education training on youth employment generation and the challenges affecting business education training for employment generation among youth in Adamawa State, Nigeria.

Recommendations

In line with the findings and conclusion, the following recommendations were made:

1. The business education curriculum should be regularly reviewed to incorporate emerging digital skills and practical entrepreneurial training; this will help in equipping the youth with the requisite competencies to create employment opportunities for themselves and others.
2. Government at all levels should increase funding for business education programs and provide adequate training facilities to enhance practical skills development.

3. Tertiary institutions should establish stronger linkages with industries and the business community to provide students with opportunities for practical experience through industrial attachment and mentorship programs.
4. Access to start-up capital and entrepreneurial support services for business education graduates should be enhanced to facilitate the transition from training to business establishment. This will help address the challenge of limited access to capital identified as a major barrier to employment generation.
5. Business educators should be exposed to training and retraining in modern business technologies and entrepreneurial practices; this will enhance their capacity to deliver relevant training that meets current labour market demands.

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ENHANCING TEACHER READINESS THROUGH CAPACITY BUILDING FOR EFFECTIVE AI INTEGRATION IN BUSINESS EDUCATION IN KWARA STATE

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Abstract

This study examined how capacity building can enhance teacher readiness for effective artificial intelligence (AI) integration in business education in Kwara State, Nigeria. A descriptive survey research design was adopted, with data collected from 32 business education lecturers across three selected tertiary institutions using a researcher-designed questionnaire. Findings revealed that teachers demonstrated a moderate level of readiness for AI integration, while capacity-building opportunities were generally limited and largely self-initiated. The study further established that capacity building positively influences teacher readiness, as training and professional development improved lecturers' confidence and competence. Key challenges identified included inadequate training, insufficient digital infrastructure, and lack of institutional support. Based on the findings, the study recommended regular AI-focused workshops, investment in digital infrastructure, continuous professional development schemes, and institutional policy frameworks. The study concludes that structured and sustained capacity-building initiatives are critical to enhancing teacher readiness and ensuring effective AI integration in business education.

Keywords: Artificial intelligence, Business education, Capacity building, Kwara State Teacher readiness

Introduction

The rapid emergence of Artificial Intelligence (AI) has significantly transformed global economic systems, organizational practices, and educational delivery. In recent years, AI technologies such as machine learning, natural language processing, predictive analytics, and intelligent tutoring systems have reshaped how knowledge is created, disseminated, and applied across sectors, particularly education and business (Dwivedi et al., 2023). The increasing integration of AI into business operations has created a growing demand for a workforce equipped with digital intelligence, problem-solving abilities, and technological adaptability. Consequently, educational institutions are under increasing pressure to prepare students for AI-driven workplaces by equipping them with relevant digital and entrepreneurial competencies (World Economic Forum, 2023).

Within the education sector, AI is increasingly being adopted to improve instructional effectiveness, personalize students' learning experiences, and support data-driven decision-making. AI-enabled technologies facilitate automated assessment, adaptive learning, intelligent tutoring systems, and personalized content delivery, thereby transforming conventional teaching practices into more interactive and technology-enhanced learning environments (UNESCO, 2023). The adoption of these AI-powered technologies has redefined pedagogical approaches and expanded opportunities for innovative instructional strategies across various disciplines, including business education. However, the successful implementation of these innovations largely depends on the readiness of teachers to effectively integrate AI tools into teaching and learning processes.

The relevance of AI is particularly evident in business education because contemporary business environments increasingly depend on automation, data analytics, digital marketing intelligence, and intelligent decision-support systems. As a result, business education programmes must align their curricula and pedagogical practices with these technological realities to remain relevant (Adeleke & Eze, 2022). Integrating AI into business education enables students to develop competencies in data-driven decision-making, digital entrepreneurship, financial technology applications, and innovation management, all of which are essential for success in the modern global

economy. Furthermore, organizations now rely extensively on AI for financial forecasting, customer relationship management, and business analytics, thereby increasing expectations for graduates to possess AI-related competencies (Organisation for Economic Co-operation and Development [OECD], 2021; Chen et al., 2022).

In Nigeria, the significance of AI in business education is heightened by rising unemployment, rapid digital transformation, and the growing need for entrepreneurial competence among graduates. Studies have shown that integrating AI tools into business education enhances students' analytical thinking, creativity, and adaptability, thereby improving their readiness for self-employment and participation in the digital economy (Ogunode & Musa, 2023). Similarly, AI-driven instructional tools such as virtual simulations, intelligent tutoring systems, and business analytics software can bridge the gap between theoretical instruction and practical business experiences in tertiary institutions (Okoye et al., 2024). However, the realization of these benefits depends substantially on the preparedness and competence of business education teachers.

Despite the enormous potential of AI in education and business education, its effective implementation remains uneven, particularly in developing countries. Challenges such as inadequate digital infrastructure, insufficient professional training opportunities, and limited institutional support continue to constrain the integration of AI into classroom practice (Zawacki-Richter et al., 2022). These challenges are particularly problematic because they directly affect teacher readiness by limiting opportunities for educators to acquire the technological, pedagogical, and digital competencies required for effective AI integration. Consequently, the transformative potential of AI may remain underutilized if these barriers are not adequately addressed.

The growing adoption of AI has also redefined the traditional roles of teachers, especially within business education. Teachers are no longer expected to function solely as transmitters of knowledge; instead, they are increasingly required to serve as facilitators, mentors, instructional designers, and interpreters of data generated through intelligent learning systems (UNESCO, 2023). AI technologies now support automated grading, adaptive learning platforms, predictive analytics, and virtual simulations, thereby shifting teachers' responsibilities toward fostering students' critical thinking, problem-solving abilities, and ethical use of emerging technologies (Holmes et al., 2022). This transformation necessitates a combination of subject-matter expertise, digital literacy, and pedagogical competence.

In Nigeria and similar developing contexts, adapting to these changing roles remains a significant challenge. Business education teachers are increasingly expected to integrate AI-based tools such as digital accounting systems, data analytics software, and virtual business simulations into classroom instruction to enhance students' employability and entrepreneurial readiness (Akinwale & George, 2023). Nevertheless, many teachers still operate within traditional teacher-centred pedagogical frameworks characterized by limited technology usage, thereby restricting effective AI adoption (Ogunode, 2024). This shift from conventional instructional practices to technologically enhanced facilitation further underscores the need to strengthen teacher readiness and provide continuous professional support.

Teacher readiness has therefore emerged as a critical determinant of successful AI integration in business education. In this context, readiness extends beyond basic technological awareness to include digital competence, pedagogical adaptability, confidence, and the ability to apply AI tools to improve student learning outcomes (Falloon, 2021). Teachers who are adequately prepared are more likely to integrate AI effectively into classroom instruction, assessment practices, and curriculum design. Conversely, inadequate readiness may limit the educational benefits of AI and hinder efforts to modernize business education, particularly in developing countries where technological adoption is still evolving.

In Nigeria, the need to strengthen teacher readiness is intensified by the increasing emphasis on digital transformation within the education sector. Although business education teachers are expected to equip students with AI-related competencies relevant to contemporary business environments, many lack access to structured professional development programmes focusing on emerging technologies (Ogunode & Izuagba, 2023). Inadequate training, insufficient institutional support, and poor digital infrastructure continue to hinder teachers' ability to adopt and utilize AI effectively in classroom instruction (Adebayo & Ahmed, 2022). These constraints reinforce the need for deliberate interventions that enhance teachers' preparedness for AI integration.

Capacity building therefore becomes indispensable in equipping teachers with the knowledge, skills, and confidence required to function effectively in AI-driven classrooms. Structured training programmes, workshops, digital literacy initiatives, mentorship opportunities, and collaborative professional learning communities can significantly improve teachers' competence and willingness to

adopt AI technologies (Okoye et al., 2024). Equally important is institutional commitment through policy support, funding, and sustained investment in digital infrastructure. Strengthening teacher readiness through comprehensive capacity-building strategies will not only improve instructional effectiveness but also ensure that business education remains relevant in preparing students for participation in an increasingly digital and AI-driven global economy.

Given these realities, enhancing teacher readiness for AI integration should be considered a strategic priority within business education. Sustainable AI integration cannot be achieved solely through the provision of technological tools; rather, it requires deliberate investment in teachers' professional development and institutional support systems. Building teachers' capacity to integrate AI effectively will ultimately determine the extent to which business education can respond to the changing demands of contemporary workplaces and contribute meaningfully to national and global economic development.

Although teacher readiness has been identified as a critical factor in the successful integration of Artificial Intelligence (AI) in business education, achieving such readiness requires deliberate and sustained capacity-building efforts. Teacher readiness cannot be attained in isolation, as it depends largely on the availability of adequate training opportunities, digital infrastructure, institutional support, and policy frameworks that enable educators to effectively adopt and utilize AI technologies. Despite the growing recognition of AI as a transformative force in education and business, the extent to which business education teachers are prepared to integrate AI into instructional practice remains uncertain, particularly in developing countries such as Nigeria.

One of the major barriers to effective AI integration in Nigerian tertiary institutions is poor capacity building. Capacity building encompasses the development of the knowledge, competencies, infrastructure, and institutional support required for individuals and institutions to successfully adopt and utilize emerging technologies. It also involves equipping lecturers, administrators, and students with the skills necessary to effectively apply AI tools in teaching, learning, research, and institutional management. However, many tertiary institutions in Nigeria continue to struggle with inadequate training opportunities, insufficient infrastructure, and weak institutional support for AI adoption (Aremu & Adeyemi, 2023). These deficiencies significantly undermine teacher readiness and limit educators' ability to integrate AI meaningfully into classroom practice.

A critical dimension of this challenge is the limited AI-related competencies among lecturers and academic staff, many of whom have not received adequate training in AI technologies, machine learning applications, and AI-supported instructional tools. Consequently, educators often lack the professional confidence and technical expertise required to effectively incorporate AI into teaching and learning processes. As noted by Ogunode and Iroegbu (2022), the successful adoption of modern educational technologies depends largely on the technological competence and readiness of academic staff. This suggests that strengthening teacher readiness must remain a central priority in efforts to promote sustainable AI integration within business education.

Beyond professional training, infrastructural deficiencies and inadequate funding further compound the problem of poor capacity building in Nigerian tertiary institutions. Effective AI integration requires reliable internet connectivity, modern computer laboratories, access to cloud-based platforms, and a stable electricity supply, all of which remain inadequate in many institutions. Nwankwo and Kanu (2021) observed that the absence of sufficient information and communication technology infrastructure significantly limits the adoption of advanced technologies such as AI. Similarly, limited financial resources constrain institutions' ability to invest in staff development programmes, AI laboratories, and modern educational technologies, thereby slowing the pace of technological innovation (Adetunji & Oladejo, 2023).

In addition to these challenges, the absence of clear institutional policies and strategic frameworks for AI adoption continues to hinder sustainable implementation efforts. Many institutions lack comprehensive guidelines that regulate the implementation, governance, and ethical use of AI, resulting in fragmented and unsustainable initiatives. According to UNESCO (2021), effective AI integration in education requires strong governance structures, clear policy direction, and continuous capacity development for educators and administrators. Addressing these interconnected challenges is therefore essential for enhancing teacher readiness and ensuring effective AI integration in business education. It is against this backdrop that this study examines the role of capacity building in enhancing teacher readiness for effective AI integration in business education.

Statement of the Problem

The integration of artificial intelligence (AI) into business education has introduced new demands for teachers to possess relevant digital and pedagogical competencies. However, many business education teachers lack the necessary AI-related knowledge and technical skills required for

effective instructional integration. This gap is further compounded by the absence of structured and sustained capacity-building programmes, as existing professional development initiatives often focus on traditional teaching methods with limited emphasis on AI literacy and digital pedagogy. As a result, the integration of AI in business education classrooms remains minimal, with teaching practices still largely conventional and unable to fully prepare students for AI-driven workplaces. This situation has created a disconnect between technological advancements and teachers' professional readiness, thereby undermining the relevance and effectiveness of business education. Therefore, the problem of this study is the inadequate readiness of business education teachers for effective AI integration due to insufficient capacity-building opportunities and institutional support.

Several studies have been conducted on teacher readiness, capacity building, and AI integration in education. For instance, Ogoronte and Bupo (2024) examined business studies teachers' readiness towards integrating artificial intelligence and learning management systems for effective teaching in Rivers State. Mensy A. Dorongon and Josefina R. Sarmiento (2025) investigated teachers' readiness for artificial intelligence integration in teaching and learning, while Guilen and Oni (2025) focused on teachers' readiness and competency in using AI in the classroom. However, most of these studies concentrated primarily on assessing levels of readiness and competence without adequately addressing how structured capacity-building initiatives can enhance teachers' preparedness for effective AI integration, particularly in business education in Kwara State. This indicated a gap in existing literature, thereby justifying the need for the present study to examine how capacity building can improve teacher readiness for effective AI integration in business education.

Purpose of the Study

The main objective of this study is to examine how capacity building can enhance teacher readiness for effective artificial intelligence (AI) integration in business education in Kwara State. Specifically, the study:

1. Determine the level of teacher readiness for artificial intelligence integration in business education.
2. Examine the capacity-building programmes available to business educators for enhancing AI-related competencies.
3. Determine the relationship between capacity building and teacher readiness for effective AI integration.
4. Identify the challenges affecting teacher readiness for artificial intelligence integration in business education.
5. Propose strategies for enhancing teacher readiness through effective capacity-building initiatives for AI integration in business education.

Research Questions

1. What is the level of teacher readiness for AI integration in business education in Kwara State?
2. What are the capacity building opportunities available for business educators in Kwara State?
3. How does capacity building influence teacher readiness for AI integration in business education in Kwara State?
4. What are the challenges hindering teacher readiness for AI integration in business education in Kwara State?
5. What strategies can enhance teacher readiness for AI integration in business education in Kwara State?

Methodology

This study adopted a descriptive survey research design. The design was considered appropriate because the study sought to examine the level of teacher readiness and the extent to which capacity-building initiatives enhance effective artificial intelligence (AI) integration in business education. The survey approach enabled the researcher to obtain firsthand information from business education lecturers. The population of this study comprised 56 business education lecturers in Kwara State, drawn from all tertiary institutions offering Business Education programmes in the state, namely: University of Ilorin, Kwara State University, Al-Hikmah University, Kwara State College of Education, Ilorin, Kwara State College of Education (Technical), Lafiagi, Federal Polytechnic, Offa, and Kwara State Polytechnic, Ilorin.

The study was delimited to three tertiary institutions in Kwara State, Nigeria, comprising one Federal university (University of Ilorin), one State university (Kwara State University), and one private university (Al-Hikmah University) due to high level of their lecturers' engagement in different capacity building. The targeted population of the study was 32 business education lecturers in the selected universities. Given that the targeted population of the study consisted 32 business education lecturers,

the study adopted a total enumeration (census) sampling technique, where all members of the population are included.

Data were collected using a researcher-designed questionnaire titled “Teacher Readiness and Capacity Building for AI Integration Questionnaire (TRCBAIQ)”. The instrument was structured into four sections. Section A contained demographic information of respondents such as gender, academic qualification, years of teaching experience, number of training attended and prior exposure to AI-related training. Section B focused on teacher readiness for AI integration. Section C examined capacity-building initiatives and professional development opportunities available to lecturers. Section D contained statement on influence of capacity building on teacher readiness while Section E addressed challenges while Section F contained information on strategies for enhancing AI integration in business education. Sections B, C, and D were structured on a four-point Likert scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD), with assigned values of 4, 3, 2, and 1 respectively.

The instrument was subjected to face and content validation by three experts in business education and educational technology to ensure clarity, relevance, and adequacy of the items in measuring the study variables. Their observations and recommendations were incorporated into the final version of the questionnaire. To determine the reliability of the instrument, a pilot test was conducted and the data obtained were analyzed using Cronbach’s Alpha which yielded a coefficient of 0.81, indicating that the instrument was reliable for the study.

The questionnaires were administered to respondents through both hard copy and online formats, depending on accessibility and convenience. All distributed copies were retrieved and used for analysis. Data collected were analyzed using descriptive statistics such as mean and standard deviation to answer the research questions. A mean score of 2.50 was used as the benchmark for decision-making, where mean score of 2.50 and above indicated agreement, while mean scores below 2.50 indicated disagreement. The results were presented in tables for clarity and ease of interpretation.

Result

Participants

The total of 32 business education lecturers participated in this study and a greater proportion of respondents were female (59.4%) compared to male with 40.6%. this indicates that there are more female business education lecturers in the selected tertiary institutions. In terms of academic qualification, the majority of respondents possessed a PhD (53.1%), followed by those with a Master’s degree (28.1%) and Bachelor’s degree (18.8%). This indicates a highly qualified academic workforce, and that most lecturers have attained advanced levels of education required for teaching in tertiary institutions. With respect to teaching experience, most respondents had between 6–10 years (31.3%) and 11–15 years (28.1%) of experience which indicate that the lecturers are relatively experienced. However, a smaller proportion (21.9%) had less than 5 years of experience, reflecting the presence of early-career academics. Based on numbers of training attended the majority of respondents had attended between 1–2 trainings (34.4%) and 3–5 trainings (28.1%), while 25.0% had not attended any training. This suggests moderate participation in professional development activities, though a significant proportion still lacks adequate training exposure. Finally, the results show that most respondents (65.6%) had no prior exposure to AI-related training, while only 34.4% had such exposure.

Research Question 1: What is the level of teacher readiness for AI integration in business education in Kwara State?

Table 1: Mean and Standard Deviation on Teacher Readiness for AI Integration (N = 32)

S/N	As far as I am concerned, I	Mean	SD	Decision
1	am fully prepared to integrate AI into my teaching	2.68	0.74	Agree
2	regularly use AI tools in lesson delivery	2.41	0.81	Disagree
3	can independently implement AI-based teaching strategies	2.55	0.76	Agree
4	am capable of training others on AI usage	2.38	0.79	Disagree
5	am ready to adapt to future AI developments	3.12	0.69	Agree
6	can confidently teach using AI tools.	2.47	0.83	Disagree
	Average Mean	***2.60***		

Decision Rule: 1.00 – 2.49 = Low readiness; 2.50 – 3.24 = Moderate Readiness; and 3.25 – 4.00 = High Readiness

The results in Table 1 indicate that teachers have a moderate level of readiness for AI integration, with an average mean score of 2.60, which falls within the range of 2.50–3.24. Item analysis shows that teachers feel somewhat prepared and are willing to adapt to future AI developments (Means = 2.55–3.12). However, they reported low readiness in practical areas such as regular use of AI tools (Mean = 2.41), ability to train others (Mean = 2.38), and confidence in teaching with AI (Mean = 2.47).

Research Question 2: What are the capacity building opportunities available for business educators in Kwara State?

Table 2:

Mean and Standard Deviation on Capacity-Building Opportunities for Business Educators

S/N	As far as I am concerned,	Mean ($\bar{x}$)	SD	Decision
1	my institution organizes workshops on emerging technologies such as AI.	2.36	0.82	Disagree
2	I have attended seminars or conferences on AI integration in education.	2.58	0.76	Agree
3	there are regular ICT training programmes for lecturers in my institution.	2.44	0.80	Disagree
4	I have access to online professional development courses on AI.	2.71	0.73	Agree
5	my institution provides technical support for integrating AI tools.	2.33	0.85	Disagree
6	there are collaborative learning communities for sharing AI knowledge among lecturers.	2.29	0.78	Disagree

The results in Table 2 indicate that capacity-building opportunities for business educators in Kwara State are generally limited and insufficient. Most items recorded mean scores below 2.50, which implies that respondents disagreed that their institutions provide workshops on AI, regular ICT training, technical support, and collaborative learning platforms. However, respondents agreed that they have attended seminars/conferences ($\bar{x}$ = 2.58) and have access to online AI courses ($\bar{x}$ = 2.71), suggesting that some opportunities exist but are likely self-initiated or externally sourced rather than institutionally driven.

Research Question 3: How does capacity building influence teacher readiness for AI integration in business education in Kwara State?

Table 3:

Mean and Standard Deviation on Influence of Capacity Building on Teacher Readiness

S/N	As far as I am concerned,	Mean ($\bar{x}$)	SD	Decision
1	participation in ai-related training improves my confidence in using ai tools.	3.18	0.66	Agree
2	workshops and seminars enhance my ability to integrate AI into teaching.	2.97	0.71	Agree
3	continuous professional development increases my readiness for AI adoption.	3.05	0.68	Agree
4	access to technical support strengthens my competence in AI integration.	2.89	0.74	Agree
5	collaborative learning with colleagues improves my AI teaching skills.	2.76	0.79	Agree
6	Capacity building programmes reduce my fear of adopting AI technologies.	3.10	0.70	Agree

Table 3 shows that capacity building positively influences teacher readiness for AI integration, as all items have mean scores above 2.50. Teachers generally agreed that training, workshops, and continuous professional development improve their confidence, competence, and readiness to use AI. The highest mean ($\bar{x}$ = 3.18) indicates that AI-related training strongly enhances confidence, while other items confirm that technical support and professional development contribute to readiness. Although collaborative learning has the lowest mean ($\bar{x}$ = 2.76), it is still considered beneficial. The low standard deviation values indicate consistency in respondents' view.

Research Question 4: What are the challenges hindering teacher readiness for AI integration in business education in Kwara State?

Table 4:

Mean and Standard Deviation on Challenges Hindering Teacher Readiness for AI Integration

S/N	As far as I am concerned, the challenges hindering teachers readiness for AI integration are as follows:	Mean ($\bar{x}$)	SD	Decision
1	Inadequate training on AI tools and applications.	3.21	0.64	Agree
2	Lack of institutional support for AI integration.	3.08	0.70	Agree

3	Insufficient digital infrastructure (internet, devices, software).	3.15	0.67	Agree
4	Limited technical support services.	2.94	0.75	Agree
5	Resistance to change among lecturers.	2.63	0.82	Agree
6	Concerns about ethical and privacy issues in AI use.	2.71	0.78	Agree

Table 4 shows that all the identified factors are perceived as challenges hindering teacher readiness for AI integration, as their mean scores are above the benchmark of 2.50. This indicates general agreement among respondents that multiple barriers affect AI adoption. Among the challenges, inadequate training on AI tools ($\bar{x}$ = 3.21) ranked highest, followed by insufficient digital infrastructure ($\bar{x}$ = 3.15) and lack of institutional support ($\bar{x}$ = 3.08), indicating that structural and capacity-building issues are the most critical barriers. Other factors such as limited technical support ($\bar{x}$ = 2.94), ethical concerns ($\bar{x}$ = 2.71), and resistance to change ($\bar{x}$ = 2.63) were also agreed upon, though to a lesser extent. The relatively low standard deviation values suggest consistency in respondents' view.

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Research Question 5: What are the strategies that can enhance teacher readiness for AI integration in business education in Kwara State?

Table 5:

Mean and Standard Deviation on Strategies for Enhancing Teacher Readiness

S/N	As far as I am concerned,	Mean ($\bar{x}$)	SD	Decision
1	Regular AI-focused workshops and training programmes for lecturers.	3.34	0.58	Agree
2	Provision of adequate digital infrastructure and internet facilities.	3.29	0.62	Agree
3	Establishment of continuous professional development (CPD) schemes on AI integration.	3.18	0.66	Agree
4	Creation of institutional policies supporting AI adoption in teaching.	3.05	0.71	Agree
5	Provision of technical support units for AI-related challenges.	3.11	0.69	Agree
6	Encouraging peer collaboration and knowledge-sharing among lecturers.	2.97	0.74	Agree

The table shows that lecturers agree on all suggested strategies to enhance teacher readiness for AI integration in business education in Kwara State, with mean scores ranging from 2.97 to 3.34. Regular AI-focused workshops ($\bar{x}$ = 3.34) and adequate digital infrastructure ($\bar{x}$ = 3.29) were rated highest, indicating the importance of training and resources. Other strategies such as continuous professional development (CPD) schemes on AI integration. technical support, institutional policies, and peer collaboration also received agreement. Standard deviations (0.58–0.74) suggest moderate consensus among respondents.

Discussion of the Findings

The finding revealed that teachers have a moderate level of readiness for AI integration in business education in Kwara State. This means that, on average, these teachers are somewhat prepared but not fully equipped to adopt and implement artificial intelligence tools meaningfully in their teaching practice. The reasons for this finding could be that infrastructural and institutional barriers can constrain teachers' willingness or ability to advance beyond basic familiarity with AI. Also, teachers' attitudes and perceptions of AI's usefulness and ease of use influence their readiness; if they perceive AI as complex or only moderately beneficial, their preparedness for full integration remains limited. The finding supports the notion of moderate teacher readiness the study of Iddrisu and Iddrisu (2025) who found that teachers in Ghana demonstrated moderate self-efficacy regarding AI use. Conversely, Eke (2024) reported higher levels of readiness and positive attitudes toward AI adoption.

The finding showed that capacity-building opportunities for business educators in Kwara State are generally limited and insufficient. This means that teachers who specialise in business education are not getting enough professional development such as workshops, in-service training, seminars, conferences, mentoring, or refresher courses to improve their skills, knowledge, and teaching practices. This could be that many education systems in Nigeria struggle to allocate sufficient financial resources to regular and meaningful professional development programmes. When budgets are low, training may be held infrequently or cancelled, and educators have fewer chances to upgrade their skills. This finding aligns with prior research in Nigeria. Studies by Olowonefa (2026) and Oke and Pitan (2025) indicate that limited professional development opportunities are a systemic challenge across various educational fields, particularly in public institutions. Similarly, Umoeshiet (2025) reported that business

educators in Delta State face inadequate in-service training, especially in areas requiring updated technological and professional skills.

The finding showed that capacity building positively influences teacher readiness for AI integration. This means that when teachers receive adequate professional development such as training, workshops, mentoring, and technical support related to artificial intelligence (AI), they become more prepared, confident, and competent to incorporate AI tools into their teaching practices. One major reason for this finding is that capacity building improves teachers' technological knowledge and self-efficacy. Training programs help teachers understand how AI tools work, how they can be applied in teaching, and how they can enhance learning outcomes. The finding agrees with the study of Chiu et al. (2023) reported that teachers who participated in AI-related professional development programmes demonstrated significantly higher levels of readiness and competence in integrating AI tools into teaching and assessment. Similarly, Holmes and Tuomi (2022) found that capacity-building initiatives focusing on AI literacy improved teachers' technological readiness and confidence in using AI-supported learning systems.

The finding revealed that inadequate training on AI tools; insufficient digital infrastructure; lack of institutional support; limited technical support; ethical concerns; and resistance to change are some of the challenges hindering teacher readiness for AI integration in business education in Kwara State. This implies that several structural and institutional barriers prevent teachers from effectively adopting artificial intelligence in their teaching practices. One reason for this finding is the lack of adequate professional training on AI tools for teachers. Another reason could be that the effective use of AI in education requires reliable internet connectivity, modern computers, appropriate software, and digital learning platforms. However, many schools and institutions, particularly in developing regions, lack these essential resources. When technological facilities are inadequate or outdated, teachers may be unable to access or implement AI tools even if they are willing to do so. The finding is in line with the study of Aljemely (2024) who found that lack of technical skills, inadequate infrastructure, ethical concerns, and insufficient institutional support are among the most common challenges preventing effective AI adoption in educational institutions.

The finding showed that regular AI-focused workshops; adequate digital infrastructure continuous professional development schemes; technical support; institutional policies; and peer collaboration were strategies to enhance teacher readiness for AI integration in business education in Kwara State. This reflects a multidimensional understanding of what it takes for educators to meaningfully adopt and sustain artificial intelligence in their instructional practices. At its core, the finding communicates that teacher readiness for AI is not a singular or spontaneous phenomenon but rather a cumulative outcome shaped by both structural and social enablers within the educational environment. Regarding the role of workshops and professional development, the finding supports the study of Yue et al. (2024) who developed a professional development model supported by workshops, discussions, and resources within the Technological Pedagogical Content Knowledge (TPACK) framework, finding that structured workshops notably improved teachers' perceptions of their TPACK abilities and significantly motivated them to teach AI literacy in primary and secondary schools. This aligns closely with the emphasis on structured workshops in the Kwara State finding.

Conclusion

This study examined teacher readiness for AI integration in business education in Kwara State, with particular attention to capacity-building opportunities, challenges, and strategies for improvement. The findings show that most business educators in Kwara State sit at a moderate level of readiness for AI integration. They are not completely unfamiliar with the idea of AI in education, but they are also far from confident or equipped enough to make it a meaningful part of how they teach. This is not entirely their fault. A significant part of the problem lies in how little professional development support these teachers actually receive. Workshops, in-service training, mentoring sessions, and refresher courses are simply not available enough, and for many educators, they are barely available at all.

What gives reason for hope, however, is the finding that capacity building genuinely makes a difference. When teachers are given proper training and support around AI, something shifts, they become more confident, more capable, and more willing to explore what AI can offer their students. This tells us that the problem is not with the teachers themselves, but with the systems that are supposed to support them. Yet even with better training, teachers still face very real obstacles, outdated equipment, poor internet connectivity, little to no institutional backing, and an understandable hesitation toward change. These are not small hurdles. They are deeply rooted structural challenges that require deliberate and sustained attention from school administrators, policymakers, and education stakeholders alike. The path forward is clear, even if it is not easy. Regular AI-focused workshops, stronger institutional policies, investment in digital infrastructure, peer collaboration, and ongoing

technical support are not luxury additions, they are necessities if business education in Kwara State is to keep pace with a rapidly changing world. Teachers cannot be expected to prepare students for an AI-driven future if they themselves are left behind.

Recommendations

1. Kwara State Ministry of Education, in collaboration with school administrators and tertiary institutions, should organise periodic AI literacy programmes, hands-on training sessions, and practical workshops to strengthen teachers' technological competence, confidence, and pedagogical skills for AI integration.
2. Education authorities and policymakers should institutionalise regular professional development programmes, including seminars, conferences, mentoring schemes, and in-service training specifically focused on artificial intelligence and other emerging educational technologies.
3. School administrators and education planners should make continuous professional development a strategic institutional priority by providing sustained training opportunities and incentivising teachers' participation in AI-related capacity-building programmes.
4. Government and educational institutions should invest in upgrading digital infrastructure, establish dedicated technical support units, develop clear ethical guidelines for AI usage, and implement change-management initiatives that encourage teachers to embrace AI technologies.
5. Educational stakeholders should develop and implement a comprehensive AI integration framework that provides regular AI-focused workshops, adequate digital infrastructure, continuous professional development opportunities, technical support services, clear institutional policies, and platforms for peer collaboration to sustainably enhance teachers' readiness for AI integration in business education.
6. School administrators should institutionalise peer collaboration by creating professional learning communities through which business education teachers can continuously share knowledge, exchange best practices, and jointly develop solutions to challenges encountered in integrating AI into instructional practices.
7. Tertiary institutions should strengthen institutional support by establishing comprehensive AI policies and frameworks that promote ethical AI use, safeguard data privacy, and provide continuous professional support to enhance teachers' readiness for sustainable AI integration in business education.

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PERCEIVED INFLUENCE OF TEACHING AND LEARNING TVET AND ENTREPRENEURSHIP EDUCATION IN NORTH - CENTRAL UNIVERSITIES ON ECONOMIC TRANSFORMATION IN NIGERIA

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Abstract

This study was carried out to investigate the perceived influence of teaching and learning TVET and entrepreneurship education in North - Central universities on economic transformation in Nigeria. The descriptive research type was adopted for the study. The study comprises two research questions and two research hypotheses. Two research hypotheses were formulated and tested at 0.05 level of significance. The population of the study comprises the entire staff and students of business education in public universities in the North-Central region of Nigeria. The instrument used for data collection was questionnaire and the instrument was validated by experts and the reliability of the instrument was tested and statistically analysed using the Cronbach Alpha method of reliability which yielded a reliability coefficient of 0.83and was considered adequate for the study. Descriptive statistics were used to answer research questions, and research hypotheses were tested at 0.05 level of significance. The results of the findings revealed that teaching and learning TVET as well as entrepreneurship education can significantly influence economic development of Nigeria. It was concluded that any nation of the world that expects real transformation and development in her economy must see TVET and entrepreneurship education as important instrument for economic booster. It was recommended among others that TVET and entrepreneurship programmes should be considered compulsory for Nigeria universities and its implementation should be facilitated at all levels of education

Keywords: Teaching, Learning, TVET, Entrepreneurship Education, Economic Transformation

Introduction

The world is moving (changing) fast and the need to transform the nations' economy has become necessary. Every nation is making efforts to make sure their economy is classified as one of the strongest or fast moving economy as the case may be. This therefore cannot be achieved unless the nations change their orientation from being a consuming nation to a productive and exporting nation. To attain this, there is need to introduce and improve the teaching and learning of Technical Vocational Education and Training (TVET) and Entrepreneurship Education in our schools curriculum.

Technical Vocational Education and Training (TVET) is an important part of our education. A nation that wants to improve her economy must first of all equip the Technical Vocational Education and Training centers and encourage citizens to enroll. This is because teaching and learning TVET is an avenue for turning a nation from a consuming nation to a producing nation. According to the Council for Technical and Vocational Education and Training (2024), TVET (Technical and Vocational Education and Training) is education and training which provides knowledge and skills for employment. TVET includes formal, non-formal and informal learning that prepares people with the knowledge and skills required in the world of work. This therefore indicates that TVET is a means through which youth of a nation can be equipped with practical and marketable skills that bring about economic transformation. According to Mohammed and Alhassan (2022), Technical and vocation education and training is a programme for the training of individual in a formal environment for the acquisition of occupational skills (trade) under the supervision of a technical officer or expert.

Abayomi and Adedayo (2020) noted that TVET focuses on providing students with practical skills and knowledge for a specific trade or vocation. This entails that if the aims and objectives of TVET is well pursued and followed, it can bring about economic development thereby causing economic

transformation within a short time. Well trained students will graduate with a specific skill that can add to the nation's growth and development in that they will not be job seekers but rather, employer of labour. TVET programmes have the capacity of offering hands-on training, industry-relevant skills development, and career pathways that address the evolving needs of the job market.

Salami (2024) concludes that Technical and Vocational Education Training (TVET) has been seen as a major programme that plays critical role in boosting the economic development of a nation. Therefore, the place of TVET in nation building cannot be written off. For the fact that TVET is a tool for productivity enhancement and poverty reduction, if the programme is well implemented, it will bring about better and sustained development which will eventually bring about economic transformation.

According to Okoli and Agada (2025), TVET is a type of education that seeks to close the gap between academic knowledge and practical application so that on completion, graduates are ready for employment. Ahmadu and Orisaremi (2025) also noted that TVET provides a direct response by equipping individuals with employable and entrepreneurial skills relevant to key sectors such as manufacturing, agriculture, construction, and ICT.

Umar (2024) identified the following as the strategies for enhancing youth employability and entrepreneurial skills in TVET:

1. Career Guidance and Counselling
2. Enhancing Skills Development TVET programmes
3. Encouraging Entrepreneurship
4. Public-Private Partnerships
5. Technical Teacher Education Development for Enhancing TVET
6. Strengthening Infrastructure
7. Expanding Apprenticeships and Internships

Similarly, Ogunsola (2017) posited that TVET can have many benefits for individuals, society, and the economy, such as increasing employability, productivity, innovation, and entrepreneurship.

Entrepreneurship

Entrepreneurship has been in existence before the colonisation. Initially, it was a form of apprenticeship training from well known craftsmen. In recent time, entrepreneurship education and training is acquired in our schools and colleges of higher learning with the intention of making each graduate a skill young man and woman who can always partake in the development of our dear country (Nigeria). According to Salami and Kehinde (2018), entrepreneurship is seen as the art which involves recognising a business opportunity, mobilizing resources and continuously exploiting that opportunity for the purpose of profit. This entails that any act of entrepreneurship will eventually lead to profit making and consequently bring about the improvement in the nation's gross domestic product (GDP) and overall growth and development.

One of the measures to accelerate nation's growth and development is the development and proper management of entrepreneurship education, this includes funding and proper monitoring for an expected output. It is important to emphasize that the development of entrepreneurship education in Nigeria's tertiary institutions is very vital to the overall development of Nigeria at large.

David, Ore and Shofolahan (2023) concluded that effective business education programme should implement relevant curriculum that is tailored towards the preparing students to fully acquire required entrepreneurial skills that can make them job providers rather than job seekers, thereby becoming successful entrepreneurs and also improving the nation's economy which invariably will bring about accelerated development of the nation. In line with this, Paul-Mgbeafulike and Onyeneke (2023) noted that the target of entrepreneurship education in Nigeria institutions of higher learning in this digital era is to turn the graduates into self reliant and job creating personnel. However the effort in the introduction of entrepreneurship education seems not to be yielding the desired results, which however call for great concern among the stakeholders in our society.

There is need to improve entrepreneurship education in schools and colleges so that its objectives of overall economic transformation will be attained. To this regard, Nwabufo and Mamman (2015) conclude that our educational system should be channeled to skills acquisition and entrepreneurial training which would engender mass job creators and not youths searching for white collar jobs. It can however be said that if well monitored, it can accelerate the nations growth and development. It was observed by James, Adamu and Opara (2018) that the fate of Nigeria and Nigerians will not only be determined by the way Nigeria addresses her economic and social problems, rather, it can have a significant impact on the success or failure of other sub-Sahara Africa. This entails that the success of Nigeria can accelerate the development of other neighbouring African countries.

Salihu, Audu, Ibrahim, and Mohammed (2020) has rightly noted and summarised the challenges of entrepreneurship education as follows:

- Unavailable fund
- Lack of teachers' motivation and specific training
- Inadequate facilities and equipment for teaching and learning
- High level of corruption and poor maintenance culture
- Poor enabling business environment
- Non-inclusion of entrepreneurship in the school subject curricular
- Poor societal attitude to entrepreneurship education development
- Unequal promotion of male and female in entrepreneurship education

If the above is well noted and adequately addressed, entrepreneurship education will not only accelerate the growth and development of a nation but will also sustain Nigeria's growth and development.

Statement of Problem

Teaching and learning TVET and entrepreneurship education in our schools, colleges and universities has been regarded as a means through which young ones can be a job provider rather than a job seeker. It has become very important that many refer to it as a means of turning the nations from a consuming nation to a productive nation. That is why the accrediting bodies in Nigeria (National Universities Commission (NUC)) in particular include vocational and entrepreneurship education in the university education, thereby making it paramount for every graduate to pass through entrepreneurship education before graduation.

As good as the objective of teaching TVET and entrepreneurship education in universities may look, its influence on economic development has not really been felt. This is why Paul-Mgbeafulike and Onyeneke (2023) noted that the target of entrepreneurship education in Nigeria institutions of higher learning in this digital era is to turn the graduates into self reliant and job creating personnel. Without which the expected growth and development may not be achieved. Therefore this study examined the perceived influence of teaching and learning TVET and entrepreneurship education in South-West universities on economic transformation in Nigeria.

Research Questions

The following research questions were raised for the study

1. What is the influence of teaching and learning TVET in South-Western Universities on economic development of Nigeria?
2. What is the influence of teaching and learning entrepreneurship education in South-Western Universities on economic development of Nigeria?

Research Hypotheses

The following hypotheses were formulated to guide the study:

$H_0$1 Teaching and learning TVET does not significantly influence economic development of Nigeria.

$H_0$2 Teaching and learning entrepreneurship education does not significantly influence economic development of Nigeria.

Methodology

The study adopted descriptive research design. The population of the study comprises the entire staff and students (200L and 300L) of business education in public universities in the North-central region of Nigeria. The sample for the study was drawn from all Universities in the North-Central region of Nigeria offering Business Education. Seven public Universities were purposefully chosen for the study, being the only Universities offering Business Education at the time of carrying out the research. Also, the research advisors' sample size table was used in determining a sample of 320 which was drawn proportionately from all the Universities in the study area, using probability proportional to size technique. A well structured questionnaire was used to collect data from the respondents. The instrument was validated by experts, and Cronbach Alpha method was used to determine the reliability coefficient of 0.83 which is considered adequate. Descriptive statistics (Chi-Square) was used to test the two null hypotheses at 0.05 level of significance.

Results of the Study

Research Question 1: What is the influence of teaching and learning TVET in North – Central Universities on economic development in Nigeria.

Table 1: Frequency distribution showing the influence of teaching and learning TVET in North – Central Universities on economic development in Nigeria.

S/N	Item	Agree		Disagree	
		Frequency	%	Frequency	%
1.	Economics transformation is a product of adequate teaching and learning TVET in North – Central Universities	280	87.6	40	12.5
2.	TVET is a major educational instrument for economic transformation in Nigeria	48	15	272	85
3	University students are highly interested and motivated in learning TVET	40	12.5	280	87.6
4	Graduate of TVET contribute immensely to the growth, development and economic transformation of a nation	252	78.8	68	21.3
5	Without teaching and learning TVET in universities nations' economics will be jeopardize	32	10	288	90
6	Teaching and learning TVET is a remedy for economy downturn	288	89.9	32	10.1
7	TVET is the major vocational course in universities that can bring about economic transformation,	104	32.5	216	67.6
8	No nation can grow or develop without the introduction of TVET in her university education	64	20.1	208	80.1
9	Graduate of TVET are not job seeker but job creators thereby contributing their quota to the nation's economic development.	76	23.8	244	76.3
10	Teaching and learning TVET should be made compulsory in our universities for economic transformation to take place	104	32.5	216	67.6

Research Question 2: What is the influence of entrepreneurship education in North – Central Universities on economic development in Nigeria.

Table 2: Frequency distribution showing the influence of teaching and learning entrepreneurship education in North – Central Universities on economic development in Nigeria.

S/N	Item	Agree		Disagree	
		Frequency	%	Frequency	%
1.	Nation's economy cannot survive without entrepreneurship education	288	90.1	32	10
2.	The way forward to economy buoyancy and transformation is through entrepreneurship	296	92.6	24	7.5
3.	education	244	76.3	64	20
4.	Entrepreneurship are the major participants in causing economic transformation in every nation,	296	92.5	24	7.6
5.	Graduate of entrepreneurship education are job creators thereby contributing their quota to nation's economic development and transformation,	292	91.3	28	8.8
6.	The purpose of teaching and learning entrepreneurship education in universities is to bring about economic growth, development and transformation.	280	87.6	40	12.5
7.	Teaching and learning entrepreneurship education should be made compulsory in universities.	276	86.3	44	13.8
8.	Nation's economy buoyancy and transformation is being determine by the capacity of entrepreneurship education graduate.	268	83.8	82	16.3
9.	University students are highly interested and motivated to learn entrepreneurship education.	296	92.5	24	7.6
10.	Entrepreneurship education is an economic booster and development facilitator. Teaching and learning entrepreneurship education will bring about self reliance thereby improving nation's economy.	216	67.6	104	32.5

Test of Hypotheses

$H_0$1: Teaching and learning TVET does not significantly influence economics development of Nigeria

Table 3: Chi-Square Tests showing the influence of teaching and learning TVET on economic development of Nigeria as perceived by North – central universities students and lecturers

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.467[a]	12	.001
Likelihood Ratio	31.836	12	.004
Linear-by-Linear Association	.112	1	.738
N of Valid Cases	320		

Sig level 0.05

The result of the chi – square test on the perception of both lecturers and students of the North – central universities on the influence of teaching and learning TVET on economic development of Nigeria shows the p – value of 0.001. Since this value is less than the 0.05 significant level, the null hypothesis which stated that: Teaching and learning TVET does not significantly influence economics development of Nigeria is therefore rejected. This is an indication that there is a statistically significant association between teaching and learning TVET on the economic development of Nigeria as perceived by both lecturers and students of the North – Central universities.

$H_0$2: Teaching and learning entrepreneurship education does not significantly influence economics development of Nigeria

Table 4: Chi Square Tests showing the influence of teaching and learning entrepreneurship education on economic development of Nigeria as perceived by North – central universities students and lecturers

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	32.216[a]	15	.000
Likelihood Ratio	40.678	15	.000
Linear-by-Linear Association	.154	1	.695
N of Valid Cases	320		

Sig level 0.05

The result of the chi – square test on the perception of both lecturers and students of the North – central universities on the influence of teaching and learning entrepreneurship education on economic development of Nigeria shows the p – value of 0.000. Since this value is less than the 0.05 significant level, the null hypothesis which stated that: Teaching and learning entrepreneurship education does not significantly influence economics development of Nigeria is therefore rejected. This is an indication that there is a statistically significant association between teaching and learning entrepreneurship education on the economic development of Nigeria as perceived by both lecturers and students of the North – Central universities.

Discussion of the Results

From the result of data analysis, it was revealed that there is a statistically significant association between teaching and learning TVET on the economic development of Nigeria as perceived by both lecturers and students of the North – Central universities. The findings of the study therefore indicate that teaching and learning TVET can significantly influence economic development of Nigeria. This is in line with Abayomi and Adedayo (2020) who noted that TVET focuses on providing students with practical skills and knowledge for a specific trade or vocation. This entails that if the aims and objectives of TVET is well pursued and followed, it can bring about economic development thereby causing economic transformation within a short time. Salami (2024) also agree with this when he concludes that Technical and Vocational Education Training (TVET) has been seen as a major programme that plays critical role in boosting the economic development of a nation. Therefore, the place of TVET in nation building cannot be written off.

The second null hypothesis of the study which stated that Teaching and learning entrepreneurship education does not significantly influence economic development of Nigeria was also rejected. This is an indication that there is a statistically significant association between teaching and learning entrepreneurship education on the economic development of Nigeria. This in line with Salami and Kehinde (2018) when they conclude that entrepreneurship is seen as the art which involves recognising a business opportunity, mobilizing resources and continuously exploiting that opportunity for the purpose of profit. This entails that any act of entrepreneurship will eventually lead to profit making and consequently bring about the improvement in the nation's gross domestic product (GDP) and overall growth and development. Also Mgbeafulike and Onyeneke (2023) noted that the target of entrepreneurship education in Nigeria institutions of higher learning in this digital era is to turn the graduates into self reliant and job creating personnel. This indicates that if a nation can have more employers than the employees, the economic development of such nation is likely to be better.

Conclusion

This paper assessed the perceived influence of teaching and learning TVET and entrepreneurship education in North - Central Universities on economic transformation in Nigeria. Based on the findings of the study, it was revealed that both TVET and entrepreneurship education are crucial to the economic transformation of any nation.

It can therefore be concluded that any nation of the world that expects real transformation and development in her economy must see TVET and entrepreneurship education as important instrument for economic booster. Therefore with good and well monitored TVET and entrepreneurship education programmes, nation's economic will be on the increase.

Recommendation

Based on the findings of the study, the following recommendations were made:

1. TVET programmes should be considered compulsory for Nigeria universities. Implementation of TVET programmes should be facilitated at all levels of education and be well monitored in order to achieve the objectives of its implementation.
2. For the fact that the world is more interested in what you can offer now, entrepreneurship education should not just be a classroom and written test, but rather practical. When many are trained towards how to make profit and be self reliance, they will be a plus to the nation's economic booster by increasing the GDP of such nation.

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BUILDING FUTURE-READY BUSINESS EDUCATORS THROUGH TALENT DEVELOPMENT AND WORK ENGAGEMENT IN NIGERIAN PUBLIC UNIVERSITIES

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Abstract

Business education is being reshaped by technological change, advancing entrepreneurship ecosystems and evolving workplace expectations which has put continuous demands on university educators to update their knowledge, pedagogical skills and professional capabilities. This study examined the relationship between talent development and work engagement among business educators and considered its implication for building a future-ready workforce in Nigerian public universities. The study adopted a correlational survey design and used data obtained from 130 business educators across 12 public universities in South-South Nigeria through census sampling. Data were collected using the talent development sections of the Talent Management Strategies Scale and the adapted Work Engagement Scale. The instruments were validated by experts, while the main Talent Management Strategies Scale and Work Engagement Scale yielded Cronbach's alpha coefficient values of 0.85 and 0.77 respectively. Pearson Product Moment Correlation was used to determine the relationship between talent development and work engagement while simple linear regression tested the predictive effect of talent development on work engagement at the 0.05 significance level. Findings revealed a strong positive relationship between talent development and work engagement among business educators ($r = .64$). Talent development also significantly predicted work engagement, $\beta = .637$, $p < .05$, with an adjusted R^2 of .401, indicating that talent development explained 40.1% of the variance in work engagement. The study concludes that sustained opportunities for training, mentoring, coaching, research development, conference participation and career advancement can strengthen business educators' vigour, dedication and absorption in their work. It then recommends a systematic institutionalization of ongoing professional development aligned with digital pedagogy, innovation, and emerging workplace competencies among Nigerian public universities. Such investment can provide a strong foundation for developing engaged business educators who are better equipped for future work demand and support business education and entrepreneurial transformation in Africa.

Keywords: talent development, work engagement, business educators, future-ready workforce, public universities

1. Introduction

There is an emergence of a talent-driven economy which has led to an increasing expectation on business education to prepare graduates for digital, innovative and entrepreneurial workplaces. This has placed high responsibilities on business educators who must now be up to date in their subject expertise, pedagogical approaches and technological capabilities. A recent study reveals that the digital competence of lecturers has now expanded beyond basic technology use to digital teaching methods, professional learning, digital literacy and students' preparation for participation in a digital society (Tondeur et al., 2023). Systematic evidence also shows that many lecturers exhibit uneven or inadequate digital competence which creates a need for practical and personalized professional development programmes (Basilotta-Gomez-Pablos et al., 2022). In the same way, Scherer et al., (2021) reports major gaps in university teachers' readiness for online teaching. This implies that future readiness can not be assumed just because educators work in the university and working in the university environment alone does not guarantee future readiness.

For educators to respond well to these expectations, there is a need for continuous development. Talent development deals extensively with keeping employees by retraining and up-skilling, as well as other focused initiatives to get employees ready to advance in their careers. It involves organized opportunities for training, mentoring, coaching, career growth and continuous professional learning. According to Mahapatra and Dash (2022), contemporary talent development practices also entail virtual learning, career co-creation and continuous reskilling in order to respond technological and workplace emerging expectations. Ensuring inclusive talent development can promote educators' growth and help institutions retain vital expertise (Kaliannan et al., 2023). However, academic talent management within

African higher education system continues to face institutional, leadership and resources limitations (Musakuro & de Klerk, 2021). Awodiji et al., (2022) confirms that although Nigerian lecturers sometimes attend conferences, workshops and other development programmes, there is a need for further capacity building initiative to translate participation into productivity.

Talent development may be more valuable when combined with work engagement which is reflected in educators' vigour and dedication to work and absorption in the work activities. Work engagement is a sense of satisfaction and fulfillment derived from job roles and responsibilities. Kovács et al., (2025) reveals that development activities and management support are part of the job resources associated with stronger work engagement among university academics. Furthermore, empirical links have been established between work engagement and innovative work behaviour in environments that are rich in technology and artificial intelligent support (Zhou et al., 2025). However, limited evidence shows the relationship between talent development and work engagement, how talent development predicts work engagement among business educators and the implication on building a future-ready workforce of business educators. This study therefore examines the relationship between talent development and work engagement using evidence from public universities in South-South Nigeria and considers the implication for building business educators who are capable of responding to innovation, technology and the future of work.

2. Problem, Purpose and Hypothesis

2.1 Problem Statement

There is an increasing high expectation on business education to prepare and produce graduates who will fit into the technology-driven, innovative and entrepreneurial workplaces. Meeting these expectations is highly dependent on business educators who continually update their professional competencies and remain energetic, dedicated and absorbed in their academic responsibilities. However, systematic talent development opportunities for educators are not always guaranteed, and there is a need to find out whether available talent development initiatives relate with business educators' engagement. When there is deprivation of adequate training, mentoring, coaching, research support and development opportunities, educators' motivation deteriorates, reducing their capacity to respond to pedagogical, innovative and workplace demands. Therefore, this study examined whether talent development significantly predicts work engagement among business educators.

2.2 Purpose

The study determined the relationship between talent development and work engagement and established the extent to which talent development predicts work engagement among business educators.

2.3 Hypothesis

Talent development does not significantly predict work engagement among business educators in Nigerian public universities.

3. Review of Related Literature and Theoretical Framework

3.1 Future-ready Business Educators

Future-ready business educators are educators who can respond well to technological changes, use innovative pedagogies, maintain and impact industry-relevant knowledge while preparing students for evolving employment conditions. In the higher education context, digital competence entails the knowledge, skills and attitudes require to proficiently use technology, whereas the HeDiCom framework outlined teaching practice, empowering students for a digital society, digital literacy, and professional development as the four dimensions of educators' digital competencies (Basilotta-Gómez-Pablos et al., 2022; Tondeur et al., 2023). Furthermore, business/entrepreneurship education could enjoy the benefits of experiential and technology-supported approaches which are connected to practical economic activity (Carpenter & Wilson, 2022; Chen et al., 2021).

Future readiness here is an implication of the findings and not a measured variable.

3.2 Talent Development

Talent development is a strategic institutional investment in employees' knowledge, skills, career progression and capabilities through training and retraining, mentoring, coaching, workshops, research and publication support, industry exposure and development opportunities to make them more valuable assets. According to Kaliannan et al., (2023), inclusive talent development harmonizes individual development with institutional performance and ensure growth opportunities across the workforce. The world of work in not static, therefore, there is a need for continuous reskilling, virtual learning and shared responsibility for career development (Mahapatra & Dash, 2022). However, Musakuro & de Klerk, (2021) found inadequate funding and inconsistent staff development practices as factors that weaken academic talent development within the higher education. Effective development should be intentionally

structured to overcome these barriers, thereby enhancing educators' readiness for emerging responsibilities and work engagement.

3.3 Work Engagement

Work engagement is a positive state of work-related fulfillment derived from job roles and responsibilities. It is characterized by vigour, dedication and absorption (Schaufeli et al, 2006). Vigour describes energy and resilience; dedication means enthusiasm, pride and involvement; and absorption denotes deep concentration in work (Schaufeli & Bakker, 2004). Engaged business educators approach their work with energy and enduring focus, be it teaching, research, supervision and student development. While job resources basically foster motivation and engagement, empirical evidences reveal that engagement stimulate innovative work behaviour among university educators (Schaufeli & Bakker, 2004; Zhou et al., 2025). Consequently, engaged business educators use development opportunities to contribute to institutional evolution.

3.4 Theoretical Framework

Expectancy Theory of Motivation serves as the primary framework for explaining the relationship between talent development and work engagement. Vroom (1964) proposes that motivation is shaped by expectancy, instrumentality, and valence. Within this framework, business educators may be actively engaged in teaching, research, innovation and other duties if they anticipate that development initiatives will improve their performance/competence (expectancy) and that the improved performance will produce rewards or outcome which they greatly value, such as recognition, professional growth or advancement (instrumentality and valence). Therefore, talent development can be a motivational resource rather than a mere administrative activity. Resource-Based View theory also gives an additional justification that employees' skills and capabilities are valuable drivers of sustained competitive advantage (Barney, 1991). Consequently, universities should prioritize continuous development of business educators as strategic academic resources in response to changing educational and workplace demands (Kaliannan et al., 2023).

4. Methodology

4.1 Research Design

The study adopted a correlational survey design because it examined the predictive relationship between talent development and work engagement without manipulating either of the variable.

4.2 Population and Sample

The population consisted of the 130 business educators across the 12 public universities in South-South Nigeria. All the 130 business educators were included through census sampling because the population was manageable.

4.3 Instrument

Data were collected through relevant sections of the Talent Management Strategies, Work Engagement and Organizational Commitment Scale. Ten items measured talent development while seventeen adapted items measured work engagement. Responses were rated on a four-point Likert scale ranging from Strongly Agree to Strongly Disagree.

4.4 Validity and reliability

The instrument was validated by experts. Cronbach's alpha coefficient of 0.85 and 0.77 were obtained for the main Talent Management Strategies and Work Engagement Scales respectively.

4.5 Data Analysis

Mean and standard deviation described the variables. Pearson Product Moment Correlation was used to determine the relationship between talent development and work engagement, while simple linear regression tested the predictive effect of talent development on work engagement at the 0.05 level of significance using SPSS 25.

5. Results

Table 1: Relationship Between Talent Development and Work Engagement of Business Educators in Universities

Variables	N	$\bar{x}$	SD	r	Interpretation
Talent Development	130	3.06	0.48	0.64	Positively High
Work Engagement		3.12	0.38		

Note: 0.01-0.30=Low, 0.31-0.50=Moderate, 0.51-0.70=High; using the study's adopted correlation benchmark as correlation strength classification vary across methodological conventions (Akoglu, 2018).

Table 1 shows that the correlation coefficient of 0.64 is positive and high which indicates a strong positive relationship between talent development and work engagement. This means that strong talent development practices were associated with higher work engagement among business educators.

Table 2: Linear Regression Estimates of Talent Development Prediction on Work Engagement of Business Educators in Universities

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.555	.170		9.154	.000
Talent Development	.512	.055	.637	9.340	.000

Note: Dependent Variable = Work Engagement; R = .637; R-square = .405; Adjusted R-square = .401; p <.05; N = 130

Table 2 shows that talent development significantly predicted work engagement with (β =.637, t = 9.340, p < .05). The adjusted R square value is .401, which indicates that the 40.1% of the variance in work engagement is explained or predicted by business educators' talent development. From the overall model analysis, the null hypothesis was not retained.

6. Discussion

The findings revealed a strong positive relationship between talent development and work engagement among business educators. This suggests that access to development opportunities like training, retraining, mentoring, coaching, research and publication support is associated with greater academic work engagement. This supports the position of Kaliannan et al. (2023) that inclusive talent development enhances employees' growth and organizational outcomes. Development opportunities and management support have been identified as the vital job resources with management support emerging as the strongest predictor of work engagement (Kovács et al., 2025). However, within African higher education context, weaknesses in training and development have been identified as one of the challenges affecting academic talent management (Musakuro & de Klerk, 2021). Therefore, systematic development of business educators is important to ensure their participation in teaching, innovation, research and student supervision.

Furthermore, talent development significantly predicted work engagement with a variance of 40.1%. Although this indicates a significant predictive contribution, it does not establish causation and the remaining variance may be due to leadership, institutional support and other personal factors. According to Expectancy Theory, development opportunities may improve engagement when educators believe those will enhance their competence and that the enhanced competence will produce valued outcomes, such as recognition and career advancement (Vroom, 1964). Similarly, Mahapatra and Dash (2022) posit that changing workplace conditions require continuous development and greater employee involvement in career development. Thus, talent development can operate both as a capacity-building mechanism and proof that business educators' present contributions and future relevance are valued.

These findings have strategic implications for building future-ready business educators. Recent empirical evidences indicate that building future-ready business educators require building digital competencies by strengthening digital teaching practice, empowering students for a digital society, digital literacy, and continuous professional development; simultaneously, higher work engagement can enhance innovative work behaviour (Basilotta-Gómez-Pablos et al., 2022; Tondeur et al., 2023; Zhou et al., 2025). Therefore, public universities in Nigeria, and by implication Africa, should align talent development initiatives with digital pedagogy, entrepreneurship, industry collaboration and emerging workplace. However, since digital literacy and future readiness were not directly measured in this study, they should be interpreted as evidence that talent development and work engagement serve as foundations for future readiness rather than establishing that the surveyed educators were already future-ready.

6. Conclusion and Recommendation

6.1 Conclusion

The study established that talent development had a strong positive relationship with work engagement and significantly predict the engagement of business educators. Development opportunities such as training, retraining, coaching, mentoring, research development, conference participation and carer growth will therefore enhance business educators' vigour, dedication and absorption in their academic responsibilities. Building future-ready business educators therefore requires universities to invest not only in technology and curriculum reforms but also in continuous development of the educators responsible for the implementation of those reforms to match the reforms.

6.2 Recommendation

Nigerian public universities should:

1. Institutionalize strategic and regular talent development programmes for business educators;
2. Establish and sustain structured mentoring and coaching arrangements;
3. Provide research, publication and conference support;
4. Create transparent career development pathways
5. Align training with digital pedagogy and changing workplace competencies
6. Assess periodically the effectiveness of talent development initiatives in place to ensure participation reflects in expected productivity.

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IMPACT OF ELECTRONIC OFFICE PRACTICE SIMULATION ON ENTREPRENEURIAL OUTCOMES OF OFFICE TECHNOLOGY AND MANAGEMENT STUDENTS OF UNIVERSITIES IN ABIA STATE

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Abstract

The study examined the impact of E-office practice simulation on entrepreneurship outcomes of OTM students in Federal and State Universities in Abia State, Nigeria. Three research questions and three null hypotheses guided the study. Descriptive research design was used to achieve the specific aims of the study. The population comprised of 228 OTM undergraduate students in the two universities in Abia State, Nigeria. The entire population was used due to the manageable size of the population hence census sampling technique was adopted. A 24-items Questionnaire titled: "Impact of E-office practice simulation on Entrepreneurship outcomes of OTM Students" was used for data collection, with 0.86 reliability coefficient value. Data collated were analyzed using mean and standard deviation statistics to ascertain the homogeneity and closeness of the responses. The hypotheses were tested using t-test statistics at an alpha level of 0.05 significance. Findings of the study indicated that students in federal and State universities were of the opinion that electronic workflow and electronic file management of e-office practice simulation have impact on entrepreneurship outcomes of OTM students in public universities in Abia State while electronic signatures had no impact on entrepreneurship outcomes. Thus, there was a significant difference in the mean ratings of students between federal and state universities on the impact of electronic workflow while there was no significant difference in the mean ratings of students between federal and state universities on the impact of electronic file management and electronic signatures of e-office practice simulation on entrepreneurship outcomes of OTM students in Abia State. Findings of the study indicated that students in federal and State universities were of the opinion that electronic workflow and electronic file management of e-office practice simulation have impact on entrepreneurship outcomes of OTM students in public universities in Abia State while electronic signatures had no impact on entrepreneurship outcomes. Therefore, the study concluded that the use of electronic workflow and electronic file management of e-office practice simulation impact on entrepreneurial outcomes of OTM students in universities in Abia state while electronic signature did not have any impact. Based on the findings, it was recommended that university authorities and policy makers should standardize the implementation of electronic workflow in e-office practice simulation across federal and state universities in Abia State. In addition, both federal and state universities should receive equal attention in terms of ICT infrastructure, internet connectivity, and technical assistance to promote effective e-office practice simulation for OTM students.

Keywords: *Entrepreneurial Skills, Office Technology Management, E-office Practice Simulation, Electronic workflow, Digital file management, Digital signature*

Introduction

The global shift toward digital transformation has fundamentally altered office administration, demanding that graduates of Office Technology and Management (OTM) possess not only secretarial skills but also entrepreneurial competencies. E-office practice simulation a computer-based learning environment that replicates real-world office tasks, document management, and virtual collaboration has emerged as a critical instructional tool (Adebayo & Ogunleye, 2023). Hence, the modern workplace is increasingly shaped by digital systems, and this has made digital competence a core employability requirement rather than an added advantage. This trend matters for higher education because universities are expected to prepare students not only for paid employment but also for self-employment and entrepreneurial participation in a technology-driven economy (UNESCO, 2025; Emeasoba & Nwatarali, 2021). The Nigerian university system, particularly in the Office Technology and Management (OTM) domain, faces mounting pressure to produce graduates who are not merely employable but are also job creators (Okafor & Eze, 2023). With unemployment rates among young graduates exceeding 42% (National Bureau of Statistics, 2024), entrepreneurial outcomes defined as the ability to start, manage, and sustain a business have become a critical metric of educational success. E-office practice simulation, a pedagogical method that replicates real-world digital office environments (e.g., document management systems, virtual collaboration tools, and cloud-based workflows), offers a potential pathway to bridge classroom theory and market realities (Adebayo & Idowu, 2022). The Office Technology and Management (OTM) programme in Nigeria aims to equip students with the necessary skills to excel in the modern office environment (Maikudi, 2024).

The persistent mismatch between business education outcomes and labour market demands in Nigeria has intensified calls for entrepreneurship-driven pedagogy (Okeke & Nwankwo, 2024). In recent years, Nigeria has emphasized entrepreneurship education as a strategic response to growing youth unemployment, economic instability, and the limitations of a job-seeking culture (Chijioke, & Omofowa, 2024). Despite its inclusion in university curricula, many graduates still lack the practical competencies and real-world exposure needed to succeed as entrepreneurs. This shortcoming raises questions about the effectiveness of current pedagogical models, which often prioritize theoretical instruction over applied learning.In Nigerian universities, particularly in Abia State, OTM programmes aim to produce graduates who can either secure paid employment or create their own office management enterprises (Nwachukwu & Ibe, 2021). Recent studies in Nigerian higher institutions show that Office Technology and Management (OTM) education is expected to equip students for ICT-compliant office environments, while modern office competencies such as online information processing, digital communication, and software use are increasingly required for employability and workplace relevance (Edionwe, 2023;Emeasoba et al, 2025).

E-office practice simulation refers to a technology-driven instructional approach that replicates real office environments using electronic office tools, software applications, digital file management, digital signature, digital communication systems, and virtual administrative processes for teaching and learning purposes. It involves the practical demonstration and simulation of modern office operations such as electronic filing, virtual meetings, online communication, cloud computing, database management, digital scheduling, desktop publishing, electronic workflow and automated office procedures in a controlled learning environment. E-office practice simulation enables students to acquire hands-on experience and practical competencies that reflect contemporary workplace realities and entrepreneurial outcomes (Mfam, Okanazu, & Ogbuabor, 2025). An electronic workflow is the digital automation of standard business processes, replacing manual, paper-based tasks with streamlined routing and approvals. Electronic workflow is paperless production, where electronic recipes handle both the manual and the automated functions. It involves document management, form routing, and built-in electronic signatures. Electronic workflow involves the use of technology to streamline, manage, and execute tasks with minimal human intervention. Digital workflow systems are now central to academic administration, finance, human resources, and communication across institutional departments (Komba & Mlozi, 2022). This process will help our universities reduce red-tapism in our administrative processes and increase faster administrative procedures, staff coordination, effective communication, achievement of goals, and digital file management among others. Office Technology and Management students with electronic competencies are more likely to adopt electronic workflow in an office, handle automation tools, handle work efficiently and effectively, and contribute to this 21st century technology driven work culture.

Electronic file management is the process of organizing, storing, naming, and maintaining electronic files. It creates a logical hierarchy of folders to eliminate clutter, allowing you to quickly locate, back up, and secure your data using built-in tools or cloud services. According to Shoewu, Akinyemi and Adamu (2023) Electronic file management is defined as a collection of data that includes many sorts of documents that may be reside throughout a network and support multiple simultaneous accesses, updates, and modifications. Electronic document management systems are designed to make it easier to handle papers that are relevant to certain businesses, initiatives, and work groups within computer networks. Abdulkadhim et al., (2015) described it as a process to initiate, store, edit, retrieve, and displaying of data with several benefits, including budgetary, management, privacy, systems integration, security and performance. Electronic file or document management system reduces expenses for educational institutions and organizations by automating tasks, boosting document security, and reducing human error and gives users an easy way to view, share and manage their documents while adjusting some security and management elements (Shoewu, Akinyemi & Adamu, 2023).

An electronic signature (e-signature) is any digital sound, symbol, or process attached to a document that indicates your intent to agree to its terms. According to Rapoza (2021) electronic signatures help in removing manual and paper processes and enabling contracts and documents to be approved anywhere and anytime, they speed-up key processes like contract signing, and document approvals; help organizations get the most out of their entire document creation, deployment, management and sharing infrastructure; have more capable and optimized capabilities in every aspect of document and content management and security. It is evident that electronic commerce will not achieve its potential in Nigeria without the proper legal recognition of electronic signatures and the provision of the legal and institutional infrastructure needed to ensure the protection of electronic transactions (Onuoha, Agbadufishim & Jubril, 2020).

Entrepreneurial outcomes of e-office practice simulation broadly refer to the entrepreneurial skills, competencies, attitudes, innovative abilities, self-reliance capabilities, and business creation potentials developed by students through exposure to simulated electronic office practices and digital business environments (Adeshina, Derera, & Vangeli, 2022). It encompasses the extent to which participation in e-office simulations enhances students' entrepreneurial readiness, creativity, problem-solving ability, digital business competence, innovation capacity, and self-employment opportunities. Entrepreneurial outcomes may manifest in areas such as digital office consultancy, virtual assistant services, desktop publishing, online business management, document processing services, data management, and other ICT-related entrepreneurial ventures. Studies have shown that technology-based simulations and entrepreneurship oriented digital training significantly improve OTM students' entrepreneurial self-efficacy, innovation capability, and startup readiness.

Office Technology and Management (OTM) students are students undergoing professional training in Office Technology and Management programmes in universities, polytechnics, and other tertiary institutions. The OTM programme is designed to equip learners with knowledge, practical office skills, managerial competencies, technological proficiency, communication skills, and entrepreneurial capabilities needed for effective office administration and modern business operations. OTM students are trained in areas such as word processing, office automation, records management, business communication, desktop publishing, data processing, cloud computing, information management, and electronic office administration (Ezeahurukwe, & Ameh, 2017). According to Maikudi, (2024), Office Technology and Management (OTM) education is crucial for preparing students for the modern workplace. The transformation from traditional secretarial studies to Office Technology and Management was largely motivated by the increasing integration of ICT into office administration and business management practices. Modern organizations now require graduates who possess advanced digital competencies and entrepreneurial capabilities capable of adapting to emerging workplace technologies and digital business environments (Ezeahurukwe, & Ameh, 2017). In Nigerian higher education, scholars have similarly argued that entrepreneurship education should include experiential learning tasks such as simulation, project-based work, and mentorship if students are to develop competence for self-employment and innovation (Maikudi, 2024). However, the available literature is still fragmented. Some studies focus on general ICT resource utilization in OTM education, others on social media use, digital skills, or entrepreneurship skills, but few have examined the specific entrepreneurial outcome of e-office practice simulation among OTM students in federal and state universities in Abia State. Studies located in South-West Nigeria, Rivers State, South-East polytechnics,

and broader Nigerian higher institutions point to the value of ICT and experiential learning, but they do not sufficiently isolate e-office simulation as a distinct instructional variable within Abia State universities. Against this background, e-office practice simulation becomes a relevant pedagogical tool for OTM students because it combines digital office operations with entrepreneurial learning. The expectation is that students who engage in e-office simulations will not only acquire technical office skills, but also develop entrepreneurial outcomes such as self-reliance, confidence in service delivery, business opportunity awareness, and readiness for digital-office-based enterprise creation. This is important because recent Nigerian studies show that ICT integration can improve student engagement, productivity, employability, and employment opportunities, while OTM and business education studies continue to emphasize the need for graduates who can meet changing market demands (Maikudi, 2024). Therefore, this study seeks to examine the impact of e-office practice simulation on entrepreneurial outcomes of OTM students in Federal and State Universities in Abia State with a view to determining how electronic workflow, electronic file management and electronic signatures impact on entrepreneurial skills acquisition, digital competence, innovation capability, and self-employment readiness among OTM students.

Statement of the Problem

University graduates supposed to have received the right training that equipped them for job employability and ability to be self-employment. However, the current status of university graduates in Nigeria is pathetic and unemployable by the organization. Despite that, universities and other higher institutions continue to produce thousands of graduates yearly into the saturated labor market (Ojo, Owoeye, & Osime, 2024).

A second concern is that entrepreneurship education in many institutions still leans heavily toward theory. Yet recent work on experiential entrepreneurship argues that students need structured simulation, practical engagement, and problem-solving tasks to develop entrepreneurial confidence and capability. Without such exposure, OTM students may graduate with certificates but without the practical orientation needed to identify opportunities, offer digital office services, or create self-employment options (Chijioke, & Omofowa, 2024).

Despite the growing importance of digital office systems, many OTM programmes still struggle with weak practical exposure, underutilized ICT resources, and insufficient integration of modern technologies into teaching and learning. Evidence from Nigerian studies shows that ICT resources may be available but are often underused, while lecturers and students may lack adequate training and support. At the same time, studies have noted that OTM graduates need stronger competencies to function in modern offices and to remain employable in a paperless, technology-driven environment (Maikudi, 2024). The problem is twofold: first, most OTM instruction is theoretical or uses basic software tutorials rather than integrated simulations. Second, there is no empirical evidence linking the frequency and quality of E-office simulation exercises to specific entrepreneurial outcomes such as, electronic work flow, electronic file management, electronic signatures, business plan development among students in Abia State's federal and state universities.

In Abia State, there is still limited empirical evidence on whether e-office practice simulation actually improves entrepreneurial outcomes for OTM students in federal and state universities. There is also little comparative evidence showing whether students in federal universities differ from those in state universities in the entrepreneurial benefits they derive from simulation-based e-office instruction. This leaves a clear research gap in both pedagogy and graduate outcome studies, and the present study seeks to address that gap by examining the impact of E-office practice simulation on entrepreneurial outcomes of OTM students in Abia State universities.

Purpose of the Study

The purpose of this study is to investigate the impact of entrepreneurial outcomes of e-office practice simulation on OTM students in federal and state universities in Abia State. The specific purposes are to determine:

1. The impact of electronic workflow on entrepreneurial outcomes of OTM students in universities in Abia State.
2. The impact of electronic file management on entrepreneurial outcomes of OTM students in universities in Abia state.
3. The impact of electronic signature on entrepreneurial outcomes of OTM students in universities in Abia state.

Research Questions

The following research questions guided the study:

1. What is the impact of electronic workflow on entrepreneurial outcomes of OTM students in Universities in Abia State.?
2. What is the impact of electronic file management on entrepreneurial outcomes of OTM students in universities in Abia state?
3. What is the impact of electronic signature on entrepreneurial outcomes of OTM students in universities in Abia state?

Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significant:

H_{01}: There is no significant difference between the mean ratings of students of the Federal and State universities on the impact of electronic workflow on entrepreneurial outcomes of OTM students in Abia State.

H_{02}: There is no significant difference between the mean ratings of students of the Federal and State universities on the impact of electronic file management on entrepreneurial outcomes of OTM students in Abia State.

H_{03}: There is no significant difference between the mean ratings of students of the Federal and State universities on the impact of electronic signatures on entrepreneurial outcomes of OTM students' universities in Abia State.

Methodology

The study adopted the descriptive survey research design. A descriptive survey is that research design used to describe the characteristics of a population, situation, or phenomenon methodologically (Librarianship Studies and Information Technology, 2022). The design was appropriate because it enable the authors to establish the impact of e-office practice simulation on entrepreneurial outcomes of OTM students. The population for this study comprised 228 OTM undergraduate students in the two universities in Abia State offering business education. There was no sampling because the population was manageable, hence census sampling technique was adopted. The instrument for data collection was a structured questionnaire titled: Questionnaire of E-office Practice Simulation for entrepreneurial outcomes of OTM Students (QEOEPSEO). A structured questionnaire consisting of 8 items was used to elicit information from respondents. The instrument is structured on a four-point rating scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). The instrument was validated by two experts in the Department of Technology and Vocational Education. To further determine the internal consistency of the instrument, a pilot study was conducted on 30 students in Department of Business Education, University of Nigeria, and Nsukka. Cronbach Alpha reliability method on the data obtained yielded reliability co-efficient value of 0.86. Data for the study was administered by the researcher with the help of two research assistants. The research assistants were briefed on the mode of instruments administration and retrieval. The instrument was administered and retrieved on the spot. Out of 228 copies of questionnaire administered, 215 copies were returned in good condition amounted to 94% questionnaire return rate and the 23 copies of questionnaire not returned amounted to 6% lose rate. The mean was used to answer the research questions; standard deviation was used to ascertain the closeness and homogeneity of the responses while the t-test statistics was used to test the hypotheses at a significance level of 0.05. Real limit of number was used to determine the level or extent of responses of each item on research questions only. The real limit value is as follows; 3.50-4.00= Strongly Agree, 2.50-3.49=Agree, 1.50-2.49=Disagree, 1.00-1.49=Strongly Disagreed. The null hypothesis was accepted when the t-calculated value is less than the t-table value at 0.05 level of significance while the hypothesis was rejected when the t-calculated value is greater than the t-table value at 0.05 level of significance.

Results

Research Question 1: What is the impact of electronic workflow on entrepreneurial outcomes of OTM students in public universities in Abia State?

Table 1: Mean and Standard deviation of response of Students On the impact of electronic workflow for entrepreneurial outcomes of OTM students in Federal and state Universities in Abia State. (N=215)

S/N	Items	Federal University			State University		
		Mean	SD	Remarks	Mean	SD	Remarks
1.	Ability to use electronic document processing software enhances entrepreneurial outcomes.	3.60	0.88	Agree	3.58	0.87	Agree
2.	Knowledge of electronic records management activities enhances entrepreneurial activities.	3.67	0.92	Agree	3.40	0.79	Agree
3	E-office simulation activities improve my electronic communication skills.	3.76	0.78	Agree	3.58	0.98	Agree
4	E-office practice simulation enhances my ability to participate in online meetings and presentations.	3.56	0.84	Agree	3.50	0.80	Agree
5	Ability to use electronic workflow approval systems during office simulation exercises has help me improve modern digital office work.	3.47	0.88	Agree	3.89	0.86	Agree
6	E-office workflow simulation improves my entrepreneurial opportunities.	3.64	0.89	Agree	3.47	0.98	Agree
7	Engagement in digital presentation activities improves my entrepreneurial skills.	3.55	0.88	Agree	3.05	0.75	Agree
8	Electronic workflow systems helps in office task coordination and approval processes.	3.58	0.91	Agree	3.61	0.70	Agree
	Grand Mean and SD	**3.63**	**0.86**		**3.51**	**0.84**	

Source: Field survey, 2026

Result of Table 1 indicates mean and standard deviation scores of respondents with a mean response of 3.11 to 3.89 which means that the respondents were of opinion that the use of electronic workflow impact on entrepreneurial outcomes of OTM students in universities in Abia state. However, average standard deviation of 0.70 to 0.98 of the respondents indicate that their mean did not vary on the impact of electronic workflow on entrepreneurial outcomes of OTM students. With a cutoff point of 2.5 a grand mean of 3.633.51 and grand standard deviation of 0.86-0.84, shows that all the respondents were of the opinion that electronic workflow impact on entrepreneurial outcomes of OTM students in public universities in Abia State.

Research Question 2: What is the impact of electronic file management on entrepreneurial outcomes of OTM students in public universities in Abia State?

Table 2: Mean and Standard deviation of response of Students in the impact of electronic file management on entrepreneurial outcomes of OTM students in Federal and state Universities in Abia State. (N=215)

S/N	Items	Federal University			State University		
		Mean	SD	Remarks	Mean	SD	Remarks
1.	Ability to use electronic file management simulation improve my entrepreneurship skills	3.25	0.80	Agree	3.33	0.84	Agree
2.	Ability to use electronic file management practice enhances my ability to establish an electronic office business.	3.14	0.71	Agree	3.25	0.87	Agree
3	E-office file management simulation improves my confidence in handling digital business operations	3.25	0.84	Agree	3.30	0.82	Agree
4	Participation in electronic file management activities enhances my self-employment readiness.	3.18	0.82	Agree	3.06	0.76	Agree
5	Electronic file management simulation enhances my employability opportunities.	3.50	0.96	SA	3.68	0.98	SA
6	Electronic file management simulation improves my ability to provide online records management services	3.43	0.84	Agree	3.39	0.83	Agree
7	Electronic file management simulation enhances my ability to work in a modern digital office environment.	3.71	0.90	Agree	3.54	0.88	Agree
8	E-office file management simulation increases my interest in technology-driven entrepreneurship.	3.04	0.92	Agree	3.38	0.75	Agree
	Grand Mean and SD	**3.41**	**0.87**		**3.43**	**0.86**	Agree

Source: Field survey, 2026

Data analyzed on Table 2 indicates the mean and standard deviation scores of respondents in the impact of electronic file management on entrepreneurial outcomes of OTM students in Federal and state Universities. Additionally, Table 2 reveals that students in Federal and State Universities rated all the items above a mean score of 2.50. This implies that students in Federal and State Universities were in agreement that electronic file management of e-office practice simulation greatly enhance their practical office skills, managerial competencies, technological proficiency, communication skills, and entrepreneurial capabilities. However, standard deviation scores of 0.87 and 0.86 indicate that students in both Federal and State universities had similar view on the impact of electronic file management of e-office practice simulation on OTM students in Federal and state Universities in Abia State. The grand mean for federal and state universities are 3.41 and 3.43 indicated that students in federal and state Universities were in agreement that electronic file management has impact on entrepreneurial outcomes of OTM students in public university in Abia State.

Research Question 3: What is the impact of electronic signatures on entrepreneurial outcomes of OTM students in public universities in Abia State?

Table 3: Mean and Standard deviation of response of Students in the impact of electronic signatures on entrepreneurial outcomes of OTM students in Federal and state Universities in Abia State. (N=215)

S/N	Items	Federal University Mean	SD	Remarks	State University Mean	SD	Remarks
1.	Electronic signature simulation improves my entrepreneurial skills.	2.00	1.68	Disagree	2.29	1.05	Disagree
2.	Electronic signature practice enhances my readiness for electronic office business operations.	2.15	1.87	Disagree	2.17	1.72	Disagree
3	Participation in electronic signature simulation improves my confidence in managing digital transactions.	2.03	1.51	Disagree	2.37	1.78	Disagree
4	Electronic signature activities improve my ability to provide electronic document authentication services.	2.32	1.07	Disagree	2.18	1.01	Disagree
5	Electronic signature simulation enhances my employability in modern digital office environments.	2.16	1.09	Disagree	2.22	1.06	Disagree
6	Electronic signature simulation enhances my digital communication and business management skills.	2.19	1.02	Disagree	2.28	1.11	Disagree
7	Electronic signature simulation increases my interest in technology-driven entrepreneurship.	2.13	1.04	Disagree	2.12	1.05	Disagree
8	Ability to use electronic signatures for virtual office communication and transaction processing enhances my business skills.	2.34	1.03	Disagree	2.24	1.00	Disagree
	Grand Mean and SD	**2.23**	**1.24**		**2.22**	**1.19**	

Source: Field survey, 2026

The data presented in Table 3 indicates mean and standard deviation scores of respondents in the impact of electronic signatures on entrepreneurial outcomes of OTM students in Federal and state Universities in Abia State. The data in Table 3 revealed that ten items were rated below a mean score of 2.50 by both academic staff of Federal and State universities with their mean responses ranging between 2.23 and 2.22 which means that the respondents were of opinion that the electronic signatures of e-office practice simulation does not enhance OTM students' entrepreneurship outcomes. However, grand standard deviation of 1.24 and 1.19 showed that all the respondents were in their agreement that the digital signatures of e-office practice simulation does not enhance OTM students' entrepreneurship outcomes. This implies that the students in Federal and State universities had the same view on the

impact of electronic on entrepreneurial outcomes of OTM students in Federal and state Universities in Abia State.

Test of Hypotheses

H_{01}: There is no significant difference between the mean ratings of students of the Federal and State universities on the impact of electronic workflow on entrepreneurial outcomes of OTM students in Abia State.

Table 4: Summary of t-test results of difference between the mean ratings of students of the Federal and State universities on the impact of electronic workflow on entrepreneurial outcomes of OTM students in Abia State.

University	N	X	SD	Df	t.cal	crit. t	Decision
Federal University	186	43.69	7.86	213	2.05	1.98	**Reject Ho**
State University	29	44.41	7.75				

Key: N=Number of respondents, X=Mean, SD=Standard Deviation, DF=Degree of Freedom, t.cal = t.calculate, crit.t = criteria value of t.

Table 4 reveals that the calculated t-value of 2.05 is greater than the criteria value of 1.96 at 213 degrees of freedom and at 0.05 level of significance. Since the calculate value is greater than the criteria value of table t, the null hypothesis is rejected. This implies that there was significant difference in the mean ratings of students between federal and state universities on the impact of electronic workflow of on entrepreneurial outcomes of OTM students in Abia State.

H_{02}: There is no significant difference between the mean ratings of students of the Federal and State universities on the impact of electronic file management on entrepreneurial outcomes of OTM students in Abia State.

Table 5: Summary of t-test results of difference between the mean ratings of students of the Federal and State universities on the impact of electronic file management on entrepreneurial outcomes of OTM students in Abia State.

University	N	X	SD	Df	t.cal	crit. t	Decision
Federal University	186	43.73	8.60	213	0.310	1.98	**Accept Ho**
State University	29	48.56	9.29				

Key: N=Number of respondents, X=Mean, SD=Standard Deviation, DF=Degree of Freedom, t.cal = t.calculate, crit.t = criteria value of t.

Table 5 reveals that the calculated t-value of 0.310 is less than the criteria value of 1.96 at 213 degrees of freedom and at 0.05 level of significance. Since the criteria value is greater than the calculated value. Therefore, null hypothesis is accepted. This implies that there was no significant difference in the mean ratings of students between federal and state universities on the impact of electronic file management on entrepreneurial outcomes of OTM students in Abia State.

H_{03}: There is no significant difference between the mean ratings of students of the Federal and State universities on the impact of electronic signatures on entrepreneurial outcomes of OTM students in public universities in Abia State.

Abia State.

Table 6: Summary of t-test results of difference between the mean ratings of students of the Federal and State universities on the impact of electronic signatures on entrepreneurial outcomes of OTM students in public universities in Abia State.

University	N	X	SD	Df	t.cal	crit. t	Decision
Federal University	186	43.16	7.95	213	0.089	1.98	**Accept Ho**
State University	29	44.29	8.94				

Key: N=Number of respondents, X=Mean, SD=Standard Deviation, DF=Degree of Freedom, t.cal = t.calculate, crit.t = criteria value of t.

Table 6 indicates that the calculated t-value of 0.089 is less than the criteria value of 1.96 at 213 degrees of freedom and at 0.05 level of significance. Since the criteria value is greater than the calculated value. Therefore, null hypothesis is accepted. This implies that there was no significant difference in the mean ratings of students between federal and state universities on the impact of electronic signatures on entrepreneurial outcomes of OTM students in public universities in Abia State.

Discussion of findings

Findings from research question one revealed that students in both federal and state universities were of the opinion that electronic workflow of e-office practice simulation has impact on OTM students' entrepreneurial outcomes in public universities in Abia State. This means that in entrepreneurship training: the use of electronic workflow of e-office practice simulation, records management, electronic communication skills, and modern digital office works improve their entrepreneurial skills, entrepreneurial readiness and entrepreneurial self- efficacy. However, hypothesis one in **table 4** reveals that there was significant difference in the mean ratings of students between federal and state universities on the impact of electronic workflow of e-office practice simulation on OTM students in Abia State on entrepreneurial outcomes. The finding was corroborated with the findings of Azih and Ama (2019) who noted that modern communication Skills enable students to develop manipulating skills, good communication skills and sound basis for specific and reflective thinking. Jones et al. (2020) have shown that proper management support, especially regarding infrastructure and training, leads to improved productivity in digital workflows. These studies showed that well-maintained infrastructure and digital support systems lead to more effective work flow in businesses thereby enhancing productivity. However, it may not be enough to provide resources; effective training, integration into work routines, and strategic utilization are essential for realizing entrepreneurial outcomes.

The finding of this study indicated that students in federal and state universities were in agreement that electronic file management of e-office practice simulation greatly enhance their practical office skills, managerial competencies, technological proficiency, communication skills, and entrepreneurial capabilities. In addition, hypothesis two in **table 5** reveals there was no significant difference in the mean ratings of students between federal and state universities on the impact of electronic file management on entrepreneurial outcomes of OTM students in Abia State. This result agrees with Egbeyemi, Enilolobo and Babayemi (2023) who found that saleable skills that make business education graduates self-employed include: computer literacy skills, file management among others, it was equally revealed that entrepreneurship training provides employment opportunities for final year students. Similarly, Shoewu, Akinyemi and Adamu (2023) noted that electronic document management system gives users an easy way to view, share and manage their documents while adjusting some security and management elements. Therefore, electronic file management gives OTM students the ability to alter, share, and synchronize and enable every activity taken within the system to be accounted for.

The **table 3** further revealed that all the respondents were in their agreement that the electronic signatures of e-office practice simulation does not enhance OTM students' entrepreneurship outcomes. This study is in line with the study of Onuoha et al (2020) which stated that in electronic signatures the legitimacy of the parties to the agreement cannot be remedied easily, no matter how sophisticated electronic signatures become. However, electronic signatures are legally valid when one party faces the prospect of finding a way to prove the identity of the original signatories in a situation where another person is not witnessing the signature, the difficulty of using an electronic signature becomes evident. The analysis of research hypothesis three ($\mathbf{H_{03}}$) revealed that there was no significant difference in the mean ratings of students between federal and state universities on the impact of electronic signatures of e-office practice simulation on OTM students in public universities in Abia State for entrepreneurship outcomes.

Conclusion

Based on the findings of this study, it was concluded that the use of electronic workflow of e-office practice simulation, records management, electronic communication skills, and modern digital office works improve their entrepreneurial skills, entrepreneurial readiness and entrepreneurial self-efficacy. However, digital file management of e-office practice simulation greatly enhance their practical office skills, managerial competencies, technological proficiency, communication skills, and entrepreneurial capabilities. Also, digital signatures of e-office practice simulation do not enhance OTM students' entrepreneurship outcome.

Recommendations

Based on the findings, it was recommended that:

i. The Federal and State Ministries of Education should provide standardized e-office facilities, internet infrastructure, and workflow software to reduce disparities between institutions. This will improve students' competence and prepare them for modern office environments.

ii. Curriculum planners and university management should ensure that digital records management, cloud storage, electronic archiving, and document retrieval systems are adequately taught and practiced in e-office simulation laboratories. This will enable students to gain hands-on experience in handling electronic documents and improve their employability and entrepreneurial competencies.

iii. Nigeria, through the National Assembly, must independently establish a legal framework governing electronic transactions and online contracts to ensure that electronic signatures are compatible.

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THE IMPACT OF DIGITAL LITERACY AND SELF-RELIANCE OF UNDERGRADNATE BUSINESS EDUCATION, STUDENTS' ENTREPRENEURIAL INTENTIONS IN TERTIARY INSTITUTIONS IN OYO STATE

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Abstract

The study is to investigate impact of digital literacy and self-reliance of undergraduate business education students' entrepreneurial intentions in tertiary institutions. Two research questions and hypothesis guided the study. Correlational research design was used for the study. The population for the study consist of 250 students of Business Education students of Emmanuel Alayande University of Education and Business Education students of Federal College of Education, Special, Oyo. There was no sampling nor sampling technique hence the entire population of of 250 undergraduate business education students served as the sample size for the study. The distribution of the students are 80 and 170 respondents from the two tertiary institutions in Oyo State. Pearson Product Moment correlation was used to determine the reliability of the questionnaire distributed, 154 was retrieved and used for the study and a coefficient of 0.73 and 0.86 were obtained. The hypothesis formulated was used to answer the research questions at 0.05 level of significance. The findings of the study shows that imagination skill and mobile development skill acquisition enhance self-reliance of undergraduate business education students in tertiary institutions in Oyo State. Based on the findings, it was recommended amongst others that impact of digital literacy (imagination skill and mobile development skill) should be encouraged to close the gap between theory and practice to give business education students competitive advantage in the labour market.

Keywords: Digital Literacy, Self-reliance, Entrepreneurial intentions, Business Education, imagination Skill, Mobile Development Skill

Introduction

The development of digital technology over the past decade has become one of the most powerful driving forces behind fundamental transformations in almost every aspect of human life, including communication, employment, education, and economic activities. The shift toward the use of digital technology has not only changed patterns of social behavior and consumption but has also opened new opportunities in the field of entrepreneurship. International studies indicate that digitalization is now regarded as "the single most important force in entrepreneurship and innovation" (Berger et al., 2021), as it accelerates business processes, increases efficiency, and creates new business models that were previously unattainable. This global transformation has prompted many universities around the world to revise their curricula to ensure that students possess sufficient digital competence and are able to adapt to the increasingly complex demands of the digital economy.

Within this global context, digital literacy has emerged as one of the essential competencies required by the younger generation. Digital literacy is no longer limited to the ability to operate technological devices, but also encompasses the capacity to manage, evaluate, and utilize digital information effectively. According to Liang et al. (2025), digital

In the face of escalating youth unemployment and economic instability in Nigeria, fostering self-reliance among university graduates has become imperative. Business education programs are uniquely positioned to equip students with the entrepreneurial competencies necessary to navigate and thrive in this challenging landscape. However, the dynamic nature of the global economy necessitates a re-evaluation of these competencies to include digital proficiency, resilience, and

sustainability consciousness. In relation to the present study, Author (2018) emphasized that well-structured business education programs significantly enhance undergraduates' global competitiveness by equipping them with digital and entrepreneurial skills. This aligns with the current study's focus on digital entrepreneurial competencies as a driver of self-reliance. Similarly, Author (2020) found that although business education graduates in Nigeria possess theoretical knowledge, they often lack practical employability skills needed to manage businesses effectively. This reinforces the importance of integrating experiential learning and resilience-building into the curriculum to enhance graduates' readiness for self-directed and sustainable entrepreneurial ventures.

Concept of Entrepreneurship Education

The individual's attitude towards entrepreneurship education is a personal perception about entrepreneurship, motivated by assessment and inclination towards entrepreneurial behaviour (Alemu & Ashagre, 2015). Entrepreneurship education is practical education that cultivate innovative talents with basic literacy in entrepreneurship and continuously injects new power into the innovation and entrepreneurship in a country (Lv et al., 2021; Hahn et al., 2019). Entrepreneurship education seeks to establish and maintain a working economy that create jobs and fights poverty (Chukwuma & Ogbeide, 2017).

Olawolu and Kaegon (2012) provides that entrepreneurship education prepares youths to be responsible individuals and entrepreneurial thinkers by exposing them to real life learning experiences where they will be required to think, take risks, manage circumstances and learn from the outcome. Entrepreneurship education entails teaching students vital skills needed to build sustainable business enterprises, equipping learners with skills required for taking responsibility and developing initiatives (Ezeani, 2012).

Entrepreneurship education involves acquiring skills, ideas and management abilities necessary for job creation (Gartner, 2018; Mokaya et al., 2012). It increases human capacity development and results in greater number of new businesses (Drost, 2019). Scholars converge in the position that exposure to entrepreneurship education influence students' attitudes toward entrepreneurship and their capacity to sustain their own businesses (Vesper & McMullan, 2018; Drost, 2019). Hence, entrepreneurship education addresses the problem of unemployment and also ensure entrepreneurial human capacity for national development.

Entrepreneurial Intention

Intention is the predisposition to enact a given behaviour in the future. It describes readiness and willingness of individuals behave or act in a specified manner. Entrepreneurial intention is thus the mindset of a person that guides anticipated outcomes. Entrepreneurial intention is the motive in individuals developed towards becoming a job creator rather than a job seeker. This could be as a result of exposure on entrepreneurship. According to Krueger (2021), entrepreneurship anticipations ought to be considered in entrepreneurship research, in that career decisions are determined by deliberate mindset.

Entrepreneurship intention is the deliberate mindset that gives way for action and guides interest toward entrepreneurial behaviours such as establishing a business and becoming a job creator. Fridoline (2019) asserts that a person's tendency of becoming an entrepreneur is influenced by their entrepreneurial anticipations. Entrepreneurial intention is thus an individual's self-realized conviction to start a business and make conscious efforts to manifest that conviction (Thompson, 2019).

Entrepreneurship Education and Entrepreneurial Intention

The rationale behind entrepreneurship education is to motivate student to become entrepreneurs upon graduation. Hence, students' exposure to entrepreneurship education affect their entrepreneurial behaviour. Zhang and Huang (2021) states entrepreneurial intention is a prerequisite to entrepreneurial action. Therefore, high level of entrepreneurial intention effectively predicts entrepreneurial entry (Fayolle & Liñán, 2014).

Izedonmi and Okafor (2010) examined effect of entrepreneurship on students' entrepreneurial intentions and found that exposure to entrepreneurship education for a period of four years aggravates entrepreneurial intention of students. Similarly, Souitaris (2017) showed that attending entrepreneurial classes and training has a positive impact on students' entrepreneurial intentions; while Burke et al. (2002) found that cultivation of entrepreneurial ability through entrepreneurship education has a significant effect on individuals' decision to start a business.

Receiving entrepreneurship education is conducive to stimulating students' entrepreneurial inspiration, accumulating entrepreneurial knowledge, and cultivating entrepreneurial abilities and skills making it easier for them to enhance their entrepreneurial intentions and participate in entrepreneurship (Muñoz et al., 2020; Solomon et al., 2019; Nabi et al 2018). According to Ajufo (2013), entrepreneurship

education is a form of empowerment that influence the behaviour and mindset of individuals towards entrepreneurial activities.
Also, Owusu-Ansah (2004), report that majority of graduates who became entrepreneurs were motivated by their exposure to entrepreneurship education; while Kumara (2012) revealed that graduates who develop positive attitudes and beliefs towards self-employment are mostly those who have received entrepreneurship education.

Statement of the problem
Business education student in various institutions are prepared to acquire trending skills in the course of study and before graduation, these skills will give them edge for immediate paid job, establish their own business and be self -employ on graduation. This scenario keeps them above board to take care of their families and boost the gross domestic product of the nation. Unfortunately business education student who do not acquire the skill in app development, mobile development skill which may result to high-rate of unemployment among graduates in Nigeria, has cut across all discipline including business education. Chinwokwu (2016) lamented that most graduates of vocational education (including business education) in Nigeria are not establishing and running their own small business for self -reliance as expected due to inadequate digital literacy skills. Therefore, there is a need to take appropriate measure to curb the menace of the high rate of unemployment among graduates through digital literacy and self-reliance, which is expected that the end result will lead to self-reliance. The digital literacy skills is needed to enable students and graduate to establish and run their own small and medium scale business for self-reliance, once the necessary skill are acquired, it becomes very challenging in this digital era. It is based on the existing gap that the researchers embarking on this study was conceived.

Purpose of the study
The main purpose of this study is to examine the digital literacy skill and self-reliance of under graduate business education student entrepreneurial mentions in tertiary institution in oyo state
Specifically, the study sought to:
1. Determine how imagination skill relates to self-empowerment of undergraduate business education students in entrepreneurial intentions in tertiary institutions in oyo state
2.Determine how mobile development skill relates to self-reliance of undergraduate business education students entrepreneurial intensions in tertiary institution in oyo state

Research Questions
The following research question guided the study:
1. How imagination skill does relates to self-reliance of undergraduate business education students entrepreneurial intentions in tertiary in oyo state
2.How mobile development skill does relates to self-reliance of education students entrepreneurial intentional in tertiary institution in Oyo state

Hypotheses
The following hypotheses formulated were rested at 0.05 level of significance.
1. There is no significant relationship between imagination skill and self-reliance of undergraduate Business Education student entrepreneurial intentional in tertiary institutions in Oyo state.
2. There is no significance relationship between mobile development skill and self-reliance of undergraduate Business Education student enterpreneurial intentions in tertiary institution in oyo state.

Methodology
The correlational design was adopted for the study. The population of the study consisted 250 respondents, made up of 80 under-graduate business education students of 2025/2026 academic year at Emmauel Alayande university of education, oyo and 170 under-graduate student of business education 2025-2026 academic year at federal college of education, special, oyo, both in oyo. There was no sampling hence the entire population of 250 under graduate business education students was used as the sample size of the study. The instrument used for data collection were two sets of researchers made questionnaires titled “imagination skill and self-reliance’ (MASSR) and ‘mobile development skill and self-reliance (DVSASE)’. The two sets of questionnaires were validated by two lecturers from the Department of Business Education and one measurement and evaluation expert, all of Emmanuel alayande university of education. The questionnaire were structured on a four-point rating scale response patterned thus: Strongly Agree [SA-4points], Agree[A-3pionts], Disagree [DA-2pionts],

and strongly Disagree [SDA-1piont]. The pearson product moment correlation coefficient (PPMCC)was used to determine the reliability of the instruments and a coefficient index of 0.73 and 0.86 were obtained. Out of the 250 copies of the questionnaires distributed, 154 were retrieved and used for analysis. Pearson product moment correlation coefficient was used to answer the research question and test the formulated hypotheses at p>0.05 level of significance, and p-value test was used to test the strength of the hypotheses. The decision rule was that the null hypotheses were retain when the critical 'r' value is greater than the calculated 'r' value otherwise accepted.

Results

Research Question 1

How does imagination skill relate to self-reliance of under graduate business education in oyo state tertiary institution?

Table 1: Relationship between imagination skill and self-Reliance of undergraduate Business Education Student entrepreneurial intentions in Oyo tertiary institutions

(N=154)

		Imagination skill	Self-reliance of undergraduate Business education students
Imagination skill	Pearson Correlation Sig. (2-tailed) N	1 154	.301 .702 154
Self-reliance of Undergraduate Business Education Students	Pearson Correlation Sig. (2-tailed) N	.301 .702 154	1 154

Data presented in Table 1 shows the calculated coefficient (r) value of response of undergraduate business Education students to determine whether there is a relationship between imagination and self reliance. The table shows that the calculated r was 0.301, with a table value of 0.179. this means that since the calculated r-value is higher than the table value, a positive relationship exists between imagination skill and self-reliance of undergraduate Business Education students entrepreneur intentions in Oyo State Tertiary institution.

Research Question 2

How mobile Development skill does relates to self-reliance of undergraduate Business Education Students entrepreneurial intentions in Oyo State Tertiary Institutions?

Table 2: Relationship between Mobile Development skill and self-Reliance of postgraduate Business Education students entrepreneurial intentions in Oyo State Tertiary institution.

(N=154)

		Mobile Development	Self-reliance of undergraduate Business education students
Mobile Development skill	Pearson Correlation Sig. (2-tailed) N	1 154	.209 .180 154
Self-reliance of Undergraduate Business	Pearson Correlation Sig. (2-tailed) N	.209 .180 154	1 154

Education Students			

Data presented in Table 2 shows the calculated coefficient (r) value of responses from undergraduate Business Education students to determine whether there is a relationship between Mobile Development skills and self-reliance of undergraduate Business Education Students of Oyo State Tertiary institutions. The table shows that the calculated r was 0.209, with a table value of 0.179. This means that since the calculated r-value is higher than the table value, a positive relationship exists between mobile development skill and self-reliance of undergraduate Business Education students entrepreneurial intentions in Oyo State Tertiary Institutions.

Hypothesis 1
There is no significant relationship between imagination skill and self-reliance of undergraduate Business Education students' entrepreneurial intentions in Oyo state Tertiary institution.
Table 3: Relationship between imagination skill and self-reliance of undergraduate business educations students' entrepreneurial intentions in Oyo State Tertiary institution.

		Imagination skill	Self-reliance of undergraduate Business education students
Imagination skill	Pearson Correlation Sig. (2-tailed) N	1 154	.301 .702 154
Self-reliance of Undergraduate Business Education Students	Pearson Correlation Sig. (2-tailed) N	.301 .702 154	1 154

In Table 3 shows the calculated coefficient (r) value of the significant relationship between imagination skill and self-reliance of undergraduate Business Education students entrepreneurial intentions in Oyo State Tertiary institutions with N=154, df = 152, P>0.05, the calculated r-value was 0.301 with a critical value of 0.179 at the P > 0.005 level of significance, and since the calculated r value was statistically greater than the table value, the null hypothesis was therefore rejected, and the conclusion is the there is relationship between imagination skill and self-reliance of undergraduate Business Education students entrepreneurial intentions in Oyo State tertiary institutions.

Hypothesis 2
There is no significant relationship between mobile development skill and self-reliance of undergraduate Business Education students entrepreneurial intentions in Oyo state tertiary institution.
Table 4: Relationship between Mobile development skill and self-reliance of undergraduate business education students entrepreneurial intentions in Oyo State tertiary institutions.

(N=154)

		Mobile Development skill	Self-reliance of undergraduate Business education students
Mobile Development skill	Pearson Correlation Sig. (2-tailed) N	1 154	.209 .180 154

Self-reliance of Undergraduate Business Education Students	Pearson Correlation Sig. (2-tailed) N	.209 .180 154	1 154

Table 4 shows that the calculated r-value was 0.209 with a critical value of 0.179 at the P>0.05 level of significance, and since the calculated r value was statistically greater than the table value, the null hypothesis was therefore rejected, and the conclusion is that there is a relationship between mobile development skill and self reliance of undergraduate Business Education students entrepreneurial intentions in Oyo state tertiary institutions.

Discussion of Findings

The first findings revealed that imagination skills can make undergraduate Business Education Students more prepared for self-reliance, imagination skill and self-reliance through having efficient user interface skills can help you design application interfaces, the ability to develop applications across different platforms and operating systems is a self-reliance, imaginations often have extensive business skills, including business management, marketing and customer service skills. This finding is in agreement with the view of Philip and Amirn (2022) imagination is a crucial topic in the IT world that provides ample opportunities for growth and self-reliance of both students and students also in the view of Rahul and Sachin (2023) imagination development is a special skill that has helped many business and individual for self-reliance.

Based on the first findings, a hypothetical test was conducted which also indicated that a statistically significant relationship exists between imagination skill and self-reliance of Postgraduate Business Education students entrepreneurial intentions in Oyo state tertiary institution. The study concluded that there is a statistically significant relationship between imagination skill and self-reliance of undergraduate business education students entrepreneurial intention in Oyo state tertiary institution, since the calculated correlation coefficient (r) value was statistically greater than the table value P>0.05 level of significance. The null hypotheses, therefore, were rejected at the P>0.05 level of significance. The strength of the relationship exists between imagination skill and self-reliance of undergraduate Business Education students. The second finding revealed that the calculated r value was statistically greater than the table value, the null hypothesis was therefore rejected, and the skills can make ungraduated Business Education students more prepared for self-reliance. It is therefore concluded that there is a relationship between mobile development skill and self-reliance for undergraduate Business Education students entrepreneurial intentions in Oyo state tertiary institution. The findings is in agreement with the view of Okiridu and Smart (2024) which indicates that about 57% of businesses implement some form of mobile development skill as a way generating business insights, revenue and success. The study got the support of Simplilearn (2023) who asserts that mobile development skill takes advantages of this human instinct and offers an easier way for people to see the information clearly and draw more accurate conclusions faster.

Conclusion

Based on the findings of the study, the researchers concluded that digital literacy skills enable individuals' ability to translate ideas into action and reality. It encompasses creativity, innovativeness, pursuing opportunity, individual empowerment, taking calculated risks and responsibility. Digital literacy skills give entrepreneur the ability to share, find, and create content using the information and communication technologies and the internet anywhere at any time to sell products and services. The study reveals that knowledge of digital literacy skills would encourage practical skills among students and graduate.

Recommendations

Based on the findings and conclusions made in the study, it was recommended among others that:

xi. The teaching of digital literacy imagination skill and mobile development skills should be encouraged to link the gap between theory and practice to give Business Education Students competitive advantage in the labour market.

xii. Management of all tertiary institutions, should ensure that good policies and adequate implementation of such policies are provided to enhance students entrepreneurial intentions.

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IMPACT OF DIGITAL ENTREPRENEURSHIP CURRICULUM ON STARTUP INTENTIONS AMONG BUSINESS EDUCATION STUDENTS IN TERTIARY INSTITUTIONS IN ABIA STATE

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Abstract

This study examined the impact of digital entrepreneurship curriculum on startup intentions and entrepreneurial self-efficacy among Business Education students in tertiary institutions in Abia State, Nigeria. The increasing integration of digital technologies into business environments has made it essential for entrepreneurship education to equip students with relevant digital competencies required for technology-enabled venture creation. A survey research design was adopted for the study. The population comprised 402 Business Education students from four public tertiary institutions offering Business Education in Abia State: Abia State University, Uturu; Michael Okpara University of Agriculture, Umudike; Federal College of Education, Ofeme; and Abia State College of Education (Technical), Arochukwu. A sample of 40 students, representing 10% of the population, was selected using the simple random sampling technique. Data were collected using a structured questionnaire titled Digital Entrepreneurship Curriculum and Startup Intention Questionnaire (DECSIQ), structured on a four-point rating scale of Very High Extent (VHE), High Extent (HE), Low Extent (LE), and Very Low Extent (VLE). The instrument was validated by experts and tested for reliability using the Cronbach Alpha method, yielding an overall reliability coefficient of 0.83. Data were analyzed using mean to answer the research questions and standard deviation to determine the closeness of responses, while t-test statistics were used to test the hypotheses at a 0.05 level of significance. The findings revealed that exposure to the digital entrepreneurship curriculum influences students' startup intentions and enhances their entrepreneurial self-efficacy to a high extent. Students demonstrated high levels of confidence in identifying digital business opportunities, utilizing digital tools, and developing scalable online ventures. The t-test results confirmed that these effects were statistically significant, leading to the rejection of the null hypotheses. The study concluded that integrating practical and technology-driven digital entrepreneurship components into business education significantly strengthens students' motivation, confidence, and capability to establish digital ventures. Based on the findings, the study recommended that tertiary institutions should strengthen digital entrepreneurship curricula through practical and experiential learning approaches, foster partnerships with digital startups and innovation hubs, and provide supportive environments that enhance students' entrepreneurial self-efficacy and enable them to translate digital knowledge into viable ventures.

Keywords: Digital Entrepreneurship, Startup Intentions, Curriculum, Entrepreneurial Self-Efficacy, Business Education.

Introduction

The entrepreneurial landscape has undergone a profound transformation with the rapid expansion of digital technologies. Entrepreneurship is widely recognized as a fundamental engine of economic

growth, innovation, and structural transformation, particularly in emerging and developing economies. Beyond job creation, entrepreneurship facilitates technological diffusion, enhances productivity, and stimulates regional competitiveness. In Nigeria, persistent youth unemployment and graduate underemployment have intensified policy emphasis on entrepreneurship as a strategic pathway to inclusive growth (National Bureau of Statistics [NBS], 2023). Entrepreneurship remains an important means for economic development of any nation, as it enhances skills acquisition, creativity, confidence, and the capacity for self-employment and job creation (Emeasoba & Onunkwo, 2022). Consequently, entrepreneurship education was institutionalized across tertiary institutions through the National Policy on Education (Federal Republic of Nigeria, 2013), with the expectation that exposure to entrepreneurial training would stimulate venture creation and the integration of digital technologies among graduates.

Digital infrastructures—encompassing mobile connectivity, cloud computing, social media platforms, data analytics, and financial technologies—have fundamentally altered opportunity recognition, venture creation processes, and value capture mechanisms (Nambisan, 2017). Digital entrepreneurship differs from traditional entrepreneurship not merely in tools but in its architecture: it is platform-based, ecosystem-driven, scalable, and characterized by low marginal costs and accelerated innovation cycles (Autio et al., 2018). In response to these changes, digital entrepreneurship curriculum has emerged as a specialized component of entrepreneurship education, designed to equip students with competencies required for technology-enabled ventures. Such curricula typically include courses and modules such as e-commerce development, digital marketing, social media strategy, online business modeling, financial technology applications, cloud-based business tools, data analytics, and innovation management. These components are intended to develop students' ability to identify digital opportunities, design scalable business models, and effectively operate within digital ecosystems (World Bank, 2020).
A critical outcome of exposure to digital entrepreneurship curriculum is the development of entrepreneurial self-efficacy, which refers to an individual's belief in their capability to successfully perform entrepreneurial tasks (Bandura, 1997). Entrepreneurial self-efficacy has been identified as a key predictor of entrepreneurial intention and behavior, as it influences individuals' confidence in opportunity recognition, risk-taking, decision-making, and venture creation (Krueger et al., 2000). In the context of digital entrepreneurship, self-efficacy extends to technological competence, digital literacy, and the ability to utilize digital platforms for business growth. Students who are exposed to practical and experiential digital entrepreneurship training are more likely to develop higher levels of confidence, self-efficacy in performing tasks such as creating online ventures, managing digital tools, and implementing digital marketing strategies (Nambisan, 2017).

Self-efficacy is an individual's belief in their capacity to execute behaviors necessary to produce specific performance attainments. It enables choosing which environments are best suited for growth and development, and facilitates taking responsibility, creating opportunities and setting and achieving ambitious goal. Self-efficacy is an individual's belief in their capacity to execute behaviors necessary to produce specific performance attainments (Chen, Greene & Crick in OECD, 2024). Self-efficacy is the belief that one can oneself do something. In the context of taking responsibility, it also includes valuing goal orientation, purpose, a growth mindset and the self-regulation to keep focused, in order to motivate acquiring these attributes or skills (Moran, 2017). When an individual presented proper skills and was given appropriate stimulation, self-efficacy was the determinative factor in taking actions, willing to pay efforts under pressure, and supporting the effort in frustration (Marino & Crocco, 2020). Business Education plays a central role in preparing students for both employment and self-reliance by integrating business knowledge with practical skills.

Business Education undergraduates are expected to acquire competencies in areas such as accounting, marketing, management, and entrepreneurship, making them suitable candidates for digital entrepreneurship development. In recent years, there has been increasing recognition of the need to embed digital entrepreneurship components within Business Education programmes to align with evolving labour market demands and technological advancements. However, the extent to which Business Education undergraduates are exposed to comprehensive digital entrepreneurship curriculum and how such exposure influences their startup intentions and self-efficacy remains an area requiring further investigation.

Furthermore, gender has been identified as an important variable in entrepreneurship studies, particularly in relation to entrepreneurial intention and self-efficacy. Research suggests that male and

female students may differ in their perception of entrepreneurial opportunities, risk tolerance, and confidence levels due to socio-cultural and educational factors (Bae et al., 2014). While some studies indicate that males tend to exhibit higher entrepreneurial intentions, others show that appropriate educational interventions can bridge this gap by enhancing the self-efficacy of female students. Therefore, examining gender differences in the context of digital entrepreneurship education is essential to ensure inclusivity and effectiveness of curriculum design.

Despite these transformations, much of entrepreneurship education in developing economies remains anchored in traditional business models, often emphasizing small-scale, brick-and-mortar ventures rather than digitally enabled innovation. While empirical evidence consistently demonstrates that entrepreneurship education positively influences entrepreneurial intentions (Bae et al., 2014), limited attention has been devoted to understanding how digital entrepreneurship curricula specifically shape students' startup intentions and self-efficacy. This distinction is theoretically and practically significant, as digital venture creation requires competencies in platform strategy, digital marketing analytics, user-centered design, and virtual collaboration—skills not typically embedded in conventional entrepreneurship programs.

Theoretically, entrepreneurial intention is widely conceptualized through the Theory of Planned Behavior (TPB), which posits that intention is determined by attitudes toward the behavior, subjective norms, and perceived behavioral control (Ajzen, 1991). Entrepreneurship education influences these antecedents by enhancing opportunity recognition, skills acquisition, and entrepreneurial self-efficacy (Krueger et al., 2000). However, digital entrepreneurship introduces additional dimensions such as technological self-efficacy and innovation capability. The extent to which digital entrepreneurship curriculum strengthens these determinants of intention remains underexplored, particularly within subnational contexts in Africa.

At the regional level, Abia State presents a distinctive entrepreneurial ecosystem characterized by vibrant small and medium-scale enterprises, manufacturing clusters, and increasing participation in digital commerce. Higher education institutions such as Abia State University and Michael Okpara University of Agriculture play a critical role in shaping the entrepreneurial capabilities of Business Education students within the region. Nonetheless, it remains unclear whether existing curricula adequately integrate digital entrepreneurship components in ways that significantly influence students' startup intentions and self-efficacy.

Although Nigeria has experienced improvements in digital connectivity and mobile penetration (World Bank, 2020), structural constraints—including infrastructural deficits, limited incubation ecosystems, weak university–industry linkages, and insufficient experiential digital learning—may weaken the translation of curricular exposure into entrepreneurial action. Consequently, there is a need for context-specific empirical investigation into how digital entrepreneurship curriculum influences startup intentions and entrepreneurial self-efficacy among Business Education undergraduates, while also considering gender differences.

This study contributes to the literature in three important ways. First, it advances entrepreneurship education scholarship by distinguishing between general entrepreneurship education and digitally oriented entrepreneurial curriculum. Second, it extends the Theory of Planned Behavior by examining how digital competencies and self-efficacy interact with intention formation in an emerging economy context. Third, it provides subnational empirical evidence from southeastern Nigeria, thereby enriching the limited body of African-focused digital entrepreneurship research. By empirically examining the impact of digital entrepreneurship curriculum on startup intentions and entrepreneurial self-efficacy, the study offers evidence-based implications for curriculum reform, policy development, and institutional strategies aimed at strengthening digital entrepreneurial transformation within Nigerian higher education.

Statement of the Problem

Despite the institutionalization of entrepreneurship education in Nigerian universities, graduate unemployment remains persistently high, raising concerns about the effectiveness of existing curricula in fostering job creation through venture development (NBS, 2023). While entrepreneurship courses are widely offered, they are often criticized for being overly theoretical, insufficiently practical, and inadequately aligned with the realities of a rapidly digitizing economy. As business ecosystems

increasingly migrate toward digital platforms, there is growing concern that traditional entrepreneurship education may not sufficiently equip students with the digital competencies required to initiate and sustain technology-enabled ventures.

Empirical studies in Nigeria have established a positive relationship between general entrepreneurship education and entrepreneurial intentions. However, limited research has specifically examined how structured digital entrepreneurship curriculum components influence startup intentions, particularly at the state level. In Abia State, where entrepreneurial activity is culturally embedded and commercial activity is vibrant, it remains unclear whether business students' exposure to digital entrepreneurship content significantly enhances their intention to establish digital startups. The absence of context-specific empirical evidence creates a knowledge gap that hinders curriculum reform and policy improvement.

Furthermore, although digital technologies have reduced barriers to market entry, students may still face challenges related to limited practical exposure, inadequate digital infrastructure, insufficient mentorship, and weak incubation support systems. Without empirical assessment, it is uncertain whether digital entrepreneurship education meaningfully strengthens entrepreneurial self-efficacy, perceived feasibility, and desirability—core determinants of startup intention. Therefore, the central problem this study addresses is the lack of empirical evidence on the impact of digital entrepreneurship curriculum on startup intentions among business students in Abia State. Addressing this gap is essential for aligning business education with the demands of Nigeria's digital economy and for enhancing the capacity of graduates to contribute to sustainable entrepreneurial transformation.

Purpose of the Study

The main purpose of this study is to examine the impact of digital entrepreneurship curriculum on startup intentions among business education students in Abia State.

Specifically, the study seeks to determine:

1. the extent to which digital entrepreneurship curriculum impact on startup intentions among business education students in Abia State.
2. the extent digital entrepreneurship curriculum impact on students' entrepreneurial self-efficacy startup intentions among business education students in Abia state.

Research Questions

1. To what extent does digital entrepreneurship curriculum impact on startup intentions among business education students in Abia State?
2. To what extent does digital entrepreneurship curriculum impact on students' entrepreneurial self-efficacy startup intentions among business education students in Abia state?

Null Hypotheses (H_0)

Ho_1: There is no significant difference between the mean ratings of male and female students on the extent digital entrepreneurship curriculum impact on the startup intentions among business education students in Abia State.

Ho_2: There is no significant difference between the mean ratings of male and female Business education students on the extent digital entrepreneurship curriculum impact on students entrepreneurial self-efficacy startup intentions in Abia State.

Methodology

This study adopted a survey research design to investigate the impact of digital entrepreneurship curriculum on startup intentions among Business Education students in Abia State. According to Ali in Madu (2023), a survey research design is appropriate for studies that aim to document, describe, and explain the current status of a phenomenon. This design was considered suitable because it enabled the researcher to systematically collect self-reported data on students' exposure to digital entrepreneurship curricula and their intentions to establish digital ventures. The population of the study comprised 402 Business Education students from selected tertiary institutions in Abia State. Specifically, the population consisted of 53 students from Abia State University, Uturu; 217 students from Michael Okpara University of Agriculture, Umudike; 29 students from the Federal College of Education, Ofeme; and 103 students from Abia State College of Education (Technical), Arochukwu.

Using the guideline proposed by Madu (2023), which recommends that 10% of a small population can serve as an adequate sample, a total of 40 students were selected as the sample for the study. The

respondents were selected using the simple random sampling technique to ensure that every student in the population had an equal chance of being included in the study. This technique helped to minimize bias and improve the representativeness of the sample drawn from the four institutions.

Data were collected using a structured questionnaire developed by the researcher, titled the *Digital Entrepreneurship Curriculum and Startup Intention Questionnaire (DECSIQ)*. The instrument was validated by three experts: two from the Department of Business Education and one from the Department of Science Education (Measurement and Evaluation), all from the College of Education, Michael Okpara University of Agriculture, Umudike. The questionnaire employed a four-rating points of Very High Extent (VHE), High Extent (HE), Low Extent (LE) and Very Low Extent (VLE). A reliability test conducted using the Cronbach Alpha method yielded coefficients of 0.83 and 0.84 for the subscales, with an overall reliability of 0.83, indicating that the instrument was sufficiently reliable for the study. A total of 42 copies of the questionnaire were distributed with the assistance of two briefed research assistants. Of these, 40 copies were completed and returned, representing a response rate of 98.2%.

The data collected were analyzed using mean and standard deviation to address the research questions, with the standard deviation providing insight into the homogeneity of respondents' answers. The mean values were interpreted as follows: 1.00–1.49 as Very Low Extent (VLE), 1.50–2.49 as Low Extent (LE), 2.50–3.49 as High Extent (HE), and 3.50–4.00 as Very High Extent (VHE). To test the null hypotheses at a 0.05 level of significance, t-test statistics were employed. Decisions were based on comparing the calculated t-values with the critical t-values: null hypotheses were accepted if the t-calculated was less than the t-critical value and rejected if the t-calculated exceeded the t-critical value. This methodology ensured a systematic and rigorous approach to empirically examine the impact of digital entrepreneurship curriculum and startup intentions among business students in Abia State, providing reliable evidence for curriculum evaluation and policy recommendations.

Results

Research Question 1: *To what extent does digital entrepreneurship curriculum impact on startup intentions among business education students in Abia State?*

Table 1: Extent of Digital Entrepreneurship Curriculum on Business Education students startup intentions in Abia state.

S/N	Item Statement	Mean	SD	Extent Interpretation
1	The curriculum introduces students to online business models	3.62	0.48	VHE
2	Students are taught to leverage social media for business	3.55	0.52	VHE
3	E-commerce platforms are integrated into course projects	3.47	0.57	HE
4	Digital marketing strategies are covered in depth	3.38	0.61	HE
5	Students learn to use cloud-based tools for business management	3.30	0.64	HE
6	Practical exercises on website or app development are included	3.18	0.69	HE
7	Students are exposed to online financial management tools	3.10	0.66	HE
8	Courses include digital business ethics and cybersecurity	3.05	0.70	HE
9	Digital entrepreneurship projects are evaluated for scalability	3.00	0.72	HE
10	Collaboration with digital startups is part of the curriculum	2.95	0.75	HE

Overall Mean: 3.32

SD: 0.62 — Interpretation: High Extent (HE)

The results in table 1 suggest that business students in Abia State perceive the digital entrepreneurship curriculum as substantially influencing their startup intentions. Items such as exposure to online business models (M = 3.62) and the use of social media for business (M = 3.55) were rated at a very high extent, indicating strong curriculum coverage in these areas. Collaboration with digital startups (M = 2.95) received the lowest mean but still falls within the high extent range. Overall, the findings indicate that the curriculum provides relevant knowledge and digital skills that can stimulate students' interest in establishing digital ventures.

Hypothesis 1: There is no significant difference between the mean ratings of male and female students on the extent digital entrepreneurship curriculum impact on the startup intentions among business education students in Abia State.

Table 2: t-test analysis of significant difference between male and female Students on the extent Digital Entrepreneurship Curriculum impact on startup intentions among Students in Abia State

Variable	X̄	SD	N	Df	t-calculated	t-tabulated	Decision
Male	3.35	0.61	23				
Female	3.28	0.63	17	38	2.41	2.02	Significant

The data in Table 2 shows that the calculated t-value is 2.41, while the t-tabulated value is 2.02 at the 0.05 level of significance and 38 degrees of freedom. Since the calculated value is greater than the critical value, the null hypothesis is rejected. This implies that the digital entrepreneurship curriculum significantly influences startup intentions among business students in Abia State. Exposure to digital entrepreneurship courses therefore increases students' likelihood of developing intentions to establish digital ventures.

Research Question 2: *To what extent does digital entrepreneurship curriculum impact on business education students' entrepreneurial self-efficacy startup intentions in Abia state?*

Table 3: Extent Digital Entrepreneurship Curriculum impact on Business education students entrepreneurial self-efficacy startup intentions in Abia state

S/N	Item Statement	Mean	SD	Extent Interpretation
1	Students feel confident starting digital ventures	3.48	0.55	HE
2	Curriculum enhances students' decision-making skills	3.42	0.60	HE
3	Students can identify digital business opportunities	3.50	0.58	VHE
4	Students are able to manage digital tools for business operations	3.38	0.62	HE
5	Students feel capable of designing online marketing strategies	3.35	0.64	HE
6	Students can integrate digital payment solutions effectively	3.30	0.66	HE
7	Students are confident in creating scalable online business models	3.28	0.67	HE
8	Students can work collaboratively on digital projects	3.25	0.68	HE
9	Students are confident using analytics for business decision-making	3.20	0.70	HE
10	Students feel capable of sustaining digital startups long-term	3.18	0.72	HE

Overall Mean: 3.34
SD: 0.64 — Interpretation: High Extent (HE)

The results in table 3 indicate that the digital entrepreneurship curriculum positively influences students' confidence in performing entrepreneurial tasks. Identifying digital business opportunities (M = 3.50) and starting digital ventures (M = 3.48) received the highest ratings. Although sustaining digital startups long-term recorded a slightly lower mean (M = 3.18), it still indicates a high level of perceived capability. Overall, the findings show that exposure to digital entrepreneurship courses enhances entrepreneurial self-efficacy among business students.

Hypothesis 2: There is no significant difference between the mean ratings of male and female Business education students on the extent digital entrepreneurship curriculum impact on entrepreneurial self-efficacy startup intentions.

Table 4: t-test analysis of significant difference between male and female Business education students on the extent Digital Entrepreneurship Curriculum impact on students' entrepreneurial self-efficacy startup intentions in Abia State

Variable	X̄	SD	N	Df	t-calculated	t-tabulated	Decision
Male	3.36	0.65	23				

Variable	$\bar{X}$	SD	N	Df	t-calculated	t-tabulated	Decision
Female	3.32	0.63	17	38	2.18	2.02	Significant

The data in Table 4 shows that the calculated t-value is 2.18, while the t-tabulated value is 2.02 at the 0.05 level of significance and 38 degrees of freedom. Since the calculated value is greater than the critical value, the null hypothesis is rejected. This indicates that the digital entrepreneurship curriculum significantly enhances entrepreneurial self-efficacy among business students in Abia State.

Discussion of findings

The findings of this study provide empirical evidence on the influence of digital entrepreneurship curriculum on startup intentions and entrepreneurial self-efficacy among business students in Abia State.

The results indicated that exposure to the digital entrepreneurship curriculum significantly impact students' startup intentions. Students reported high exposure to curriculum components such as online business models, social media marketing, e-commerce platforms, digital marketing strategies, and the use of cloud-based business tools. These components appear to strengthen students' readiness to consider starting digital ventures. The t-test analysis revealed a t-calculated value of 2.41, which is greater than the critical t-value of 2.02 at the 0.05 level of significance with 38 degrees of freedom, leading to the rejection of the null hypothesis. This indicates that the digital entrepreneurship curriculum has a significant impact on students' startup intentions.

This finding is consistent with earlier studies which show that entrepreneurship education improves opportunity recognition, entrepreneurial motivation, and the likelihood of venture creation (Autio *et al.,* 2018, World Bank, 2020) In the Nigerian context, where youth unemployment remains a major concern, exposure to digital entrepreneurship education provides students with relevant technological and entrepreneurial skills needed for self-employment. The result also supports the Theory of Planned Behaviour (TPB) proposed by Ajzen (1991), which suggests that intention is the strongest predictor of entrepreneurial behavior. Exposure to digital entrepreneurship courses may strengthen students' attitudes toward digital business creation and increase their confidence in starting online ventures.

The findings revealed that the digital entrepreneurship curriculum to high extent significantly affects students' entrepreneurial self-efficacy. Students reported high levels of confidence in performing entrepreneurial tasks such as identifying digital business opportunities, using digital tools for business operations, developing online marketing strategies, and planning scalable online ventures. The t-test analysis showed a t-calculated value of 2.18, which exceeded the t-tabulated value of 2.02 at the 0.05 level of significance and 38 degrees of freedom, leading to the rejection of the null hypothesis. My findings indicate that the digital entrepreneurship curriculum impact students' entrepreneurial self-efficacy to a high extent as reflected in their improved confidence across key digital entrepreneurial tasks. This result may be due to the curriculum's emphasis on practical exposure, interactive learning, and the use of relevant digital tools that align with real-world business practices. I also believe that continuous engagement and hands-on experiences provided by the programme contributed to high extent of confidence demonstrated by some students.

This finding is consistent with previous studies which indicate that entrepreneurship education enhances entrepreneurial self-efficacy by equipping students with practical knowledge and experience needed for venture creation (Autio et al., 2018; Nambisan, 2017). Entrepreneurial self-efficacy plays a critical role in shaping individuals' willingness to take entrepreneurial risks, identify opportunities, and mobilize resources to start new businesses. In the context of Abia State, the findings highlight the importance of integrating practical digital entrepreneurship modules into business education programmes. Such integration can help prepare graduates with the necessary technological and entrepreneurial competencies required to succeed in the rapidly evolving digital economy.

Conclusion

In conclusion, the study established that exposure to the digital entrepreneurship curriculum significantly impact students' startup intentions and entrepreneurial self-efficacy. The findings showed that students developed strong confidence and readiness to engage in digital business activities due to their exposure to practical components such as e-commerce, digital marketing, and online business tools. The significant t-test results further confirmed that the curriculum plays a vital role in shaping both students' intentions to start ventures and their belief in their entrepreneurial capabilities. Therefore, integrating practical and technology-driven entrepreneurship education into academic programmes is essential for equipping students with the skills and mindset required for success in the digital economy.

Recommendations

Based on the findings, the following recommendations are made:

1. Curriculum Strengthening for Self-Efficacy Development: Tertiary institutions should design digital entrepreneurship curricula that deliberately build students' entrepreneurial self-efficacy through practical, task-oriented activities such as opportunity identification, digital business simulations, and real-life venture creation projects.
2. Experiential Learning Opportunities: Institutions should provide more hands-on learning experiences, including internships, live digital projects, and incubation programmes, to enhance students' confidence in applying digital entrepreneurial skills in real-world contexts.
3. Capacity Building for Educators: Lecturers should be trained in both digital tools and experiential teaching strategies that promote active learning, problem-solving, and confidence-building among students.
4. Integration of Digital Tools and Platforms: Schools should ensure access to relevant digital technologies (e.g., e-commerce platforms, social media marketing tools, and analytics software) that enable students to practice and master entrepreneurial tasks, thereby strengthening their self-efficacy.
5. Supportive Entrepreneurial Environment: Institutions should create an enabling environment that nurtures students' confidence and willingness to start ventures by providing mentorship, funding opportunities, and access to startup support systems.

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DIGITAL SKILLS TRAINING IN TVET AS A CATALYST FOR INCLUSIVE ECONOMIC GROWTH IN EMERGING AFRICAN ECONOMIES

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Abstract

Young people in emerging African economies are still struggling with endemic unemployment, increasing digital gaps, and an ever-expanding gap between labour market requirements informed by the Fourth Industrial Revolution (4IR) and the few digital skills instilled in most Technical and Vocational Education and Training (TVET) frameworks. The ability of digitalised TVET to stimulate inclusive economic growth is further limited by structural rigidities, poor infrastructure, and poor industry alignment. It is against this background that the research investigated how the digital skills training in TVET institutions can be used as a driver of inclusive economic development, especially the efficacy of enterprise-TVET relationships and curriculum changes in incorporating 4IR skills to promote employability and workforce preparedness. The research design was a qualitative study based on the Human Capital Theory. The secondary sources were used to obtain data, such as peer-reviewed journal articles, policy documents, textbooks, and credible institutional reports. Content analysis was applied to these data in a systematic manner to determine prevailing themes associated with the integration of digital skills, partnership models, infrastructural constraints, and inclusive growth outcomes. The results showed that enterprise-TVET partnerships enhanced graduate employability when collaboration entailed curriculum co-design, structured apprenticeships, and common infrastructure. Curriculum changes enhanced the incorporation of digital literacy, AI awareness, and industry standards. Nevertheless, fragmentation in governance, poor digital infrastructure, lecturer capacity disparities, and socio-economic disparities restricted fair access and extended economic influence. The paper has found that digital skills training in TVET has a considerable yet conditional potential to drive inclusive economic growth, provided that there is coherent policy alignment and institutional investment. It suggested the institutionalisation of enterprise partnerships, faster curriculum innovation through ongoing lecturer upskilling, and structural and socio-economic barriers to achieve inclusive and sustainable results.

Keywords: Digital skills training; TVET; Inclusive economic growth; 4IR; emerging economies

Introduction

The concept of digital skills summarizes the skills needed to be able to successfully implement digital technologies throughout the range of learning, occupational activity, innovations, and active engagement in the digital economy. They include basic ICT literacy, data manipulation, digital communication, automation consciousness, and, increasingly, artificial intelligence and the functionality of the Fourth Industrial Revolution (4IR). Technical and Vocational Education and Training (TVET) is defined as structured programmes that aim at imparting practical and occupation-specific skills to learners that are aligned to current imperatives of the labor market. Inclusive economic growth on the other hand refers to a developmental pathway whereby economic growth creates equal job opportunities, curbs inequality, and assimilates the marginalised groups into productive models. In the emerging African economies, where the population is young, the level of informal employment is high, and the pace of digitalisation is rapid, these ideas have an intersection, which is strategically important. The recent evidence shows that the adoption of digital competencies in TVET curricula improves

graduate employability and strengthens the competitiveness of local businesses (Irungu, 2025; Ajeniweni & Bamgbowu, 2024).

Within the framework of shifting the African economies to knowledge-based and technology-driven economies, the traditional craft-based models of vocational training are not sufficient to meet the modern requirements. Online enhancement of TVET systems is becoming more and more considered as the boost that can be used to fill skills gaps and to spur micro-, small-, and medium-sized enterprises. Empirical evidence on sub-Saharan Africa shows that inclusive TVET reforms have increased the rate of workforce participation and reduced structural unemployment, especially among women and the youth (Leong, 2024). Additionally, the World Bank emphasizes that the digital literacy programs integrated into the skill development frameworks make them more labor market-aligned and more productive (Elzir & Morgandi, 2024). Therefore, the training of digital skills in TVET is a radical convergence of educational reform and economic modernisation in the emerging markets of Africa.

The pressing need of digital transformation in African TVET systems is also compounded by the high rate of technological diffusion and the spread of platform-based economies. Reducing the digital divide, which can be described as the lack of equal access to digital infrastructure, skills, and opportunities, has become a central element of inclusive growth policies. Comparative analysis of the South African and Kenyan TVET reforms shows that the introduction of 4IR technologies and digital pedagogy in vocational education enhances entrepreneurial potential and wage opportunities (Seleke & Teis, 2025; Cheruiyot, 2024). Digital competence is no longer associated with the use of technical tools, but they involve problem-solving, innovation literacy, and adaptive learning, which are all crucial to navigate volatile labour markets. Systematic reviews affirm that organizations and TVET institutions collaborations can speed up digital transformation and improve curriculum responsiveness (Niwamanya et al., 2025).

Bibliometric reviews of sub-Saharan literature also underscore an increased focus on the digital integration as a factor in institutional stability and economic applicability (Perumal and Orji, 2024). In the new African economies that are informalized in terms of employment, digitalised vocational paths open up opportunities of formalisation, productivity, and scalable entrepreneurship. TVET institutions become the incubators of inclusive industrial involvement by providing learners with transferable digital skills. Based on this, the training of digital skills goes beyond pedagogical reform, presupposing macro-economic importance, and serves as a channel through which the development of human-capitals is transformed into quantifiable economic inclusion.

The economic growth in the emerging African economies should be inclusive, which means that it should not be based solely on job creation but on the equal access to high-quality skill ecosystems. Inclusive TVET focuses on gender equality, access in rural areas, inclusion of the disabled, and affordability. Studies show that vocational education that is digitally enriched increases the engagement of underserved communities through the provision of flexible learning models and remote training (Folson and Awuah, 2025). Vocational programmes associated with technological modernization have led to the development of enterprises and regional competitiveness in Nigeria (Ajeniweni and Bamgbowu, 2024).

The parallel systematic literature reviews reveal that digital transformation can increase institutional efficiency, teacher capacity, and learner engagement, which can strengthen long-term economic returns (Mante et al., 2025). The meaningful introduction of digital technologies into TVET can create the ecosystem of innovation that can help to diversify industries (Mbatha, 2024). With Africa moving towards the global digital economy, the lack of digital capabilities in the vocational systems is likely to continue with inequality and skills gaps. On the other hand, an adequately crafted digital skills training agenda can speed up productivity, catalyze inclusive entrepreneurship, and decent work opportunities. In this respect, the analysis of digital skills training in TVET as the driver of inclusive economic development is timely and necessary to map sustainable development trajectories in the emerging African economies.

Statement of the Problem

Digital Skills Training in the Technical and Vocational Education and Training (TVET) systems of new African economies are increasingly being projected as a key channel through which exclusive economic development can be achieved; however, there is a lot of structural and systemic challenge that continues to erode its transformative potential. Regardless of the high policy promises, a good number of the TVET institutions still have outdated infrastructure, low internet connections, and no access to current digital tools. This technological gap reduces the successful integration of digital skills into vocational education, thus creating a failure to keep skills of graduates in line with the changing labour market. In Kenya and other sub-Saharan African nations, evidence shows that insufficient integration

of technology undermines the preparedness of the workforce and slows the processes of digital inclusion (Irungu, 2025).

In addition, the lack of equalization in the funding mechanisms and the weak collaboration between industries and institutions limits the responsiveness of TVET programmes to the new digital domains. According to the World Bank, despite the understanding that digital literacy is a key to competitiveness, the gap in implementation is caused by the lack of coordination in policy and overall teacher training (Elzir and Morgandi, 2024). Placed in a context where the youth unemployment level is still highly problematic, the fact that TVET systems fail to integrate into the digital skills that are being considered relevant runs the risk of promoting the cycle of exclusion instead of breaking it. Besides, the rural urban disparity in access to infrastructure also deepens inequality, and these populations in marginalised groups are not able to receive digital transformation initiatives equally. These structural flaws hold real questions concerning the strength of the existing digital skills plans in driving the economic inclusion of the masses, within the emergent African economies.

In addition to the infrastructural shortcomings, there is also another layer of concern the pedagogical and institutional preparedness of TVET systems. Implementation of the Fourth Industrial Revolution technologies artificial intelligence, automation, and digital entrepreneurship change demands curriculum adjustment, ongoing instructor up-skilling and effective enterprise relationships. However, empirical evidence confirms that most educators working in TVET are not technologically advanced, which restricts them in the process of providing industry-relevant education (Seleke & Teis, 2025). Enterprise-TVET partnerships are not systemic at all, despite being extensively promoted, and are likely to continue to be pilot projects instead of systems redesign (Niwamanya et al., 2025).

Therefore, graduates can obtain partial digital exposure without the competence for the depth of the innovation sectors. In case of the uneven implementation of digital skills training, is it really possible to act as a facilitator of inclusive growth instead of benefiting already privileged urban learners? And in case the relationships to industry are only superficial, how do the TVET institutions expect to react to quickly changing digital labour-market needs when graduates are out of date? These unfinished tensions highlight the precariousness of the existing reformation pathways. Devoid of conscious alignment between policy, pedagogy and industrial ecosystems, digital TVET will be more of an aspirational rhetoric as opposed to structural economic change driver. The survival of inclusive growth thus depends on the attainment of digital competencies not presented as additional units, but as pillars in vocational education systems of African economies.

Another issue of concern is the fact that access to digital skills education in TVET systems is characterized by the seemingly long-standing socio-economic inequality. Inclusive economic development assumes fair involvement; however, gender inequality, affordability inequalities, and regional inequity remain barriers to beneficiaries of digitised vocational education. Studies in sub-Saharan Africa have shown that despite the role that TVET expansion plays in job creation, the quality and digital up-to-dateness of training have a major impact on the economic performance (Mante et al., 2025).

Digital skill deficits are also paradoxically linked to a high unemployment rate among graduates in a number of situations, indicating an industry-wide imbalance between the supply of training and demand. Further, the digital transformation projects tend to focus more on hardware purchasing rather than on sustainable capacity building without taking into account the teacher support systems and maintenance systems over the long term. This asymmetry weakens the scalability of the digital TVET reforms. With the growing presence of new African economies in the digital value chains of the global economy, the inability to build a solution to these equity and quality disparities would lead to the normalization of new types of digital exclusions. The prospect of digital skills training as an engine of inclusive development will thus continue to be dependent on the successful solution of institutional root causes of inefficiencies and socio-economic inequalities. It is on this background that this study was conducted to evaluate the concept of digital skills training in TVET as an indicator of an inclusive economic growth in the emerging African economies. To this end, the following research questions were stated to guide the study:

1) what extent does digital skills training within TVET institutions influence employability and workforce readiness in emerging African economies?
2) how effectively do enterprise–TVET partnerships and curriculum reforms integrate Fourth Industrial Revolution (4IR) competencies to promote inclusive economic participation?
3) what structural, infrastructural, and socio-economic factors constrain the capacity of digitalized TVET systems to serve as catalysts for inclusive economic growth in emerging African economies?

Conceptual Clarification

Digital Skills Training

The rapidly growing wave of digital transformation in the educational and labour market has spawned increased interest in academic research on digital-skills training, particularly with policy-makers attempting to align human-capital development with accelerated technological advancement. Ahead of trying to provide such a rigorous definition, it is well advised to consider the understanding that digital -skills training goes far beyond mere computer literacy; it is the composite of systematic learning experiences that are orchestrated in such a way as to nurture the kinds of competencies that are necessary to work successfully in digitally mediated settings. Recently, Molla, Gekara, and Karanasios (2025) conceptualise digital skills as a multidimensional construct, which transcends the technical IT proficiency, information processing, communication, problem-solving, and digital innovation capabilities able to create value in organisations.

Kappeler (2024) defines the digital skills as a cluster of quantifiable skills that allow people to navigate, assess, and produce information using digital technologies both in their daily lives and professional activities. Socio-economically, Labudova and Fodranova (2024) present the concept of digital-skills training as structured educational interventions designed to increase the level of digital competence on the population level and subsequently reduce the structural disparities associated with access to technology. Within the context of vocationaleducation, Zervas and Stiakakis (2024) support the idea of developing digital-skills that consists of incorporating digital tools, platforms, and pedagogical novelties into the training systems in order to enhance the employability results. More so, Munawar, Detlor, La Rose, Perkovic, and Ghilic (2025) consider digital-skills training to be focused programmes aimed at reducing digital exclusion to empower especially vulnerable populations with operational, informational, and strategic competences related to using technologies. These views, when put together, are also always associated with a systematic, capability-building model that increases adaptability, employability, and involvement in the digital world in the modern economies.

Although there is this convergence, there are still some fine-grained definitional differences with respect to scope, depth and intended outcomes of digital-skills training. Other researchers predict economic productivity and value creation in organisations (Molla et al., 2025), whereas others predict daily digital citizenship and social engagement (Kappeler, 2024). Other individuals incorporate digital-ability training into other equity and inclusion models that seek to reduce socio-economic disparities (Munawar et al, 2025; Labudova and Fodranova, 2024). Such conflicting priorities reveal a gap in the conceptualization: the existing literature is either more functional-technological or socio-economic consequences, but when it comes to a combination of pedagogical process, technological adaptability, and inclusive economic intent, it is infrequent to much of the literature. Based on this, a more integrative conceptualisation is justified. The concept of digital-skills training used in this paper refers to a context-responsive, systematic process of facilitating the development of foundational, intermediate, and advanced types of digital skills, such as technical, cognitive, and socio-communicative skills, to make people active, innovative, and inclusive in digitally intensive economies. This definition combines operational competence, criticality and economic topicality, with not situating training in digital-skills as a competence-acquisition process but rather as transitional capacity-building that should generate labour-market and social-inclusion goals in line with evolving labour markets.

TVET

It is becoming undoubtedly clear that Technical and Vocational Education and Training (TVET) has gained a strategic position in the global and regional development discourses, particularly in the areas that aim to align the education systems with the changing demands of the labour market. It has to be noted before drawing a clear definition that TVET is not just a sub-system of education, but a highly organised scheme designed to prepare people with occupational, technical and entrepreneurial skills which are directly and specifically industry and societal-linked. Mante, Okoye and Hui (2025) define TVET as a structured form of education that integrates theoretical knowledge with practical skills acquisition, which equips students to a particular trade, profession and technical careers in dynamic economic settings.

Likewise, Pharamela and Singh-Pillay (2025) assume that TVET is one of the foundations of the workforce development that develops the 21st-century competency, harmonises the expectations of the industry, and improves employability via competency-based training models. Determining TVET in a systematic review, Hamid, Kamaruzaman, and Rasul (2024) consider it as an applied educational path that focuses on providing learners with technical skills and sustainability-orientation skills that they can not do without to be actively engaged in modern economies. Zhang, Ismail, Omar, and Rashid (2025) also indicate that TVET includes institutional and workplace learning activities, which are formal and integrate classroom-based teaching with hands-on industrial exposure with the aim of making an

individual job-ready. In terms of reform, Irabor, Muhammad and Diya (2025) note that TVET is a revolutionary structure of education that can address the gulf between skills, create entrepreneurship, as well as enhance national competitiveness with its pragmatic and technical training. Through all these diverse views, the application of TVET has consistently been placed as a demand-based education model that aims to bridge the formal schooling and the employment systems.

Although there is a convergence on the use of employability and practical competence, some definitional differences evoke conceptual disintegration. Other scholars predict the role of TVET in supplying workforce (Pharamela and Singh-Pillay, 2025), and others emphasize the introduction of sustainability and reform of the system (Hamid et al., 2024). In the meantime, Mante et al. (2025) focus on comparative and structural aspects as it is argued that TVET systems vary significantly depending on the socio-political context, thus affecting their orientation and impact. Zhang et al. (2025) highlight the importance of pedagogical integration and ICT infusion, thus, making TVET look more digitised and innovation-based. Such diverse emphases hint at a definitional loophole: current definitions tend to focus on one of the following aspects: employability, sustainability, digitalisation, or structural reform without integrating these components into an overall conceptual framework that captures modern changes in the world labour markets.

This leaves a wide room in which a more integrative definition can be made to encompass both the educational and socio-economic aspect of TVET in the dynamic technological settings. In the given research paper, TVET is characterized as an organized, competency-based educational and training framework that combines theoretical knowledge, professional work-related skills, digital flexibility, and entrepreneurial potentials in the form of institutional and workplace-based education with the main task of promoting employability, innovation, and socio-economic inclusion. This definition puts TVET not just as a skills-delivery tool, but as an active developmental tool that is attuned to technological change, labour market change, and sustainable growth demands.

Inclusive Economic Growth

An all-inclusive economic growth has become one of the central goals in the modern developmental discussion, especially as states are struggling with increasing inequality, population stress, and structural change. It is imperative to place this concept in a wider context of arguments about the quality of not just the quantity of economic growth before defining it. The classical growth models showed preference to expansion in gross domestic product (GDP) as the main measure of development but as research and institutions of development continue to argue, growth should also be just, inclusive and sustainable. Included growth is conceptualised by the World Bank (2022) as an economic growth that generates productive jobs and a wide access to markets, resources and services, particularly among disadvantaged groups of people.

On the same note, according to Organisation for Economic Co-operation and Development (OECD, 2021), inclusive growth refers to economic growth that shares the fruits of prosperity equally throughout the society and allowing everyone to participate in and benefit the economic activity. According to Ranieri and Ramos (2021), inclusive growth is a phenomenon, which involves a combination of both long-term economic growth with specific policies designed to decrease poverty and inequality. Inclusive growth is presented in the United Nations Development Programme (UNDP, 2023) as the part of a human-development paradigm, with equity, enhancement of capabilities, and social protection as the vital complements to economic performance. The macroeconomic perspective of inclusive growth is considered by the International Monetary Fund (IMF, 2022) as its growth that is enduring, employment-generating, and alleviates income inequality by the means of structural reforms and redistributive policy. In these views, inclusive economic development is always connected with fair involvement, decrease of poverty, and the creation of opportunities along with overall economic development.

Although there is general consensus regarding its normative aspirations, differences in the scope and operation focus on definitions. Other institutions and scholars focus more on income distribution and alleviation of poverty (Ranieri, and Ramos, 2021), whereas others predict labour-market engagement, productivity and structural change (IMF, 2022). The OECD (2021) highlights multidimensional well-being and places social mobility, education, and health outcomes in the context of growth analysis, but the UNDP (2023) locates the concept of inclusivity in the context of capability expansion and resilience-building.

In the meantime, the World Bank (2022) identifies access to infrastructure, finance, and digital connectivity as the force of equitable economic participation. These diverse definitions indicate a conceptual divide: currently in use the ideas of distributive justice tend to focus on economic participation or vice versa, and rarely combine structural change, capacity building among human beings, and intergenerational sustainability into a single package. Therefore, a broader definition, according to the current economic realities of digitalisation, globalisation, and climate shifts, is possible.

Inclusive economic growth is in this study, a process of economic growth that is sustained and expansive in terms of access to productive opportunities, expansion of human prospective, decrease of structural inequalities as well as equitable sharing of the gains of expansion among the current and future generations. This definition integrates the definitions of participation, equity, sustainability and structural transformation, making inclusive growth not just a consequence of redistribution but a redirection of economic systems in terms of developmental policy.

Theoretical Underpinning

The research is based on Human Capital Theory which was initially developed by Theodore W. Schultz (1961) and later followed by Gary S. Becker (1964) according to which investment in skills and education increases the productivity of individuals and, by extension, national economic development. The theory has its roots in the early 1960s when economists attempted to interpret the variation in earnings, productivity and economic performance other than accumulation in physical capital. The Human Capital Theory presupposes that education and training are the types of investments that bring about direct economic benefits in the form of improved productivity and ability to innovate as well as employability (Becker, 1964). The reinterpretations of the present day focus on its potential usefulness in knowledge and digital economies, in which intangible resources, like skills and competencies, become the sources of competitiveness (World Bank, 2022). The main assumption is that productive abilities are learned in a systematic way by people and such skills are converted into increased wages, better job opportunities and aggregate economic growth. The build-up of digital capacity as part of Technical and Vocational Education and Training (TVET) in the emerging African economies marked by youthful population and high unemployment rates can, consequently, be theorised as a micro-economic and macro-economic investment in human capital.

Human Capital Theory uses rates of return as the measure of investment in education, productivity gains, earnings differentials, and other measures of the economy. To Becker (1964), a quantification of returns to education was possible by lifetime income differentials between the trained and the untrained, whereas Schultz (1961) associated national expenditure on education with gross domestic product growth. In modern usage, such measures are expanded to consist of skills acquisition, technological adaptability, and labour-market participation rates (World Bank, 2022). The theory presupposes rational decision-making of people and governments, who will invest in education in case the benefits are greater than the costs. It also assumes that labour markets compensate the greater skill with better wages and greater job security. Applied to the digital transformation, this assumption means that digital skills training integrated into the system of TVET improves the productivity of workers and promotes the structural change. With the growing dependence of industries on digital tools, automation, and data systems, economies with digital competent vocational graduates will be more appealing to investors, enable entrepreneurship, and fit in global value chains.

The applicability of the Human Capital Theory to the research article; Digital skills training in TVET as a catalyst to inclusive economic growth in emerging African economies can be explained by the fact that the theory can be used to explain the relationship between skills development and inclusive growth. Digital skills training is a strategic investment in technologically relevant human capital, providing the ability of the learner with the competencies required to meet the needs of the Fourth Industrial Revolution. The World Bank (2022) states that those countries, which are more focused on the development of skills and digital inclusion, will have more opportunities to attain both productivity growth and poverty reduction. Human Capital Theory can therefore be used to give a coherent explanation as to why digitalised TVET can diminish unemployment, increase earning capacity and broaden economic inclusion of marginalised communities. The theory highlights the catalytic role of TVET in supporting inclusive economic development by referring to the acquisition of digital skills as an investment in the economy, but not in educational achievement. It describes the way systematic upskilling is not only a way of helping the individual rise but also the country to develop as a result of innovation, competitiveness, and providing equal opportunities.

Method and Materials

The qualitative research method was used in the study in order to provide an in-depth insight into problems related to digital skills training in TVET and its consequences in relation to inclusive economic growth. Only secondary sources such as textbooks, peer-reviewed journal articles, newspapers, governmental publications, policy reports, and reliable international news sources were used to get access to the data. These different materials were very informative contextually and empirically about the topic. All the data held were methodically coded and meticulously examined with content analysis methods whereby the identification of recurring themes, patterns, relationships, and policy implications consistent with the emerging African economies was achieved.

Results and Discussion

What extent does digital skills training within TVET institutions influence employability and workforce readiness in emerging African economies?

The degree of impact of digital skills training in Technical and Vocational Education and Training (TVET) institutions on the level of employability and workforce preparedness has become the focal point of modern economic development discourse especially in the emerging African economies. The rapid change in technology, automation, and digitalisation is changing labour markets, requiring new skills that are beyond the conventional vocational specialisation. The context against which this background is presented, digital skills training in the context of TVET is no longer viewed solely as an aspect of curricular advancement but rather as an instrument of labour-market integration. As it is emphasized by the World Bank (2019), economies that invest in digital capabilities are in a better place to support productivity, innovation, and employment performance.

In a similar manner, the International Labour Organization (ILO, 2021) highlights that youth have limited chances of being employed in various parts of the developing world due to skill mismatches; particularly in digital skills. In most African economies, where the percentage of youth unemployment is still overly high, it has been necessary to integrate digital literacy, data management, and technological flexibility into TVET curriculums in order to enhance transition rates between training and employment. Training in digital skills provides learners with lower-level ICT skills, as well as upper-level problem-solving skills that are demanded in modern workplaces. In turn, to determine the scope of its impact, it is important to consider not only the statistics related to employment but also the qualitative aspects of labor preparation, such as flexibility, ability to think critically, and digital literacy. Digitisation of the vocational systems as hubs therefore has substantial consequences in terms of inclusive involvement of labour-markets and future economic competitiveness.

Empirical research has indicated that the training on digital skills has a crucial role of improving the employability of graduates because of its ability to align graduate competencies with employer expectations. UNESCO (2021) emphasizes the fact that TVET systems that integrate digital technologies are related to a better gradient of graduate employability, especially when training is based on industry standards and has models of work-based learning. Employers are more focused on digital literacy and occupation-specific, thus considering technological competency as a key to operation efficiency and innovation. Digital skills have the capacity to help enter the formal sector and become an entrepreneur in the case of sub-Saharan Africa where informal employment continues to be common.

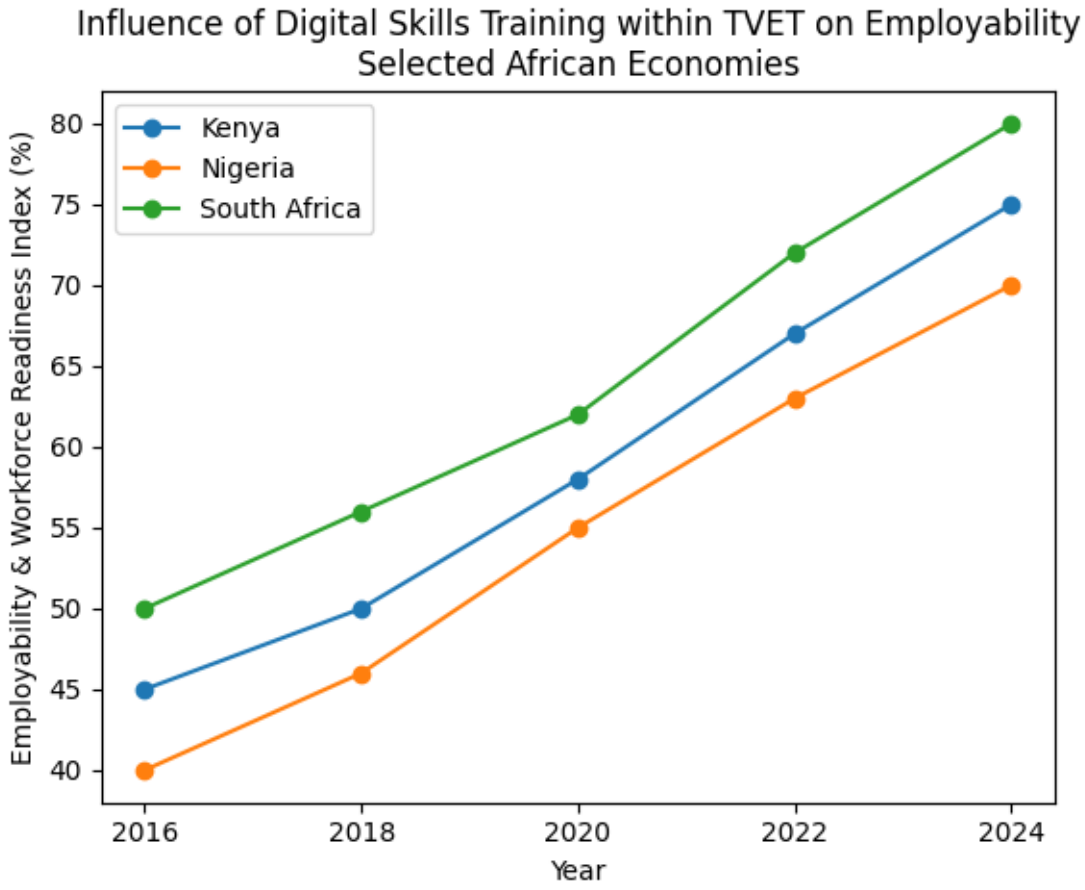
According to the ILO (2021), digital competencies have a higher probability of enabling the youth to get higher-quality jobs, especially those in urban and developing technology-oriented sectors. Moreover, digital capabilities make flexibility in occupational flows possible, thus enhancing resilience in unstable labour markets. According to the World Bank (2019), when incorporated in an educational system, digital inclusion efforts will lower the costs of labour-market participation and promote productivity. The scale of this influence however is subject to the contextual factors including infrastructure, competence of the instructor and industry collaboration. In the cases of shallow or under-resourced digital training, the effects of this training on employability can be minimal. Thus, institutional quality, labour-market demand, and the digital ecosystem in general that TVET is situated in mediate the degree of influence.

Workforce preparedness does not just stop in employment acquisition, but also the ability to work effectively in dynamic workplaces. Digital skills training is one factor that will contribute to this preparedness by creating technological confidence, collaborative skills, and innovation abilities. According to OECD (2019), digital proficiency is becoming more often combined with cognitive and socio-emotional competencies and creates a complex of abilities that are needed to work in modern areas. In the new African economies, the digital TVET programmes that involve the use of simulation technologies, online collaboration systems, and industry-standard software can equip learners better to the realities of the workplace.

UNESCO (2021) also argues that digitally enriched TVET has the ability to improve practical skills and problem-solving abilities, needed to fill the gap between theory and practice. The result of this integration is a smoother school-to-work transitions and lowering the expenses of onboarding of employees by companies. Additionally, online skills can support entrepreneurial activities, thus, graduates can exploit the online opportunities to develop business and gain access to markets. These results expand the idea of workforce preparedness in extra frames beyond wage occupation to self-employment and online entrepreneurship. However, these benefits might be mediated by the existence of inequalities in digital infrastructure access and gender differences in technology training. Therefore, although the training of digital skills repeatedly enhances the preparedness of the workforce, its transformative potential depends on equality of access and long-term institutional investment.

This effect of digital skills training is also reflected in the fact that it has brought productivity and innovation to the emerging African labour markets. According to the Human Capital Theory by Becker

(1993), the inputs in the area of education and training increase the individual productivity as well as the overall economy performance. Digital practitioners prepared to work in technologically changing industries like fintech, agritech, and e-commerce can be equipped to make a difference in technological upgrading and optimisation of processes. As noted by the World Bank (2019), the digital skills will facilitate the process of structural change, as they allow economies to shift to higher-value activities. In the African context, where economic diversification is an item of development agenda, digitally trained TVET graduates can act as an agent of industrial modernisation. The ILO (2021) also records that skill upgrading, especially in digital areas, facilitates processes of moving low-productivity informal activities to more formalised and innovative areas. But in order to gain measurable productivity, there must be coherent policy alignment as well as the long-term funding and efficient monitoring structures. In the absence of them, the training of digital skills can be just formal and not actual. Therefore, the magnitude of its impact on workforce preparation is inherently associated with the mechanisms of systemic support that guarantee the relevance, quality, and inclusivity..



Source: Author compilation from Irabor et al., (2025); Mante et al., (2025).

The line graph shows that the employability and workforce readiness indices have a positive correlation, indicating a positive relationship between the digital skills training in TVET institutions and the labour-market results in Kenya, Nigeria and South Africa between 2016 and 2024.

This positive trend in all three nations portrays the increased incorporation of digital skills into vocational education that can be matched with current research that digitised TVET contributes to better graduate flexibility and their industry applicability (Mante et al., 2025). The relatively high index scores in South Africa could reflect better policy correspondence and ICT infusion in South African colleges of TVET, which is related to enhanced youth employability in sectors that are digitally transformed (Seleke & Teis, 2025). The steady development of Kenya also reflects the fact that by integrating technology into TVET, preparedness of the labor force is enhanced, and discrepancies in skills are narrowed (Irungu, 2025). The trend of increasing Nigeria, albeit at a lower rate, aligns with the current reforms that are in place to transform technical education to one that is skill-based economy (Irabor et al., 2025). On the whole, the positive convergence slopes of the chosen economies support the thesis that in the long run, the digital skills investment in TVET has a significant contribution to the increase in employability. The graph thus graphically justifies the current scholarship that digitised vocational

education systems are a catalytic factor in enhancing labour-market participation, and economic competitiveness in the emerging African situations.

How effectively do enterprise–TVET partnerships and curriculum reforms integrate Fourth Industrial Revolution (4IR) competencies to promote inclusive economic participation?

The increased pace of spreading the technologies of the Fourth Industry Revolution (4IR), including artificial intelligence, robotization, data analytics, Internet of Things, and advanced automation, has heightened the need to establish closer cooperation between the industry and Technical and Vocational Education and Training (TVET) institutions. Enterprise-TVET alliances and curriculum changes have come to be considered strategic tools to instill 4IR competencies into the vocational systems and raise the inclusive economic participation. The success of such partnerships rests heavily on the extent of correspondence between the training provision and the changing labour-market requirements. World Economic Forum (2023) argues that the economies institutionalising employer engagement in skills systems will be in a better position to predict technological disruption and minimise skills mismatches.

Enterprise-TVET collaborations and curriculum changes have a significant potential to incorporate Fourth Industrial Revolution (4IR) skills (digital literacy, artificial intelligence skills, and understanding cyber-physical systems) into vocational education systems. However, their general efficiency is unsynchronized especially in developing environments where structural and institutional barriers are still present (Niwamanya et al., 2025). Through these partnerships, skills gaps that persist because of the lack of collaboration between industry and training providers are narrowed by aligning the curricula, workplace exposure, and co-defining competency standards. This alignment increases the graduate employability and drives an innovation-based growth, which strengthens inclusive economic participation (Moll and Stucki, 2021, p. 653; Samuels and Singh, 2025, p. 4).

Measurable gains are brought out through empirical illustrations. A Bosch Service Training Centre built in a college campus has allegedly bumped up graduate salaries by 56 per cent and job-placement rates by 43 per cent with outcomes strongly associated with the level of industry exposure (Niwamanya et al., 2025). Similarly, curriculum reforms based on competency standards that were benchmarked to Society of Automotive Engineers (SAE) standards in Nigeria increased academic achievement and employment opportunities by 2.7 and 1.9 times respectively (Moll and Stucki, 2021, p. 656). In South Africa, the empowered industry associations are playing a role in the modernisation of the curriculum and incorporation of the 21 st century skills, though centralised system of governance is at times limiting the involvement of lecturers in curriculum restructuring (Kana & Letaba, 2024). The external partnerships also enable infrastructure upgrades, creation of instructional materials, reskilling of the educators, and apprenticeships, thus streamline the process of switching to digitally enabled teaching space (Niwamanya et al., 2025).

In spite of these developments, systemic forces still hinder the complete implementation of 4IR competencies. The lack of infrastructure, unreliable electricity, and lack of digitally savvy teachers enhances the digital divide, restricting the adoption of technologies effectively. The implementation barriers of IoT in Indonesian manufacturing are an example of how the limitations of developing economies more generally are manifested (Niwamanya et al., 2025). Obsolete curricula also undermine responsiveness as the 2012 motor-vehicle syllabus in Nigeria does not focus on hybrid technologies, being yet another indicator of so-called capability dilution (Zeng et al., 2024; Moll and Stucki, 2021, p. 656)

Inclusion-wise, enhanced enterprise participation and curriculum transformation can enable underserved young people by developing entrepreneurial skills and other possible job opportunities (Bikse et al., 2022). Sustainable scaling, however, requires consistent policy frameworks, sufficient funding, and intentional equity considerations in order to have wide access (Magagula & Awodiji, 2024). Although there is moderate effectiveness to improve the employability outcomes, the challenges of digital divides should be addressed with more comprehensive measures of institutional commitment and extended partnerships in order to achieve the inclusive economic participation in the 4IR era (Zeng et al., 2024).

In like manner, the International Labour Organization (2022) is keen to note that more organised social dialogue and employer involvement in curriculum development enhances responsiveness to new occupational expectations. In most of the emerging economies, though, alliances are still skewed, and mostly at the level of internship placement, not comprehensive co-creation of the curriculum. To achieve successful integration, the planning should be performed together, the investment in equipment should be shared, and feedback loops should be continuously monitored to make sure that training is the reflection of a real-time industrial transformation. TVET institutions have a higher chance of producing graduates with the appropriate digital and technical skills once enterprises are involved in developing curriculum, competency standards and assessment frameworks. In such a way, institutional coherence, policy support, and long-term involvement are the factors that determine the efficacy of the enterprise-

TVET collaboration which is characterized by the promotion of inclusive participation rather than symbolic cooperation.

Curriculum reform is the key to introducing 4IR competencies in vocational education. Historically, traditional TVET curriculum is based on technical skills, mainly manual and routine, which needs systemic redesigning to include digital literacy, basics of coding, data management, automation processes, and interdisciplinary problem solving. According to OECD (2019), to succeed in the digital world, it is important to have not just technical skills but also cognitive flexibility and socio-emotional skills. These capabilities are embedded to competency-based frameworks to improve workforce flexibility and durability. UNESCO (2021) continues by suggesting that reconstructed curricula should incorporate digital technologies in all fields instead of taking them as discrete courses. It is indicated that nations that have adopted modular, flexible, and curriculums informed by industries have better graduate employment indicators (World Economic Forum, 2023).

Nevertheless, due to the slow rate at which the curriculum is reformed, it is usually outpaced by the technological change, which makes it ineffective. Also, institutional variations in capacity (especially when resources are limited) limit wholesale adoption of more sophisticated technologies, including simulation laboratories or AI-powered educational systems. An effective reform would therefore entail an investment in training of instructors, digital infrastructure and ongoing professional development. In a world where these systemic supports do not exist, curriculum innovation will be more of a dream than a revolution. Therefore, although curriculum reforms are effective in the integration of 4IR competencies, their effectiveness hinges upon a wholesome alignment of the institution and policies.

Enterprise-TVET partnerships have another effect of affecting inclusivity through increasing accessibility to industry-related opportunities to marginalised groups. The International Labour Organization (2022) also points out that properly designed models of apprenticeships and work-based learning can improve the youth transition to formal work, especially when non-discriminatory recruitment models are used. Partnerships enhance competence and confidence in the real world by exposing the learners to practical applications of digital applications. The World Economic Forum (2023) also highlights that the combination of the government and businesses can speed up reskilling and upskilling practices, which are necessary in digital economies.

Nonetheless, the inclusion would still depend on just access to such partnerships. In schemes where urban institutions or learners with higher performance have the benefit of being engaged in enterprises, the rural and disadvantaged population might not be included. To ensure effective integration of the 4IR competencies, targeted inclusion policies such as gender-sensitive recruitment, financial support strategies, and decentralised partnership strategies are thus necessary. Moreover, companies should cease to engage in short-term training interactions in favor of long-term strategic partnerships that help to transform the system. Enterprise-TVET partnership can become an effective tool of expanding economic engagement when the concept of inclusivity is incorporated into the framework of partnership. However, unless there is a clear equity consideration, alliances can strengthen the existing disparities instead of reducing them.

The general quality of enterprise-TVET partnerships and curriculum changes in terms of merging 4IR skills can therefore be perceived as multidimensional. The Human Capital Theory provided by Becker (1993) is the assumption that the relevant skills are invested in and contribute to the productivity and to the economic returns; in the digital age, the aspects of technological reality have to be taken into consideration. According to the findings reported by OECD (2019), the digital-intensive industries are characterized by a greater increase in productivity in the case where the skills of the workforce are consistent with technological progress.

However, there are systemic issues that can limit achievement e.g. insufficient funding, rigidity of regulation and a lack of cross-sector coordination. UNESCO (2021) explains that change should not be a one-off project but a comprehensive reform agenda that encompasses governance, funding and participation. In the case of enterprise collaboration institutionalised, curriculum reforms become iterative and instructor capacity is being steadily enhanced, 4IR competency integration is more effective. This coherence improves employability, drives entrepreneurship and ensures inclusion in the changing labour markets.

What structural, infrastructural, and socio-economic factors constrain the capacity of digitalized TVET systems to serve as catalysts for inclusive economic growth in emerging African economies?

The idea that digitally oriented Technical and Vocational Education and Training (TVET) systems can be the driving force behind inclusive economic development in emerging African economies has become a prevailing discourse in the modern policy not only sphere, but also a prominent one. However, this transformative pledge is bounded by a web of structural, infrastructural and socio-economic

obstacles, which limit the effectiveness of execution. Although the digitalisation of TVET has the potential of increasing employability, productivity, and innovation, the underlying weaknesses in the system often eliminate the expected results. The World Bank in its 2021 report finds that governance fragmentation, limited financing and insufficient institutional coordination are common features of skills systems in Sub-Saharan Africa and all arthritic to the effectiveness of reform. Similarly, the 2022 assessment by UNESCO makes it clear that without coherent policy frameworks and sustainable funding schemes, digital transformation in education will serve to solidify inequalities instead of alleviate them. Curriculum changes in the system may also be slowed down by structural rigidities in qualification systems, accreditation systems and regulatory systems making it hard to have TVET institutions match those digital technologies at a very rapid rate. Therefore, although digitally enhanced TVET has developmental potential, its ability to spur inclusive economic growth is highly modulated by systemic and context-level constraints requiring policy intervention.

Organizational, the factors of governance fragmentation and lack of industry alignment are the main barriers to improvement. The quality of systems and governance in many of the emerging economies of Africa are characterised by decentralised or overlapping TVET systems and this has led to incoherence, lack of focus and efficient allocation of resources. According to International Labour Organization (2022), the lack of sufficient synchronisation between ministries, education and training facilities, and industry players restrict responsiveness to labour market needs. Further, the involvement of the employer is often intermittent, limiting the potential of co-designed curriculum and work-based learning frameworks that are vital in the integration of 4IR competence. These challenges are enhanced by structural underinvestment. The World Bank (2021) has found that even in most of the low- and middle-income countries, the amount of skills allocated by the government is still small compared to the demographic pressure and technological needs. Minimal fiscal space inhibits acquisition of current equipment, digital infrastructure and instructor development programmes. On top of this, bureaucratic inertia of public institutions may slow innovation, hence the deterrence of the implementation of new delivery models like blended learning or digital simulation platforms. These organizational weaknesses undermine institutional pillars of digitally experienced TVET systems to propel productive growth, and participation.

Another major impediment is infrastructural constraints. The availability of reliable power, access to and high quality, speedy internet connectivity and access to state-of-the-art hardware are invaluable conditions of meaningful digital training. However, according to the 2023 evaluation reports by the International Telecommunication Union the connectivity gaps in Sub-Saharan Africa are still present and are specifically in rural regions where the broadband penetration rates are relatively low. These differences enhance rural-urban differences in access to digitally mobile TVET chances. Maintenance and sustainability issues are a common occurrence even in areas with infrastructure since institutions do not have technical support systems and periodical funds to upgrade them. UNESCO (2022) notes that digital projects tend to focus on acquiring equipment instead of developing the ecosystem on a long-term basis, which translates into insufficient use of technology. Moreover, the lack of instructor digital competence may compromise the pedagogical worth of the offered infrastructure. Without constant professional growth, teachers might not manage to make the use of advanced technologies in competency-based education effective. Such infrastructural deficits limit quality training and graduate preparedness to digitally intensive labour markets, and thus an overall economic effect of digitalised TVET systems.

Digitalised TVET is further limited by socio-economic inequality as a catalyst. Poverty levels are high, gendered and informal work patterns affect the patterns of participation and determine the outcomes of training. According to the report released by the African Development Bank in 2022, financial barriers, such as tuition fees and the opportunity costs of studying are overwhelmingly applied to marginalised youth. The issue of gender discrepancy in STEM training and digital literacy has continued to restrain women in the sector that is driven by technology. The ILO (2022) also emphasizes that young individuals with informal or precarious jobs usually have no access to formal reskilling opportunities. Further, the lack of devices and connectivity on the household level limits the practising and consolidation of digital skills by learners outside the institution. The enrolment may also be discouraged by socio-cultural attitudes that do not value vocational career, which undermine the magnitude and effectiveness of TVET reform initiatives. These socio-economic processes combine with structural and infrastructural limits when they become more cyclical, like exclusion, and with repressed potentials of inclusive growth of digitalised skills systems.

Altogether, the weaknesses of structural governance, lack of infrastructures, and an embedded socio-economic inequality are barriers to the ability of digitalised TVET systems to become effective drivers of inclusive economic development in emergent African economies. Although digital integration can be

very promising, its fulfilment is dependent on the congruency of policies, sustainable investment, fair access plans and effective institutional capabilities.

Summary of Major Findings

1) Enterprise-TVET alliances are proven to increase the employability of graduates; nevertheless, its effectiveness depends on the depth and durability. Pilot projects show empirically that when collaboration is not anchored on conventional internships, but involves curriculum co-design, shared infrastructure, and structured apprenticeship, graduates report better salary results and faster job acquisition. On the other hand, the facade or short-lived interactions only have peripheral effects. The effectiveness of the partnerships depends on the ability to remain connected to the industry, institutional adaptability, and favourable policy contexts, and it is emphasised that even though the partnerships instil Fourth-Industrial-Revolution (4IR) capabilities and enable labour-market transformations, their transformative capabilities are inherently reliant on depth, persistence, and systemic compatibility as opposed to merely symbolic collaboration.

2) Foregrounding Curricular reforms based on competency-based learning have enabled the addition of digital literacy, artificial-intelligence awareness, and high-technical standards in TVET programmes, which supports workforce readiness. Organizations that compare their performance with the industry standards have a better academic performance and job opportunities. However, outmoded syllabi, bureaucratism, and minimal lecturer involvement hinder the reform process. The lack of infrastructure and professional training limits the efficacy of implementation further. As a result, even though curricular innovation plays a critical role in instilling 4IR competencies, it is tempered by fragmentation of governance, lack of funds and the low responsiveness of institutions to dynamic technological change.

3) The inclusion results have been limited by structural and socio-economic impediments. Despite the fact that digitalised TVET reforms provide a entrepreneurial and formal employment opportunities, there are still inherent inequalities that do not favour rural and marginalized people, especially as a result of ineffective infrastructure, inconsistent power supply, and digital divides. Gender inequality and financial barriers reinforced further to undermine fair advantages. Although, as human-capital investment in digital-skills training is paid off in labour-market terms, the projected inclusive growth is offset by systemic inefficiencies and resource imbalances. Broad-based economic inclusion, as such, requires concerted policy reform, long-term funding, and a wide choice of implementation strategies based on equity.

Conclusion

The paper has demonstrated that enterprise-TVET collaborations and curriculum redesigns have a significant but disproportionate role in integrating 4IR competencies into vocational education systems in the developing environment. The findings suggest that industry and TVET institutionally-structured, long-term, and strategically-aligned partnerships result in quantifiable improvements in graduate employability, salary performance, and the rates of labour-market transition. The example of co-located training centres and competency-based curriculum benchmarking as pilot initiatives depicts the positive impact of deep-partnering intensity on employment opportunities and applicability of skills. These results confirm that the ability of the vocational curriculum to correspond to industry standards improves workforce preparation and reduces skills mismatch, but these improvements are not universally obtained because of structural inflexibility, policy fragmentation, and institutional inflexibility.

The research also confirms that the curriculum reforms play significant roles in instilling digital literacy, artificial-intelligence-awareness and cyber-physical-systems skills to training programmes. However, old syllabi, bureaucratic stagnation and lack of lecturer engagement restrain the rate and extent of change. Infrastructural shortages, such as the unstable electricity supply, insufficient digital machinery, and poor connectivity, in a variety of situations consume the performance of reform efforts. Hypocrisy in educator capacity and limited chances of professional growth further limits the transformation of policy dreams into classroom reality. As a result, although partnerships enhance infrastructure improvements, jointly developed resources, and training opportunities, systemic vulnerabilities moderate the transformative possibilities.

There are also socio-economic issues that determine the outcome in terms of inclusivity. Even though alternative employment opportunities of marginalised young people are available through entrepreneurial training and exposure to industries, the inequality in access to resources and digital gaps hinder the participation of the young people. Reform scaling requires long-term investments, policy

stability, and strategic equity-based approaches to make sure that the gains are no longer limited to select institutions or city centres.

These results are in line with the Human Capital Theory which was taken as the theoretical framework of the research. The theory assumes that productivity, earning and overall economic growth increase through investment in education and development of skills. The information indicates that digital-skills training in the TVET is a type of human capital investment with positive labour-market payoff in the case of successful implementation. The assumed efficient returns on educational investment of the theory, however, depend upon facilitating structural and institutional circumstances. Without proper infrastructure, governance coherence as well as inclusive access, the expected economic dividends are reduced.

Finally, the paper finds that the enterprise-TVET partnerships and curriculum changes have a moderate level of effectiveness, and their ability to stimulate inclusive economic growth requires enhanced cooperation, systemic change, and long-term human investment.

Recommendations

Based on the major findings highlighted the following recommendations were stated:

1) Strengthen and Institutionalise Enterprise–TVET Partnerships: Governments ought to operationalise enterpriseTVET partnerships via extensive policy frameworks, incentive schemes and long-term partnership contracts that facilitate curriculum co-design, joint infrastructure, and formal apprenticeship. Involvement of the industry should not be in the form of advice on training but as a participant of training delivery and testing. Such mechanisms as sector-specific skills councils and performance-based funding schemes would guarantee a lasting interest, better fit to 4IR labour requirements, and overall increase graduate employability in developing African economies.
2) Accelerate Curriculum Reform and Lecturer Capacity Development: TVET authorities ought to adopt cyclic curriculum review processes that are industry responsive to accommodate new 4IR competencies AI, automation and digital systems. The introduction of modern equipment should be accompanied by systematic up-skilling of the lecturers; this is achieved with professional development and industry attachments. Decentralisation of decision-making also has the potential to make institutions more responsive to technological change as well as competency-based and modular solutions will attract workforce agility.
3) Address Structural and Socio-Economic Barriers to Inclusion: Policy makers need to focus on the development of infrastructure, especially access to dependable electricity and broadband networks, as a way of reducing digital gaps between urban and rural institutions. The necessary tools include financial support schemes, gender-responsive strategies and specific outreach programmes to broaden participation of marginalised groups. Coherent financing schemes and equity-based implementation systems will guarantee that the digitalised TVET reforms will lead to inclusive economic development instead of strengthening the existing inequalities.

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IMPACT OF BUSINESS INNOVATION ON SUSTAINABLE ENTREPRENEURIAL SUCCESS IN SELECTED MANUFACTURING FIRMS IN ENUGU METROPOLIS

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Abstract

Business Innovation is the key determinant for business survival. This study focused on impact of business innovation on sustainable entrepreneurial success using Emenite Nigeria Limited Emene Enugu and Innoson Plastic Manufacturing Firm Emene Enugu, Enugu State as studies. The following are objectives of this study: to determine the nature of correlation between improved customers satisfaction and high profitability, to ascertain the level of relationship between digital technology adoption and high productivity, to find out the significant correlation between satisfying new products and customers satisfaction. Related literatures were reviewed according to contributions of different scholars. This study is anchored on Joseph Schumpeter's theory of "creative destruction" (1939) and Clayton Christensen's 1997 theory of disruptive innovation. The population of this study is 362 and the sample size is 190. Data was collected using questionnaire. 190 copies of questionnaire was administered to the two selected organizations respondents and 190 copies were filled correctly and returned by the respondents of two selected organizations. Data collected were analysed using simple percentage distribution and hypotheses are tested using Karl Pearson product moment correlation coefficient at moderated statistic 0.05 level of significance. After testing the hypotheses, the following were discovered: there is significant correlation between improved customers satisfaction and high profitability, there is significant relationship between digital technology adoption and high productivity, there is significant relationship between satisfying new products and customers satisfaction. Based on the findings of this study, the researcher concludes that business innovation is the key determinant of sustainable entrepreneurial business survival, high profitability, improved customers satisfaction, satisfying new-products availability and sustenance of businesses in the environment. From the findings and the conclusions of this study, the following are recommended: that management should adopt frequent innovativeness in their business dealings, that management should always train their employees to enable them acquire required skills for business sustainability, that management should invest in digital technological tools in order to overcome competitiveness and to be in business in continuum, that management should ensure producing their products/ services according to customers specifications in order for customers to demand their products/ services, that management should ensure that they produce satisfying new products/services based on present trends and financial capacity of customers for continuous patronage of organizations products/services in the environment.
Keywords: Innovation, sustainability, and entrepreneurial-success

BACKGROUND OF THIS STUDY

Business Innovation has evolved from an optional growth lever into an essential survival strategy. Traditionally rooted in Joseph Schumpeter's theory of 1939 creative destruction modern, business innovation has expended beyond basic product upgrades to organizational shifts, digital overhauls, and eco-friendly practices. Business innovation is the creation of substantial new value for customers and a company by introducing new products, services, processes, or methods. Schumpeter (1934) described innovation as carrying out new combinations in production, including new goods, new methods of production, new markets, or new forms of organization. Drucker (1985) defined innovation as the specific tool of entrepreneurs, meaning the act that endows resources with a new capacity to create wealth.

Business innovation drives sustainable entrepreneurial success by creating unique value, reducing environmental impact, and securing long-term market relevance. Also the selected organization under study such as Emenite Nigeria Limited Emene Enugu and Innoson plastic manufacturing firm Emene Enugu adopts launching new or improved goods and services that meet shifting customer's demands, improving operational methods to lower costs and reduces waste, changing how companies delivers

and captures value, such as shifting from ownership to subscription models, and responding swiftly to changes that occur in the business environment in order to sustain profitability and to be in business.

STATEMENT OF THE PROBLEM

The problem in this study centers on how traditional businesses struggle to achieve long-term survival because they fail to integrate business innovation with sustainable practices. The following challenges are experienced in the organizations under study such as poor customers satisfaction, poor profitability, poor digital technology adoption, poor productivity, and poor satisfying new products. The above mentioned challenges are what the researcher saw and he was disturbed as well made him to go into this study in order to address it for continuity existence of the organizations in the business domain.

OBJECTIVES OF THIS STUDY

This study looked at impact of business innovation on sustainable entrepreneurial success, while specific objectives are:

(1) To determine the nature of correlation between improved customers satisfaction and high profitability.
(2) To ascertain the level of relationship between digital technology adoption and high productivity.
(3) To find out the significant correlation between satisfying new products and customers satisfaction.

RESEARCH QUESTION

(1) What is the nature of correlation between improved customers satisfaction and high profitability?
(2) What is the level of relationship between digital technology adoption and high productivity?
(3) What is the significant relationship between satisfying new products and customers satisfaction?

RESEARCH HYPOTHESES

Ho_1: There is no significant correlation between improved customers satisfaction and high profitability.
H_1: There is significant correlation between improved customers satisfaction and high profitability.
Ho_2: There is no significant relationship between digital technology adoption and high productivity.
H_2: There is significant relationship between digital technology adoption and high productivity.
Ho_3: There is no significant relationship between satisfying new products and customers satisfaction.
H_3: There is significant relationship between satisfying new products and customers satisfaction.

SIGNIFICANCE OF THE STUDY

Government, manufacturing firms, service firms and non-governmental organizations will benefit from this study by implementing innovation on their business dealings for continuity, profitability and existence in the business domain.

SCOPE OF THE STUDY

The study covers two selected manufacturing firms such as Emenite Nigeria Limited Emene Enugu and Innoson Plastic Manufacturing firm Emene Enugu, Enugu State, Nigeria.

REVIEW OF RELATED LITERATURE

Business innovation is the creation of substantial new value for customers and the company by creatively changing one or more dimensions of the business system (Mohanbir et al (2006).

Rosabeth (1983) defined business innovation as the process of bringing new problem-solving ideas into practical use. Also, Joe et al (2011) described business innovation as translating ideas into useful, implemented products, processes, or services. Drucker (2022), opined that innovation is the specific tool of entrepreneurs, the means by which they exploit changes as an opportunity for a different business or a different service. He added that its goal is the reinvigoration of a business, the creation of new value, and boosting organizational growth and productivity.

IMPORTANCE OF BUSINESS INNOVATION ON ENTREPRENEURIAL ORGANISATIONS.

The following are Importance Of Business Innovation On Entrepreneurial Organisations:

(1) Drives competitive advantage: Innovation allows startups to offer unique products or services that stand out from established competitors.
(2) Enhances Adaptability: It equips businesses to quickly adjust to market changes, economic shifts, and customer demands.
(3) Increases Efficiency: New technologies and streamlined workflows reduce operational costs and boost productivity.
(4) Fosters Customers Loyalty: Listening to client or feedback and introducing useful features creates real value and keeps buyers satisfied.
(5) Creates new revenue streams: Developing novel business models or entering untapped markets opens up fresh paths for financial gain.

(6) Promotes sustainability: Eco-friendly practices and resource reduction help organisations build long-term resilience, etc.

FACTORS ADOPTED FOR SUSTAINABLE ENTREPRENEURIAL SUCCESS.

The following are Factors Adopted For Sustainable Entrepreneurial Success:

(1) Prior Knowledge and experience: Founders with industry background or previous startup experience recognize eco-friendly and social market opportunities faster.
(2) Triple bottom line integration: Success requires balancing profit with social equity and ecological health, rather than focusing solely on financial returns.
(3) Sustainable innovation capabilities: The ability to design eco-friendly products, green production processes, and cost-effective recycling or energy-saving techniques.
(4) Supportive policy and Government incentives: Favourable regulations, grants, subsidies and tax breaks help green businesses survive long initial payback periods.
(5) Access to finance and working capital: Reliable funding streams and proper cash flow management allow sustainable ventures to weather high upfront costs for green technology.
(6) Strategic networking: Strong social ties and partnership with communities, suppliers, and mentors help secure resources and build trust.
(7) Systems and foresight thinking: Competence in analyzing long term environmental impacts and anticipating future ecological or market shifts, etc.

Motivating factors of entrepreneurship in Nigeria.

The following are Motivating factors of entrepreneurship in Nigeria:

(1) Desire for independence / autonomy: The yearning to be one's own boss and have freedom in decision-making is the leading motivator across Nigeria demographics, Ade Aladejebi (2018).
(2) Wealth creation and income increase: Seeking a higher standard of living and substantial financial returns pulls individuals away from fixed-salary jobs, Asika (2006).
(3) Utilization of skills and training: The drive to directly apply specialized knowledge, creativity and professional background to solve a market problem, Rankovic (2013).
(4) Unemployment and underemployment: A lack of formal jobs forces a large percentage of graduates and youths to create their own employment to survive, Agbim (2013).
(5) Job dissatisfaction and low wages: Corporate environments in Nigeria often feature stagnation, job insecurity or poor compensation, driving workers out, Chu et al (2007).
(6) Family security and responsibility: The urgent pressure to provide basic food, healthcare, and education for an extended family structure, Agbim (2021), etc.

QUALITIES OF ENTREPRENEURS FOR SUSTAINABLE SUCCESS IN ORGANISATIONS.

The following are Qualities Of Entrepreneurs For Sustainable Success In Organisations:

(1) Visionary thinking: Seeing the future of the market before it happens.
(2) Resilience: Bouncing back quickly from failure.
(3) Adaptability: Changing plans when situations shift.
(4) Integrity: Doing the right thing and being honest.
(5) Emotional intelligence: Understanding and managing your own emotions while empathizing with others.
(6) Resource Management: Using time, money, and materials wisely.
(7) Continuous learning: Staying curious and open to new knowledge, etc.

BUSINESS INNOVATIONS ADOPTED FOR SUSTAINABLE ENTREPRENEURIAL SUCCESS.

The following are Business Innovations Adopted For Sustainable Entrepreneurial Success:

(1) Circular Economy models: Design products to be reused, repaired, or recycled instead of thrown away.
(2) Product-as-a-service / Renting or leasing products to customers instead of selling them outright (like leasing machinery or clothing subscriptions).
(3) Green supply chain management: Sourcing materials locally, using eco-friendly packaging, and optimizing shipping routes to save fuel.
(4) Renewable energy integration: Powering operations with solar, wind, or biomass energy instead of fossil fuels.
(5) Upcycling and waste valorization: Turning manufacturing byproducts or waste materials into new, high-value products.
(6) Eco-design and Biomaterials: Making products from biodegradable, plant-based, or recycled materials, etc.

ROLES OF CUSTOMERS SATISFACTION ON SUSTAINABLE ENTREPRENEURIAL SUCCESS.

The following are Roles Of Customers Satisfaction On Sustainable Entrepreneurial Success:

(1) Drives retention and lifetime value: Satisfied customers return repeatedly, reducing the high marketing costs of constantly acquiring new clients.
(2) Fueling organic growth: Happy customers act as unpaid brand ambassadors, generating highly trusted word-of-mouth referrals.
(3) Providing a competitive buffer: Strong customer loyalty insulates an entrepreneur against price price wars, competitor entry, and market downturns.
(4) Lowering capital costs: High satisfaction creates stable, predictable, recurring revenue, making the venture more attractive to lenders and investors.
(5) Creating a feedback loop for innovation: Satisfied customers willingly share insights, helping entrepreneurs refine products without expensive market research, etc.

CONTRIBUTIONS OF DIGITAL TECHNOLOGICAL ADOPTION ON SUSTAINABLE ENTREPRENEURIAL SUCCESS.

The following are Contributions Of Digital Technological Adoption On Sustainable Entrepreneurial Success:

1. Saves energy: Smart sensors and cloud computing tracks and lower power used in offices and factories.
2. Reduces paper: Digital files and cloud storage cut paper waste and save trees.
3. Optimizes materials: Software tracks inventory closely to prevent overproduction and material loss.
4. Reaches new buyers: E-commerce platforms let small green businesses sell products worldwide.
5. Targets audiences: Social media tools help brands find customers who care about eco-friendly values.
6. Builds communities: Online forums and digital marketing create loyalty groups of green consumers.
7. Tracks impact: Sustainability software measures carbon footprints and waste output accurately.
8. Improves strategy: Data analytics show which products or green practices work best.
9. Predicts trends: Forecasting tools help owners plan inventory without creating surplus waste.
10. Cuts travel: Video calls replace business trips, which lowers fuel use and carbon emissions.
11. Reduces space: Remote work options lower the need for large office buildings and daily commutes.
12. Saves time: Automated tasks speed up daily work and lower labour overheads.

ROLES OF SATISFYING NEW PRODUCTS ON SUSTAINABLE ENTREPRENEURIAL SUCCESS.

The following are Roles Of Satisfying New Products On Sustainable Entrepreneurial Success:

1. Matching expectation: Fulfilling modern buyer demands for eco-friendly and socially responsible options ensures steady sales.
2. Delivering value: Going beyond basic profits to address environmental and social needs creates a powerful triple-bottom-line value proposition (People, Planet, Profit).
3. Lowering costs: Incorporating sustainable design frameworks reduces product development waste and overall manufacturing expenses by up to twenty percent.
4. Resource optimization: Utilising recycled materials and efficient lifecycles protects businesses against tightening global environmental regulations.
5. Building reputation: Environmentally responsible innovations improve brand image and customer loyalty.
6. Attracting investment: Ethical practices and sustainable product lines help ventures secure funding from modern impact investors, etc.

THEORETICAL FRAMEWORK

Joseph Schumpeter's theory of "creative destruction" states that capitalism is an organic, dynamic system driven by innovation that incessantly destroys old economic structures while creating new, more efficient ones. While Schumpeter fully popularized the specific phrase in his 1942 book Capitalism, Socialism and Democracy, he explicitly detailed its underlying theoretical and mathematical mechanics through the lens of innovation-driven waves in his landmark 1939 work.

Clayton Christensen's 1997 theory of disruptive innovation explains how small companies with fewer resources can defeat big established companies by starting at the bottom of a market and moving up.

DISRUPTIVE INNOVATION: New companies introduce simpler, cheaper or more convenient products. These products initially appeal to people who are ignored or priced out of the main market.

EMPIRICAL REVIEWS

(1) Empowering sustainable entrepreneurship through data-driven innovation by Khan et al. (2026).

Focus and Methodology: Evaluated small and medium enterprises (SMEs) utilizing a dynamic capabilities theory framework to look out how data innovation influences sustainable goals.

Core findings: The study validates that digital and data-driven business model innovations are vital for streamlining operations and strengthening a firm's long-term Environmental, Social and Governance (ESG) performance and market resilience.

(2) Effect of business innovation on small scale enterprise sustainability by Pius et al (2026).

Focus and methodology: Quantitative survey design using multiple regression analysis to observe specific dimensions of process and product innovation.

Core findings: Product innovation (β = 0.341), marketing innovation (β = 0.314), and process innovation (β = 0.299) each exerted a statistically significant positive effect on overall business sustainability. Jointly, these dimensions accounted for 66.3% of the variance in long-term enterprises survival. Process improvements uniquely lowered operational waste and maximized raw material utility.

GAP IN KNOWLEDGE

Amongst the empirical studies reviewed include Khan et al (2026) and Pius et al (2026). A careful assessment of the studies of the above mentioned scholars revealed that they focused on how data innovation influences sustainable goals, specific dimensions of process and product innovation, without reference to improved customers satisfaction, high profitability, digital technology adoption, high productivity and satisfying new products thereby creating gap in knowledge.

SUMMARY OF REVIEW OF RELATED LITERATURE

Business innovation directly drives sustainable entrepreneurial success by improving resource efficiency, competitive advantages, and long term value creation.

METHODOLOGY

RESEARCH DESIGN

The study adopted survey research design because it uses research questionnaire to get data from the respondents.

POPULATION OF THE STUDY

The population of this study is 362, where Emenite Nigeria Limited, Emene Enugu employees are 150 and Innoson Plastic Manufacturing Company Limited Emene Enugu employees are 212.

SAMPLE SIZE

The sample size of this study is 190

SAMPLE SIZE DETERMINATION

In this study, the sample size is determined using Taro Yamane's formula.

The formula is below:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = sample size

N = population size

e = level of significance at 5% (0.05)

1 = A constant

Substituted as:

$$n = \frac{362}{1 + 362(0.05)^2}$$

$$n = \frac{362}{1 + 362(0.0025)}$$

$$n = \frac{362}{1 + 0.905}$$

$$n = \frac{362}{1.905}$$

$$n = 190$$

RESEARCH INSTRUMENT VALIDITY

In this study, the researcher uses face validity and content validity to ensure that structured questionnaire item questions cover comprehensively objectives of the study and achieved what is intended to achieve.

METHOD OF DATA ANALYSIS

In this study, simple percentage distribution was used to analyze the responses of the respondents generated through questionnaire and hypotheses are tested using Karl Pearson product moment

correlation co-efficient. The Karl Pearson product moment correlation co-efficient (r) formula is given below:

$$r = \frac{n\sum xy - \sum x\sum y}{\sqrt{n\sum x2 - (\sum x)2}\ \sqrt{n\sum y2 - (\sum y)2}}$$

where

n = number of trials

x = Variable one = Independent variable

y =Variable two = Dependent variable

x and y are non-parametric measures got from the responses of the respondents as shown below:

Calculated value of the product moment correlation co-efficient is given below:

$$/t/ = \frac{r\sqrt{n-2}}{\sqrt{1-r2}}$$

Decision rule:

To accept each relevant hypothesis, the rule is:

Do not reject Ho (null hypothesis) if and only if table value (T.V) is greater than calculated value, otherwise reject Ho (null hypothesis) and accept alternative hypothesis.

DATA PRESENTATION, ANALYSIS AND TEST OF HYPOTHESES.

Test of hypotheses

The hypotheses are tested using Karl Pearson product moment correlation co-efficient to determine the nature of correlation between improved customers satisfaction and high profitability and co-relation between variable x and y in each hypothesis.

where

x = independent variable

y =dependent variable

x and y are non-parametric measures got from the responses from the questionnaire as shown below:

H_1: There significant correlation between improved customers satisfaction and high profitability.

x = Improved customers satisfaction

y = High profitability

x and y are non-parametric measures got from the responses from the questionnaire as shown below:

This is addressed from the table below:

S/N	X	Y	XY	X^2	Y^2
1.	42	40	1680	1764	1600
2.	45	42	1890	2025	1764
3.	48	45	2160	2304	2025
4.	49	48	2352	2401	2304
5.	50	49	2450	2500	2401
6.	55	54	2970	3025	2916
7.	59	57	3363	3481	3249
8.	60	59	3540	3600	3481
9.	65	64	4160	4225	4096
10.	68	67	4556	4624	4489
TOTAL	541	525	29121	29949	28325

Source: field survey 2026

n = 10 = number of trials

Karl Pearson Product Moment Correlation Coefficient is given by the formula:

$$r = \frac{n\sum xy - \sum x\sum y}{\sqrt{n\sum x2 - (\sum x)2}\ \sqrt{n\sum y2 - (\sum y)2}}$$

$$r = \frac{10(29121) - (541)(525)}{\sqrt{10(29949) - (541)2}\ \sqrt{10\ (28325) - \ (525)2}}$$

$$r = \frac{2912 - 284025}{\sqrt{10(29949) - \ (541)2}\ \sqrt{10(28325) - \ (525)2}}$$

$$r = \frac{2912 - 284025}{\sqrt{299490 - \ 292681}\ \sqrt{283250 - \ 275625}}$$

$$r = \frac{7185}{}$$

$\sqrt{6809}\ \sqrt{7625}$

r = $\frac{7185}{\sqrt{51918625}}$

r = $\frac{7185}{7205}$

r = 0.9972

Hypothesis is tested by the formula below:

/t/ = $\frac{r\sqrt{n-2}}{\sqrt{1-r2}}$

$t^{\delta}{}_{n-2}$ for table value

$t^{0.05}{}_{10-2} = t^{0.05}{}_{8}$ = 1.9

$\frac{r\sqrt{n-2}}{\sqrt{1-r2}}$ for calculated value

$\frac{0.9972\ \sqrt{10} - 2}{\sqrt{1-(0.9972)2}}$

$\frac{0.9972\ (3.16 - 2)}{\sqrt{1-0.99440784}}$

$\frac{0.9972\ (1.16)}{\sqrt{0.00559216}}$

$\frac{1.156752}{0.74781}$ = 15.47

Decision: Since the calculated value of 15.47 is greater than table value of 1.9, null hypothesis is rejected and alternative hypothesis is accepted. Therefore, there is significant correlation between improved customers satisfaction and high profitability.

H_2: There is significant relationship between digital technology adoption and high productivity.

x = Digital technology adoption

y = High Productivity

x and y are non-parametric measures got from the questionnaire responses as shown below:

This is addressed from the table below:

S/N	X	Y	XY	X^2	Y^2
1.	65	64	4160	4225	4096
2.	65	67	4556	4624	4489
3.	69	66	4554	4761	4356
4.	70	69	4830	4900	4761
5.	75	72	5400	5625	5184
6.	77	76	5852	5929	5776
7.	79	78	6162	6241	6084
8.	80	79	6320	6400	6241
9.	85	84	7140	7225	7056
10.	88	87	7656	7744	7569
TOTAL	756	742	56630	57674	55612

Source: field survey 2026

n = 10=number of trial

Karl Pearson Product Moment Correlation Coefficient is given by the formula below:

r = $\frac{n\sum xy - \sum x\sum y}{\sqrt{n\sum x2 - (\sum x)2}\ \sqrt{n\sum y2 - (\sum y)2}}$

r = $\frac{10(56630) - (756)\ (742)}{\sqrt{10(57674) - (756)2}\ \sqrt{10\ (55612) - \ (742)2}}$

r = $\frac{566300 - 560952)}{\sqrt{576740 - 571536}\ \sqrt{556120 - 550564}}$

r = $\frac{5348}{\sqrt{(5204)}\ \sqrt{5556}}$

r = $\frac{5348}{}$

$\sqrt{28913424}$

r = 5348 / 5377

r = 0.9946

Hypothesis is tested by the formula below:

/t/ = $\frac{r\sqrt{n-2}}{\sqrt{1-r2}}$

t^{δ}_{n-2} for table value

$t^{0.05}_{10-2} = t^{0.05}_{8}$ = 1.9

For calculated value:

$\frac{r\sqrt{n-2}}{\sqrt{1-r2}}$ for calculated value

$$\frac{0.9946\sqrt{10-2}}{\sqrt{1-(0.9946)2}}$$

$$\frac{0.9946\ (3.16-2)}{\sqrt{1-0.98922916}}$$

$$\frac{0.9946\ (1.16)}{\sqrt{0.01077084}}$$

1.153736

0.103783

11.12

Decision: Since the calculated value of 11.12 is greater than table value of 1.9, H_0 hypothesis is rejected and alternative hypothesis is accepted. Therefore, there is significant relationship between digital technology adoption and high productivity

H_3: There is significant relationship between satisfying new-products and customers satisfaction

x = Digital technology adoption

y = High Productivity

x and y are non-parametric measures got from the questionnaire responses as shown below:

This is addressed from the table below:

S/N	X	Y	XY	X^2	Y^2
1.	84	84	7140	7225	7056
2.	86	85	7310	7396	7225
3.	89	86	7654	7921	7396
4.	90	87	7830	8100	7569
5.	95	92	8740	9025	8464
6.	96	95	9120	9216	9025
7.	98	97	9506	9604	9409
8.	99	98	9702	9801	9604
9.	101	100	10100	10201	10000
10.	103	102	10506	10609	10404
TOTAL	942	926	87608	89098	86152

Source: field survey 2026

n = 10=number of trial

Karl Pearson Product Moment Correlation Coefficient is given by the formula below:

$$r = \frac{n\sum xy - \sum x\sum y}{\sqrt{n\sum x2-(\sum x)2}\ \sqrt{n\sum y2-(\sum y)2}}$$

$$r = \frac{10(87608) - (942)(926)}{\sqrt{10(89098)-(942)2}\ \sqrt{10\ (86152)-\ (926)2}}$$

$$r = \frac{876080 - 872292}{\sqrt{890980-887364}\ \sqrt{861520-857476}}$$

$$r = \frac{378}{\sqrt{(3616)}\ \sqrt{4044}}$$

$$r = \frac{3788}{\sqrt{14623104}}$$

r = $\frac{3788}{3824}$

r = 0.9906

Hypothesis is tested by the formula below:

/t/ = $\frac{r\sqrt{n-2}}{\sqrt{1-r2}}$

t^{δ}_{n-2} for table value

$t^{0.05}_{10-2} = t^{0.05}_{8} = 1.9$

$\frac{r\sqrt{n-2}}{\sqrt{1-r2}}$ for calculated value

$$\frac{0.9906\sqrt{10-2}}{\sqrt{1-(0.9906)2}}$$

$$\frac{0.9906\ (3.16-2)}{\sqrt{1-0.98128836}}$$

$$\frac{0.9906\ (1.16)}{\sqrt{0.1871164}}$$

$$\frac{1.149096}{0.136790}$$

3.12

Decision: Since the calculated value of 3.12 is greater than table value of 1.9, H_0 (null hypothesis) is rejected and alternative hypothesis is accepted. Therefore there is significant relationship between satisfying new products and customers satisfaction.

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

SUMMARY OF MAJOR FINDINGS

In this study, the following are summary of major of findings:

1. There is significant correlation between improved customers satisfaction and high profitability.
2. There is significant relationship between digital technology adoption and high productivity
3. There is significant relationship between satisfying new products and customers satisfaction

CONCLUSIONS OF THE STUDY

Based on the findings of this study, the researcher concludes that business innovation is the key determinant of sustainable entrepreneurial business survival, high profitability, improved customers satisfaction, satisfying new-products availability and sustenance of businesses in the environment.

RECOMMENDATIONS

From the findings and the conclusions of this study, the following are recommended:

(1) That management should adopt frequent innovativeness in their business dealings.
(2) That management should always train their employees to enable them acquire required skills for business sustainability.
(3) That management should invest in digital technological tools in order to overcome competitiveness and to be in business in continuum.
(4) That management should ensure producing their products / services according to customers specifications in order for customers to demand their products/ services.
(5) That management should ensure that they produce satisfying new products/services based on present trends and financial capacity of customers for continuous patronage of organizations products/services in the environment.

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AUTOMATION TECHNOLOGIES AND ENTREPRENEURIAL LEARNING OUTCOMES OF BUSINESS EDUCATION STUDENTS IN TERTIARY INSTITUTIONS IN BAYELSA STATE

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Abstract

The increasing use of automation technologies in Business Education has raised questions about whether technological engagement corresponds with stronger entrepreneurial competencies. This study examined the relationships between digital business tools use, automated accounting systems use and entrepreneurial learning outcomes among Business Education students in tertiary institutions in Bayelsa State, Nigeria. A correlational survey design was employed, guided by two research questions and two null hypotheses. The stated population comprised 867 students, from which a sample of 300 was selected through proportionate stratified random sampling. The supplied dataset contained 300 complete records collected using the Automation Technologies and Entrepreneurial Learning Outcomes Questionnaire (ATELOQ). Frequencies and percentages summarised demographic characteristics, while Pearson Product Moment Correlation examined the relationships and tested the hypotheses at the .05 significance level. Digital business tools use showed a weak negative, non-significant relationship with perceived entrepreneurial learning outcomes (r = −.106, p = .067). Automated accounting systems use also showed a negligible negative, non-significant relationship with perceived entrepreneurial learning outcomes (r = −.048, p = .407). Both null hypotheses were therefore not rejected. However, negative internal consistency coefficients across the three subscales substantially limited interpretation of the composite scores. Additionally, the dataset contained four institution codes, requiring reconciliation with the stated three-institution sampling framework. The study concluded that the analysis provided insufficient evidence of significant linear relationships, although measurement weaknesses prevented firm substantive conclusions. Questionnaire review, coding verification and renewed reliability assessment were recommended, alongside practical technology training that incorporated reflection, financial interpretation and business decision-making.

Keywords: Automation technologies; digital business tools; automated accounting systems; entrepreneurial learning outcomes; Business Education; Bayelsa State.

Introduction

Digitalisation is reshaping business operations and the competencies required for entrepreneurial participation. Digital business tools facilitate marketing, customer engagement and access to markets, while automated accounting systems support routine financial tasks, including transaction processing and reporting (OECD, 2021). However, technological adoption alone does not guarantee effective business performance, as its benefits depend on users' skills and complementary organisational practices (OECD, 2021, 2023b). For Business Education, this suggests that preparing students for technology-enabled entrepreneurship requires attention to both software proficiency and the ability to apply knowledge to practical business problems.

Entrepreneurial learning should therefore extend beyond familiarity with digital applications to include opportunity recognition, resource management and informed decision-making. The OECD (2023b) identified creativity, problem-solving and entrepreneurial skills as important complements to digital competence. In this context, digital business tools and automated accounting systems could provide opportunities for students to practise enterprise-related tasks. Nevertheless, their educational contribution depends on purposeful teaching, suitable resources and support for developing digital competence (OECD, 2023a). The implication is that students' ability to operate an application should be distinguished from their capacity to interpret its outputs and apply them to entrepreneurial decisions.

Claims about the educational benefits of automation technologies also require critical scrutiny. UNESCO (2023) reported that evidence of technology's effects on learning was mixed and emphasised equitable access, appropriate governance and teacher capacity as conditions for effective implementation. Similarly, the OECD (2023a) situated effective digital education within a wider ecosystem of infrastructure, professional development and institutional support. These perspectives suggest that frequent technology use may not necessarily indicate meaningful entrepreneurial learning; the quality and purpose of its use also matter (OECD, 2023a; UNESCO, 2023).

Against this background, the study examined the relationship between automation technologies and entrepreneurial learning outcomes of Business Education students in tertiary institutions in Bayelsa State. Specifically, it investigated the use of digital business tools and automated accounting systems as two dimensions of automation technologies. Although international evidence provides a useful conceptual basis, it does not establish the relationships within this particular educational setting. The study therefore sought context-specific evidence of associations, while recognising that its correlational design could not establish causal effects.

Aim and Objectives of the Study

The study aimed to examine the relationship between automation technologies and entrepreneurial learning outcomes of Business Education students in tertiary institutions in Bayelsa State. The specific objectives were to:

1. Determine the relationship between the use of digital business tools and entrepreneurial learning outcomes of Business Education students in tertiary institutions in Bayelsa State.
2. Examine the relationship between the use of automated accounting systems and entrepreneurial learning outcomes of Business Education students in tertiary institutions in Bayelsa State.

Research Questions

The following research questions guided the study:

1. What relationship exists between the use of digital business tools and entrepreneurial learning outcomes of Business Education students in tertiary institutions in Bayelsa State?
2. What relationship exists between the use of automated accounting systems and entrepreneurial learning outcomes of Business Education students in tertiary institutions in Bayelsa State?

Research Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

H_{01}: There is no significant relationship between the use of digital business tools and entrepreneurial learning outcomes of Business Education students in tertiary institutions in Bayelsa State.

H_{02}: There is no significant relationship between the use of automated accounting systems and entrepreneurial learning outcomes of Business Education students in tertiary institutions in Bayelsa State.

Conceptual review

Automation technologies refer to digital systems that perform or streamline tasks with reduced manual intervention. In this study, they comprised digital business tools and automated accounting systems. Digital business tools support activities such as marketing, customer communication and business planning, whereas automated accounting systems facilitate financial transaction processing and reporting (OECD, 2021). However, digitalisation and automation should not be treated as interchangeable: a digital application constitutes an automation technology only where it automates a task or workflow. Entrepreneurial learning outcomes encompass the knowledge, skills and judgement students develop for identifying opportunities, managing resources and making business decisions. The OECD (2023b) emphasised that digital competence requires complementary problem-solving, creative and entrepreneurial skills. Consequently, software familiarity alone is an inadequate indicator of entrepreneurial learning; students' ability to apply and critically interpret technological outputs is also relevant.

Theoretical review

Experiential Learning Theory provides a suitable lens for explaining the proposed relationships because it connects practical experience with reflection, conceptual understanding and subsequent experimentation. Morris's (2020) review of Kolb's model emphasised the contextual character of experience and the importance of critical reflection, suggesting that participation in an activity does not automatically produce meaningful learning. Applied to this study, digital business tools could enable students to practise enterprise planning and marketing, while automated accounting systems could provide opportunities to process transactions, examine financial reports and reconsider business decisions. These are proposed applications of the theory rather than established effects. Motta and

Galina (2023) similarly positioned experiential activities as relevant to entrepreneurship education. Nevertheless, the theory offers a stronger explanation when technology use involves authentic tasks, feedback and reflection; frequency of software use alone cannot demonstrate that the experiential learning process occurred.

Literature synthesis

The literature suggests that technology can support entrepreneurial learning, but its contribution depends on the interaction between practical activities, student competence and institutional support. Motta and Galina (2023) highlighted the relevance of experiential approaches to entrepreneurship education, while the OECD (2023b) stressed that digital adoption requires complementary entrepreneurial capabilities. These perspectives converge on the importance of purposeful application rather than technology exposure alone. However, UNESCO (2023) reported mixed evidence concerning technology's effects on learning, and the OECD (2023a) emphasised the infrastructure and professional support required for effective digital education. Furthermore, general evidence on entrepreneurship education or business digitalisation does not directly establish separate relationships between digital business tools, automated accounting systems and entrepreneurial learning outcomes among Business Education students in Bayelsa State. The present study addressed this contextual and analytical question, while its correlational design limited conclusions to associations rather than causal effects.

Research Method

The study employed a correlational survey research design to examine the relationships between automation technologies and entrepreneurial learning outcomes of Business Education students in tertiary institutions in Bayelsa State, Nigeria. The population of the study comprised 867 Business Education students in three tertiary institutions in Bayelsa State. A sample of 300 students, representing approximately 34.6% of the population, was selected using proportionate stratified random sampling. This technique ensured that each institution was represented in proportion to its Business Education student population.

The students were stratified according to their institutions. Institutional allocations were rounded to whole numbers and adjusted to maintain the total sample of 300. Within each institution, simple random sampling without replacement was used to select students from the enrolment register, giving every eligible student an equal chance of selection within that stratum.

Data were collected using a structured questionnaire titled "Automation Technologies and Entrepreneurial Learning Outcomes Questionnaire (ATELOQ)". The instrument covered respondents' demographic characteristics, use of digital business tools, use of automated accounting systems and entrepreneurial learning outcomes. Technology-use items focused on students' engagement with relevant applications, while entrepreneurial learning items addressed their perceived ability to identify business opportunities, plan enterprise activities, manage resources and make informed business decisions. Because these outcomes were measured through self-reports, the scores represented perceived entrepreneurial competencies rather than independently assessed business performance.

The questionnaire was validated by experts and its internal consistency was assessed using Cronbach's alpha, yielding an overall coefficient of 0.87. This coefficient indicated consistency across the instrument's items, although separate reliability coefficients for the three substantive subscales were necessary to assess the consistency of each construct.

Frequencies and percentages were used to summarise respondents' demographic characteristics. Separate composite scores were computed for digital business tools, automated accounting systems and entrepreneurial learning outcomes according to the questionnaire's scoring procedure. Pearson Product Moment Correlation was used to answer the research questions and test the null hypotheses at the 0.05 level of significance. Each technology dimension was correlated separately with entrepreneurial learning outcomes. The direction and magnitude of the correlation coefficients informed the interpretation of the relationships, while a null hypothesis was rejected when its corresponding *p*-value was below .05. The final analysis also required checks of linearity and influential outliers, alongside reporting the number of valid responses used.

Results

Demographic Characteristics

Table 1: Demographic Characteristics of Respondents (N = 300)

Variable	Category	Frequency	Percentage (%)
Sex	Male	83	27.7
	Female	112	37.3
	Preferred not to disclose	105	35.0
Age	Below 20 years	83	27.7
	20–24 years	73	24.3
	25–29 years	71	23.7
	30 years and above	73	24.3
Institution	Code 1	87	29.0
	Code 2	81	27.0
	Code 3	63	21.0
	Code 4	69	23.0
Programme	NCE Business Education	164	54.7
	Bachelor's degree in Business Education	136	45.3
Level of study	100 level	70	23.3
	200 level	72	24.0
	300 level	74	24.7
	400 level	84	28.0
Entrepreneurship course participation	Yes	155	51.7
	No	145	48.3
Digital business applications training	Yes	147	49.0
	No	153	51.0
Accounting software training	Yes	138	46.0
	No	162	54.0

Table 1 showed that female respondents constituted 37.3% of the sample, males accounted for 27.7%, and 35.0% preferred not to disclose their sex. Respondents below 20 years formed the largest age category (27.7%), although the age distribution was relatively balanced. NCE students accounted for 54.7%, while bachelor's degree students constituted 45.3%. The largest level-of-study category was 400 level (28.0%).

Slightly more than half of the respondents (51.7%) reported participation in an entrepreneurship course. However, 51.0% reported no practical training in digital business applications, and 54.0% reported no accounting software training. Institution codes 1–4 accounted for 29.0%, 27.0%, 21.0% and 23.0%, respectively.

Research Questions

Research Question One: What relationship exists between the use of digital business tools and entrepreneurial learning outcomes of Business Education students in tertiary institutions in Bayelsa State?

Table 2: Relationship between Digital Business Tools Use and Entrepreneurial Learning Outcomes

Variable	N	Mean	SD	Pearson's r	95% CI for r
Digital business tools use	300	2.53	0.38	−.106	[−.217, .007]
Entrepreneurial learning outcomes	300	2.47	0.39	—	—

Source: Field Survey, 2026

Table 2 showed a weak negative relationship between digital business tools use and entrepreneurial learning outcomes (r = −.106). Higher reported technology use was associated with slightly lower entrepreneurial learning outcome scores, but the relationship was small. The confidence interval included zero, indicating uncertainty about the direction of the population relationship. The mean scores were 2.53 for digital business tools use and 2.47 for perceived entrepreneurial learning outcomes.

Research Question Two: What relationship exists between the use of automated accounting systems and entrepreneurial learning outcomes of Business Education students in tertiary institutions in Bayelsa State?

Table 3: Relationship between Automated Accounting Systems Use and Entrepreneurial Learning Outcomes

Variable	N	Mean	SD	Pearson's r	95% CI for r
Automated accounting systems use	300	2.49	0.40	−.048	[−.160, .066]
Entrepreneurial learning outcomes	300	2.47	0.39	—	—

Source: Field Survey, 2026

Table 3 revealed a negligible negative relationship between automated accounting systems use and entrepreneurial learning outcomes (r = −.048). The scores showed little linear association, and the confidence interval included zero. Automated accounting systems use recorded a mean of 2.49, while perceived entrepreneurial learning outcomes recorded a mean of 2.47.

Test of Hypotheses

H_{01}: There is no significant relationship between the use of digital business tools and entrepreneurial learning outcomes of Business Education students in tertiary institutions in Bayelsa State.

H_{02}: There is no significant relationship between the use of automated accounting systems and entrepreneurial learning outcomes of Business Education students in tertiary institutions in Bayelsa State.

Table 4: Pearson Correlation Tests of the Null Hypotheses

Hypothesis	Relationship tested	N	df	R	p-value	Decision at α = .05
H_{01}	Digital business tools use and entrepreneurial learning outcomes	300	298	−.106	.067	Failed to reject H_{01}
H_{02}	Automated accounting systems use and entrepreneurial learning outcomes	300	298	−.048	.407	Failed to reject H_{02}

Source: Field Survey, 2026 Note: Tests were two-tailed; df = N − 2.

For Hypothesis One, the correlation was not statistically significant, $r(298) = -.106$, $p = .067$. Since the p-value exceeded .05, the null hypothesis was not rejected. The analysis did not provide sufficient evidence of a linear relationship between digital business tools use and perceived entrepreneurial learning outcomes.

For Hypothesis Two, the correlation was also not statistically significant, $r(298) = -.048$, $p = .407$. The null hypothesis was not rejected because the p-value exceeded .05. The analysis did not provide sufficient evidence of a linear relationship between automated accounting systems use and perceived entrepreneurial learning outcomes.

Discussion of Findings

The first finding revealed a weak negative and statistically non-significant relationship between digital business tools use and entrepreneurial learning outcomes (r = −.106, p = .067). The analysis therefore provided insufficient evidence that students who used these tools more frequently reported stronger entrepreneurial competencies. This finding qualified the assumption that technological exposure necessarily translates into meaningful learning. UNESCO (2023) similarly emphasised that the educational contribution of technology depends on its appropriateness, teaching conditions and supporting resources. However, the present result should not be interpreted as evidence that digital business tools reduced entrepreneurial competence, because the relationship was small, statistically non-significant and derived from a correlational design.

A possible explanation was that frequency of use did not capture the quality of students' engagement with digital business tools. Scheduling promotional messages or processing online orders may provide practical experience, but such activities may contribute little to entrepreneurial judgement unless accompanied by feedback, reflection and opportunities to evaluate decisions. This interpretation was consistent with Morris's (2020) emphasis on critical reflection within experiential learning and Motta and Galina's (2023) examination of practical activities in entrepreneurship education. Nevertheless, these learning processes were not directly measured in the study and therefore remained possible

explanations rather than established mechanisms. More fundamentally, the negative reliability coefficients for digital business tools use and entrepreneurial learning outcomes weakened interpretation of their composite scores, making substantive conclusions premature.

The second finding showed a negligible negative and statistically non-significant relationship between automated accounting systems use and entrepreneurial learning outcomes ($r = -.048$, $p = .407$). Thus, the dataset did not provide sufficient evidence of a linear association between the two variables. Although accounting software can automate financial recording and reporting, operational efficiency should be distinguished from students' ability to interpret financial information and make entrepreneurial decisions. The OECD (2021, 2023b) emphasised that digital adoption requires complementary skills and practices to realise its benefits. Accordingly, the finding suggested that reported software use alone was an inadequate basis for inferring stronger entrepreneurial learning outcomes; it did not establish that accounting software lacked educational value.

The demographic results provided a relevant consideration: 54.0% of respondents reported no practical training in accounting software. Limited training could have affected the depth of students' engagement, although the analysis did not establish training as an explanation for the non-significant relationship. From an experiential learning perspective, accounting exercises would be more educationally meaningful when students used financial reports to evaluate costs, profitability and alternative business decisions, rather than merely entering transactions. This interpretation aligned with the emphasis on practical learning in Motta and Galina (2023) and institutional support in OECD (2023a). However, the negative reliability coefficient for the accounting systems subscale, together with the unreliable entrepreneurial outcomes scale, substantially restricted confidence in this finding. The appropriate implication was to review item coherence and data coding before drawing conclusions about the relationship between accounting automation and entrepreneurial learning.

Conclusion

The study found no statistically significant relationship between either digital business tools use or automated accounting systems use and perceived entrepreneurial learning outcomes among the respondents. These findings provided insufficient evidence that more frequent technology use was associated with stronger entrepreneurial competencies. However, the negative reliability coefficients of the measurement scales limited confidence in the results; consequently, the findings could not support firm conclusions about the educational value of automation technologies.

Recommendations

1. Researchers should review the questionnaire items, verify data coding and establish adequate subscale reliability before drawing substantive conclusions from the composite scores.
2. Business Education lecturers should integrate digital business tools into practical enterprise activities involving feedback and reflection, and evaluate students' demonstrated competencies alongside their reported technology use.
3. Tertiary institutions should address the reported accounting software training gap through practical exercises that connect transaction processing with financial interpretation and business decision-making.

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DIGITAL TRANSFORMATION AND TECHNO-PRENEURIAL SKILL ACQUISITION AMONG YOUTH IN NIGERIA

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Abstract

The study examined the relationship between digital transformation and techno-preneurial skill acquisition among youths in the South-South geopolitical zone of Nigeria. Specifically, two objectives were formulated to guide the study, with corresponding research questions and hypotheses. The population comprised 5,000 youths aged 18–35 years in Akwa Ibom, Bayelsa, Cross River, Delta, Edo and Rivers States, from which a sample of 400 respondents was selected. Data were collected using a structured 14-item Digital Transformation and Techno-preneurial Skill Acquisition Questionnaire (DTPSAQ), rated on a four-point scale. Mean and standard deviation were used to answer the research questions, while simple linear regression and multiple regression were used to test the hypotheses at the 0.05 level of significance. The findings indicated a high extent of digital transformation among the respondents, with a grand mean of 3.17, and a high level of techno-preneurial skill acquisition, with a grand mean of 3.18. Digital transformation significantly contributed to techno-preneurial skill acquisition and explained 27.1% of its variance. Furthermore, digital literacy, digital technology adoption, digital connectivity and digital platform utilisation jointly accounted for 37.6% of the variance in techno-preneurial skill acquisition, with all four predictors making significant positive contributions. The study concluded that digital transformation was an important factor associated with the development of techno-preneurial competencies among youths in the South-South geopolitical zone of Nigeria. It recommended the integration of practical digital entrepreneurial competencies into Business Education and entrepreneurship programmes, improvement of digital connectivity, and stronger collaboration among educational institutions, government and industry to support youth digital entrepreneurship.

Keywords: digital transformation, digital literacy, digital technology adoption, digital connectivity, digital platforms, techno-preneurial skills and youths

Introduction

Digital transformation has become an important part of everyday economic and social life. It is changing how people learn, communicate, conduct businesses, access financial services, market products and create opportunities for employment and income generation. In broad terms, digital transformation involves the use of digital technologies to improve existing activities and processes or create new ways of producing and delivering value. The growing use of digital platforms, mobile technologies, social media, cloud computing, electronic commerce, digital financial services and other emerging technologies has consequently changed the skills people need to participate effectively in the modern economy. In this environment, being digitally competent goes beyond knowing how to operate a computer. It involves being able to use digital technologies creatively, communicate and collaborate online, find and evaluate information, manage digital resources and use technology to identify and pursue economic opportunities.

These changes are particularly important for Nigeria, where a large and youthful population is faced with increasing demands for employment and sustainable sources of income. The World Bank Group (2019) reported that Nigeria has considerable potential to develop a strong digital economy, but noted the need for continued improvements in digital infrastructure, digital platforms, digital financial services, digital entrepreneurship and digital skills. The report also identified digital entrepreneurship as an important avenue through which technology can contribute to economic transformation and emphasized the need to strengthen the digital skills of Nigerians. This suggests that although digital transformation is creating new opportunities for young people to participate in economic activities, the extent to which they can benefit from these opportunities depends partly on whether they possess the skills needed to use available technologies effectively.

The issue is particularly relevant to young people because they represent an important human-resource base for Nigeria's economic development. At the same time, many young people experience difficulties in moving from education into productive and sustainable employment. The International Labour Organization (2024) observed that young people continue to face challenges in accessing decent employment and making successful transitions from education into the labour market. In Nigeria, these challenges are occurring alongside rapid technological changes and a changing world of work in which digital competencies are becoming increasingly important. As a result, preparing young people only for conventional employment may no longer be enough. There is a growing need to develop skills that can help young people create opportunities for themselves and others through entrepreneurship and technology-supported business activities.

The Nigerian government has also recognized the importance of digital skills and entrepreneurship in responding to these emerging realities. Through the National Digital Economy Policy and Strategy, the National Information Technology Development Agency (NITDA, 2020) identified digital literacy and skills, digital innovation and entrepreneurship, digital infrastructure, digital services and the development of a digital society as important areas of Nigeria's digital transformation agenda. The policy recognizes that citizens need relevant digital skills to participate meaningfully in the digital economy and that digital innovation and entrepreneurship can support employment creation, economic diversification and national development. This policy direction therefore reflects the growing connection between digital transformation, human-capital development and entrepreneurship in Nigeria.

The changing digital environment has also influenced the way entrepreneurship is practiced. Many entrepreneurial activities that were traditionally carried out through physical markets can now be supported by digital technologies. Entrepreneurs can advertise products through social media, communicate with customers through digital platforms, receive electronic payments, conduct market research online, operate electronic commerce platforms and reach customers outside their immediate geographical locations. The World Bank Group (2019) noted the development of an emerging ecosystem of digital entrepreneurs, start-ups, incubators and venture-capital organizations in Nigeria. However, the report also identified challenges associated with financing, infrastructure, market access and the wider business environment. These circumstances suggest that participation in technology-enabled entrepreneurship requires more than an interest in starting a business. Young people also need the technological and entrepreneurial competencies that enable them to identify opportunities and turn them into viable economic activities.

It is against this background that techno-preneurial skills have become increasingly relevant to youth development. Techno-preneurial skills can be understood as the combination of technological, entrepreneurial and innovative abilities required to identify opportunities, develop technology-supported solutions, establish enterprises and manage business activities in a digital environment. These skills may include digital marketing, electronic commerce, social-media management, digital financial transactions, online communication, digital content creation, opportunity recognition, creativity, innovation, problem-solving, business planning and risk management. When these competencies are developed together, young people are better positioned to move from simply using technology to applying it productively in creating and managing entrepreneurial activities.

Evidence from Nigerian studies further demonstrates the growing importance of these competencies. Enang (2023) emphasized the importance of digital entrepreneurial skills and competencies for Business Education students in the digital era and highlighted competencies that can help learners respond to technology-driven changes in the business environment. Similarly, Bello and Abdullahi (2025) reported that entrepreneurial and digital skills were associated with youth empowerment in North-West Nigeria, particularly through competencies relating to opportunity recognition, risk management, digital marketing and electronic commerce. These findings indicate that digital and entrepreneurial skills can provide young people with competencies that are relevant to economic participation, empowerment and self-employment.

The relationship between digital skills and youth employment has also received empirical attention. Adams et al. (2026) reported that digital skills acquisition, including technical digital skills, digital marketing and e-commerce skills, was associated with youth self-employment in South-South Nigeria. This finding is relevant to the present study because it suggests that digital competencies can provide young people with resources for participating in self-employment and other technology-enabled economic activities. In a related study, Babajide (2026) emphasized the importance of digital skills for youth employability, job readiness and entrepreneurship in Nigeria. The study, however, also identified challenges such as inadequate ICT infrastructure, limited access to digital resources and deficiencies

in training capacity. These findings point to the need not only to promote digital skills but also to create conditions that allow young people to acquire and apply such skills effectively.

Despite the opportunities created by digital transformation, access to technology does not automatically lead to the acquisition or effective use of techno-preneurial skills. Young people may face a number of barriers, including inadequate access to digital devices, poor internet connectivity, high data costs, inadequate digital infrastructure, limited training opportunities, lack of finance, insufficient mentorship and weak institutional support. Nalado and Sunday (2026), for example, identified digital-skills gaps, inconsistent connectivity, limited access to digital devices, high data costs and inadequate institutional support as challenges affecting youth digital entrepreneurship in Kaduna State, Nigeria. These challenges show that digital transformation is not simply a matter of making technologies available. Young people also need the knowledge, practical skills, support systems and enabling environment required to use those technologies productively.

Education therefore has an important role to play in helping young people respond to the opportunities and challenges created by digital transformation. Educational institutions can provide opportunities for learners to develop digital literacy, entrepreneurial competencies, creativity, innovation and problem-solving skills through relevant curriculum content, practical training, digital-learning environments, entrepreneurship programmes and partnerships with industry. Such experiences can help young people move beyond using technology primarily for communication and information access to applying it in productive and entrepreneurial activities. Enang (2023) specifically emphasized the relevance of digital entrepreneurial competencies to Business Education in preparing learners for the demands of the digital era. This underscores the contribution education can make to developing the competencies required for meaningful participation in a technology-driven economy.

The importance of developing these competencies is also reflected in Nigeria's broader digital-development initiatives. NITDA (2020) identified digital skills and digital innovation and entrepreneurship as key components of Nigeria's digital economy strategy. This policy direction recognizes that technological development must be accompanied by appropriate human-capacity development if the benefits of digital transformation are to be widely realized. Similarly, the World Bank Group (2019) emphasized the importance of strengthening digital skills and creating an enabling environment for digital entrepreneurship as part of efforts to expand Nigeria's digital economy. Together, these policy and development perspectives highlight the close relationship between access to digital technologies, skills development and entrepreneurial participation.

Although increasing attention has been given to digital skills, entrepreneurship, youth empowerment and employability in Nigeria, there is still a need for further empirical understanding of how digital transformation relates specifically to the acquisition of techno-preneurial skills among young people. Existing studies have examined different aspects of the issue, including digital entrepreneurial competencies, youth empowerment, employability, self-employment and the challenges associated with digital entrepreneurship. However, comparatively less attention has been given to digital transformation as a broader factor associated with the acquisition of integrated technological, entrepreneurial and innovative competencies among Nigerian youth. Examining this relationship is important because the benefits of digital transformation ultimately depend not only on the availability of technology but also on people's ability to use it effectively to create value and pursue productive economic opportunities.

It is against this background that the present study examines the relationship between digital transformation and techno-preneurial skill acquisition among youth in Nigeria. The study focuses on the extent to which the changing digital environment is associated with the development of technological, entrepreneurial and innovative competencies required for effective participation in a digitally driven economy. Evidence from the study may be useful to educators, policymakers, entrepreneurship-development agencies, youth organizations and other stakeholders involved in digital-skills development and youth entrepreneurship. It may also provide a basis for strengthening educational and entrepreneurial interventions designed to help young people make productive use of the opportunities created by digital transformation.

Problem of the Study

The rapid advancement of digital technologies is changing the nature of work, business and entrepreneurship globally. In Nigeria, digital platforms, mobile technologies, electronic commerce, social media, digital payment systems and other technology-driven services are creating new opportunities for young people to acquire skills, establish businesses, market products and generate income. The World Bank Group (2019) identified digital skills and digital entrepreneurship as having considerable potential to contribute to Nigeria's economic development, while the National Information

Technology Development Agency (NITDA, 2020) recognized digital skills, digital innovation and entrepreneurship as important components of Nigeria's digital economy. These developments suggest that young people with relevant technological and entrepreneurial competencies can participate more meaningfully in emerging economic activities.

Despite these opportunities, the availability of digital technologies does not necessarily mean that Nigerian youths possess the **techno-preneurial skills** required to use them productively. Access to smartphones, social media and other digital platforms may exist without the practical ability to apply such technologies to digital marketing, electronic commerce, online business management, digital financial transactions, content creation, opportunity recognition, innovation, problem-solving and technology-based business planning. Enang (2023) emphasized the importance of digital entrepreneurial competencies in helping learners respond to the changing demands of the digital era. This concern is particularly important given the continuing difficulties young people face in moving from education into productive employment. The International Labour Organization (2024) noted persistent challenges relating to youth employment and transitions from education to work, making the development of competencies for self-employment and enterprise creation increasingly relevant.

The challenge is further compounded by conditions that can restrict the acquisition and application of digital and entrepreneurial skills. Limited internet connectivity, inadequate access to digital devices, high data costs, insufficient practical training, limited finance, weak mentorship and inadequate institutional support may prevent young people from converting digital opportunities into sustainable economic activities. Nalado and Sunday (2026) identified digital-skills gaps, connectivity problems, limited access to devices, high data costs and inadequate institutional support as challenges affecting youth digital entrepreneurship, while Babajide (2026) highlighted infrastructural and training-related constraints to digital-skills development among Nigerian youths. Thus, although national policies increasingly emphasize digital transformation and entrepreneurship, policy attention alone does not guarantee that young people acquire the practical competencies needed to participate effectively in the digital economy (NITDA, 2020).

Existing empirical studies provide evidence that digital transformation is associated with skills development, education and entrepreneurial activities. Ekoh-Nweke and Ikpeama (2023) found that digitalization had a high influence on entrepreneurial and managerial skills acquisition among Business Education students, while Ufondu et al. (2023) emphasized curriculum modernization and the integration of digital literacy, data-analysis software, project-management platforms and digital marketing tools for 21st-century skill development. Enang (2024) similarly emphasized digital learning resources and institutional digital-transformation strategies, while Musa and Auwalu (2025) reported that digital transformation positively influenced educational outcomes. Beyond education, Sani et al. (2026), Buba and Joseph (2026) and Jimoh et al. (2026) demonstrated the growing relevance of digital technologies to business performance, operational efficiency, market reach and entrepreneurial activities, although infrastructure, funding and digital-skills gaps continued to constrain effective adoption.

Studies have also established the importance of specific digital and entrepreneurial competencies. Enang (2023) emphasized technological, entrepreneurial and innovative competencies, while Araoye et al. (2024) identified ICT proficiency, innovation, creativity and marketing skills as important for self-reliance. David et al. (2025) identified marketing, networking, critical thinking, communication, financial literacy, problem-solving, strategic planning and technical skills as relevant to employability. Bello and Abdullahi (2025) found that opportunity recognition, risk management, digital marketing and e-commerce were associated with youth empowerment, while Adams et al. (2026) reported that technical digital skills, digital marketing, e-commerce skills and digital literacy significantly contributed to youth self-employment. Egajivwie and Omorojie (2026) further emphasized digital entrepreneurial training for employability, while Okonkwo et al. (2025) demonstrated the emerging relevance of artificial intelligence-based approaches to developing digital entrepreneurial skills and job-creation capacity.

Although these studies establish important connections between digital transformation, digital skills, entrepreneurial competencies, employability and youth empowerment, much of the existing evidence has focused on students in particular institutions, SMEs, educators or established entrepreneurs. Comparatively limited attention has been given to techno-preneurial skill acquisition as an integrated construct among youth in Nigeria, particularly in relation to digital transformation as a broader phenomenon. It is therefore necessary to determine whether and to what extent digital transformation is associated with the acquisition of the technological, entrepreneurial and innovative competencies required for productive participation in the contemporary digital economy. The present

study consequently examines the relationship between digital transformation and techno-preneurial skill acquisition among youth in Nigeria.

Objectives of the Study

The main objective of the study was to examine the relationship between digital transformation and techno-preneurial skill acquisition among youth in Nigeria. Specifically, the study sought to:

1. Examine the extent to which digital transformation contributes to techno-preneurial skill acquisition among youth in Nigeria.
2. Determine the extent to which digital transformation dimensions—digital literacy, digital technology adoption, digital connectivity, and digital platform utilisation—predict techno-preneurial skill acquisition among youth in Nigeria.

Research Questions

The following research questions guided the study:

1. To what extent does digital transformation contribute to techno-preneurial skill acquisition among youth in Nigeria?
2. To what extent do digital literacy, digital technology adoption, digital connectivity, and digital platform utilisation predict techno-preneurial skill acquisition among youth in Nigeria?

Research Hypotheses

The following null hypotheses tested at 0.05 level of significance:

H_{01}: Digital transformation does not significantly contribute to techno-preneurial skill acquisition among youth in Nigeria.

H_{02}: Digital literacy, digital technology adoption, digital connectivity, and digital platform utilisation do not significantly predict techno-preneurial skill acquisition among youth in Nigeria.

Methodology

The study adopted a correlational survey research design to examine the relationship between digital transformation and techno-preneurial skill acquisition among youths in the South-South geopolitical zone of Nigeria. The design was considered suitable because the study focused on determining the extent to which digital transformation was related to techno-preneurial skill acquisition without manipulating either of the variables. It also provided an appropriate basis for collecting data from a relatively large number of respondents and statistically determining the nature and predictive relationship between the variables. In the study, digital transformation served as the independent variable, while techno-preneurial skill acquisition was treated as the dependent variable.

The study was conducted in the South-South geopolitical zone of Nigeria, comprising Akwa Ibom, Bayelsa, Cross River, Delta, Edo and Rivers States. The zone was considered appropriate for the study because of the increasing use of digital technologies in education, communication, commerce, financial transactions, employment and entrepreneurial activities. The growing use of smartphones, internet-enabled platforms, social media, electronic commerce and digital financial services among young people provided a suitable context for examining the relationship between digital transformation and the acquisition of techno-preneurial skills.

The population of the study comprised 5,000 youths aged 18–35 years drawn from Akwa Ibom, Bayelsa, Cross River, Delta, Edo and Rivers States. The population consisted of youths who had access to and used digital technologies and platforms for educational, social, economic or entrepreneurial purposes. Specifically, the population included youths who interacted with digital devices and platforms such as smartphones, computers, social media, electronic commerce platforms, internet-based services and digital financial technologies. This population was considered appropriate because the study was concerned with youths who were exposed to and actively interacted with digital technologies and could therefore provide relevant information on the relationship between digital transformation and techno-preneurial skill acquisition.

From the population of 5,000 youths, a sample of 400 respondents was selected for the study using a multistage sampling procedure. The procedure was adopted to ensure that respondents were drawn from different locations within the six states of the South-South geopolitical zone. The sampling process involved the identification of the six states as the study locations, followed by the selection of appropriate communities or locations within the states and, subsequently, the selection of eligible youths from the identified locations. To participate in the study, respondents were required to be between 18 and 35 years of age, reside in one of the six selected states and have access to or use

digital technologies for educational, social, economic or entrepreneurial activities. The sampling procedure provided a practical means of reaching respondents across the study area while ensuring that the selected participants met the requirements of the study.

Data were collected using a structured questionnaire titled Digital Transformation and Techno-preneurial Skill Acquisition Questionnaire (DTPSAQ). The instrument consisted of 14 items divided into two sections. Section A contained seven items designed to measure digital transformation, covering digital literacy, digital technology adoption, internet connectivity, digital platform utilisation and digital financial technology. The items focused on respondents' access to, use of and engagement with digital technologies in their educational, social, economic and entrepreneurial activities. Section B also contained seven items designed to measure techno-preneurial skill acquisition. The items covered digital marketing, online business management, opportunity recognition, innovation and creativity, digital financial management, technology-based problem-solving and business-idea development. These dimensions were included to reflect practical skills that enable youths to identify, develop and manage entrepreneurial opportunities within digitally enabled environments. All items were structured on a four-point Likert-type scale of Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2 and Strongly Disagree (SD) = 1.

The face and content validity of the DTPSAQ were established through expert review. The instrument was presented to experts in Business Education, Entrepreneurship Education, and Measurement and Evaluation, who examined the items in relation to the objectives and research questions of the study. They also assessed the clarity of the statements, relevance of the items, adequacy of coverage, appropriateness of wording and suitability of the response format. Their observations and recommendations were used to revise ambiguous, unclear or repetitive items before the final version of the questionnaire was administered. The validation process helped to ensure that the instrument adequately covered the constructs of digital transformation and techno-preneurial skill acquisition investigated in the study.

The reliability of the instrument was determined through a pilot test involving 30 youths who had characteristics similar to those of the respondents in the main study but were not included in the final sample. The data obtained from the pilot test were subjected to Cronbach's alpha reliability analysis to establish the internal consistency of the items. The analysis produced reliability coefficients of 0.79 for the Digital Transformation Scale and 0.91 for the Techno-preneurial Skill Acquisition Scale. The coefficients indicated satisfactory internal consistency among the items in the respective scales and provided support for the use of the instrument in the main study.

The questionnaires were administered through a combination of electronic and physical methods. The electronic version was distributed through appropriate digital platforms, while printed copies were administered directly to respondents who were more accessible through physical contact. This approach helped to broaden the coverage of respondents across the study locations. Before completing the questionnaire, the respondents were informed about the purpose of the study and the type of information required. They were encouraged to respond honestly and independently to the items. Participation was voluntary, and the information provided by the respondents was treated confidentially and used strictly for academic purposes. After administration, the completed questionnaires were retrieved and screened for completeness, after which the usable responses were coded and prepared for statistical analysis.

The data collected were analysed using descriptive and inferential statistical techniques. Mean and standard deviation were used to answer the research questions, while regression analysis was employed to test the hypotheses at the 0.05 level of significance. A criterion mean of 2.50 was adopted for interpreting the responses obtained from the four-point scale. Mean scores ranging from 2.50 to 4.00 were interpreted as agreement, while mean scores ranging from 1.00 to 2.49 were interpreted as disagreement. Simple linear regression analysis was used to determine the relationship and predictive effect of digital transformation on techno-preneurial skill acquisition. Multiple regression analysis was used to determine the extent to which the dimensions of digital transformation collectively and individually predicted techno-preneurial skill acquisition. The regression analyses also provided information on the direction and strength of the relationships between the variables. The null hypotheses were tested at the 0.05 level of significance and were rejected where the obtained p-value was less than 0.05. Where the p-value was greater than or equal to 0.05, the null hypotheses were not rejected.

Throughout the study, basic ethical principles relating to voluntary participation, confidentiality and responsible handling of research information were observed. The respondents were adequately informed about the purpose of the study and were not compelled to participate or provide information against their wishes. The information obtained from the respondents was treated confidentially and

used strictly for the purposes of the study. Respondents were also allowed to complete the questionnaire independently and without undue influence or interference from the researcher.

Results of the Findings

Research Question One

To what extent does digital transformation contribute to techno-preneurial skill acquisition among youth in Nigeria?

Table 1: Mean and Standard Deviation of Respondents' Ratings on Digital Transformation and Techno-preneurial Skill Acquisition

S/N	Digital Transformation Items	SA	A	D	SD	WS	M	SD	Decision
1	I possess adequate digital literacy to use computers and digital devices for productive activities.	176	158	45	21	1,289	3.22	0.86	High
2	I regularly adopt digital technologies to improve the way I perform business-related activities.	168	161	50	21	1,276	3.19	0.87	High
3	I can effectively use internet-enabled technologies to search for business and entrepreneurial opportunities.	171	157	51	21	1,278	3.2	0.87	High
4	I have reliable access to digital connectivity that enables me to participate in online economic activities.	142	161	67	30	1,215	3.04	0.92	High
5	I use social media and other digital platforms to communicate with potential customers and business partners.	183	148	48	21	1,293	3.23	0.85	High
6	I use digital platforms such as e-commerce and online marketplaces to promote or access products and services.	151	164	59	26	1,240	3.1	0.89	High
7	I use digital payment and financial technologies to conduct or support economic and business transactions.	174	153	52	21	1,280	3.2	0.87	High
	Grand Mean					**8,871**	**3.17**	**0.88**	**High**

Note:*SA (Strongly Agree), A (Agree), D (Disagree), SD (Strongly Disagree), Weighted Score, Mean and SD (Standard Deviation)*

The data presented in Table 1 show that respondents reported a high extent of digital transformation, with a grand mean of 3.17, which is above the criterion mean of 2.50. The highest mean of 3.23 was recorded for the use of social media and other digital platforms to communicate with potential customers and business partners, followed by digital literacy with a mean of 3.22. The use of digital payment and financial technologies and the use of internet-enabled technologies for identifying entrepreneurial opportunities each recorded a mean of 3.20. Reliable digital connectivity recorded the lowest mean of 3.04, although this was still above the criterion mean. The result indicates that the youths generally have substantial exposure to and engagement with digital technologies for productive, business and entrepreneurial activities. The relatively lower mean for digital connectivity suggests that access to reliable connectivity may constitute a comparatively greater constraint than other dimensions of digital transformation.

Research Question Two

To what extent do digital literacy, digital technology adoption, digital connectivity, and digital platform utilisation predict techno-preneurial skill acquisition among youth in Nigeria?

Table 2: Mean and Standard Deviation of Techno-preneurial Skill Acquisition among Youth

S/N	Techno-preneurial Skill Acquisition Items	SA	A	D	SD	WS	Mean	SD	Decision
1	I have acquired skills for using digital platforms to market products and services.	180	151	49	20	1,291	3.23	0.85	High
2	I have acquired skills for establishing and managing online business activities.	169	158	52	21	1,275	3.19	0.87	High
3	I can identify entrepreneurial opportunities created by emerging digital technologies.	173	154	51	22	1,278	3.2	0.88	High
4	I can use digital technologies to develop creative and innovative products or services.	165	162	52	21	1,271	3.18	0.87	High
5	I can use digital financial tools to manage business income, expenses and transactions.	158	164	56	22	1,258	3.15	0.87	High
6	I can use digital technologies to solve problems encountered in entrepreneurial activities.	161	159	58	22	1,259	3.15	0.88	High
7	I can use digital technologies to develop and implement a business idea into a viable entrepreneurial activity.	169	157	51	23	1,272	3.18	0.89	High
	Grand Mean					**8,904**	**3.18**	**0.87**	**High**

The data presented in Table 2 indicate that respondents reported a high extent of techno-preneurial skill acquisition, as shown by the grand mean of 3.18, which is higher than the criterion mean of 2.50. The highest mean of 3.23 was recorded for the acquisition of skills for using digital platforms to market products and services. This was followed by the ability to identify entrepreneurial opportunities created by emerging digital technologies, with a mean of 3.20. The ability to establish and manage online business activities recorded a mean of 3.19, while the ability to use digital technologies for developing and implementing business ideas recorded a mean of 3.18. The lowest means of 3.15 were recorded for the use of digital financial tools in managing business transactions and the use of digital technologies to solve entrepreneurial problems. Nevertheless, both means were above the criterion mean. Overall, the result suggests that the respondents had acquired considerable techno-preneurial competencies, particularly in digital marketing, opportunity recognition and online business activities.

Test of Hypothesis One

$H_0$1: Digital transformation does not significantly contribute to techno-preneurial skill acquisition among youth in Nigeria.

Table 3: Simple Linear Regression Analysis of Digital Transformation and Techno-preneurial Skill Acquisition

Model	R	R^2	Adjusted R^2	Std. Error of Estimate	F	Sig.
1	0.521	0.271	0.269	0.463	147.83	<0.001
Predictor	**B**	**Std. Error**	**Beta (β)**	**t**	**Sig.**	**Decision**
Constant	1.274	0.158	—	8.06	<0.001	Significant

Digital transformation	0.601	0.049	0.521	12.16	<0.001	Significant

The data presented in Table 3 show that digital transformation had a positive and significant contribution to techno-preneurial skill acquisition among youth in Nigeria. The correlation coefficient of R = 0.521 indicates a positive relationship between digital transformation and techno-preneurial skill acquisition. The coefficient of determination, $R^2 = 0.271$, indicates that digital transformation explained 27.1% of the variation in techno-preneurial skill acquisition, while the remaining 72.9% could be attributed to other factors not included in the model. The regression model was statistically significant, $F(1,398) = 147.83$, $p < .001$. Furthermore, digital transformation had a positive regression coefficient ($\beta = 0.521$, $t = 12.16$, $p < .001$). Since the calculated significance value of less than .001 is below the 0.05 level of significance, the null hypothesis is rejected. Therefore, digital transformation significantly contributes to techno-preneurial skill acquisition among youth in Nigeria.

Test of Hypothesis Two

$H_0$2: Digital literacy, digital technology adoption, digital connectivity, and digital platform utilisation do not significantly predict techno-preneurial skill acquisition among youth in Nigeria.

Table 4: Multiple Regression Analysis of Digital Literacy, Digital Technology Adoption, Digital Connectivity and Digital Platform Utilisation as Predictors of Techno-preneurial Skill Acquisition

Model	**R**	**R^2**	**Adjusted R^2**	**Std. Error of Estimate**	**F**	**Sig.**
1	0.613	0.376	0.369	0.431	59.47	<0.001
Predictor	**B**	**Std. Error**	**Beta (β)**	**t**	**Sig.**	**Decision**
Constant	0.982	0.176	—	5.58	<0.001	Significant
Digital literacy	0.184	0.051	0.184	3.62	<0.001	Significant
Digital technology adoption	0.231	0.051	0.236	4.53	<0.001	Significant
Digital connectivity	0.139	0.049	0.141	2.83	0.005	Significant
Digital platform utilisation	0.286	0.05	0.291	5.68	<0.001	Significant

The data presented in Table 4 indicate that the four dimensions of digital transformation jointly predicted techno-preneurial skill acquisition among youth in Nigeria. The multiple correlation coefficient of R = 0.613 indicates a positive relationship between the predictors collectively and techno-preneurial skill acquisition. The R^2 value of 0.376 indicates that digital literacy, digital technology adoption, digital connectivity and digital platform utilisation jointly explained 37.6% of the variance in techno-preneurial skill acquisition. The adjusted R^2 of 0.369 indicates that approximately 36.9% of the variance was explained after adjusting for the number of predictors in the model. The overall regression model was statistically significant, $F(4,395) = 59.47$, $p < .001$. Individually, digital literacy significantly predicted techno-preneurial skill acquisition ($\beta = 0.184$, $t = 3.62$, $p < .001$); digital technology adoption also made a significant positive contribution ($\beta = 0.236$, $t = 4.53$, $p < .001$); digital connectivity significantly predicted techno-preneurial skill acquisition ($\beta = 0.141$, $t = 2.83$, $p = .005$); and digital platform utilisation made a significant positive contribution ($\beta = 0.291$, $t = 5.68$, $p < .001$).

Since the overall probability value of $p < .001$ is less than the 0.05 level of significance, the null hypothesis is rejected. Therefore, digital literacy, digital technology adoption, digital connectivity and digital platform utilisation jointly have a significant predictive relationship with techno-preneurial skill acquisition among youth in Nigeria. Among the four predictors, digital platform utilisation recorded the largest standardized coefficient ($\beta = 0.291$), followed by digital technology adoption ($\beta = 0.236$), digital literacy ($\beta = 0.184$) and digital connectivity ($\beta = 0.141$). These coefficients describe the statistical contributions of the predictors in this illustrative model and should not be interpreted as causal effects.

The analysis indicates that respondents reported a high level of digital transformation, with a grand mean of 3.17, and a high level of techno-preneurial skill acquisition, with a grand mean of 3.18. The simple regression analysis showed that digital transformation significantly contributed to techno-preneurial skill acquisition and explained 27.1% of its variance. The multiple regression analysis further showed that digital literacy, digital technology adoption, digital connectivity and digital platform utilisation jointly explained 37.6% of the variance in techno-preneurial skill acquisition. Both null hypotheses were rejected at the 0.05 level of significance.

Discussion of Findings

Digital Transformation and Techno-preneurial Skill Acquisition

The finding of the study revealed that youth in Nigeria reported a high extent of digital transformation, with a grand mean of 3.17. The result indicates that the respondents were considerably exposed to and engaged in digital technologies, particularly digital literacy, digital technology adoption, internet-enabled technologies, social media, e-commerce platforms and digital payment technologies. The finding further showed that digital transformation significantly contributed to techno-preneurial skill acquisition, with digital transformation explaining 27.1% of the variance in techno-preneurial skill acquisition. This finding suggests that increased exposure to and utilisation of digital technologies is associated with improved acquisition of skills needed to identify opportunities, market products, manage online businesses, use digital financial tools and develop technology-supported business ideas.

The finding agrees with Ekoh-Nweke and Ikpeama (2023), who found that digitalization highly influenced entrepreneurial and managerial skills acquisition among Business Education students in public universities in South-East Nigeria. Their study concluded that digitalization provides opportunities for students to acquire relevant skills for functioning effectively in the contemporary business environment. The agreement between the two studies lies in the recognition that digital technology is not merely a communication tool but also an important mechanism through which entrepreneurial and occupational competencies can be developed. While Ekoh-Nweke and Ikpeama focused specifically on Business Education students, the present study extends the discussion to youth more broadly and specifically examines techno-preneurial skill acquisition. The finding also agrees with Enang (2023), who argued that digital entrepreneurial competencies are increasingly necessary for Business Education students to remain effective and relevant in the digital era. Enang emphasised the importance of integrating digital entrepreneurial competencies into education to enhance self-reliance and job creation. The present finding provides empirical support for this position by showing a statistically significant relationship between digital transformation and techno-preneurial skill acquisition. Thus, the result reinforces the argument that digital exposure and competence should be connected with entrepreneurial learning rather than treated as separate areas of education.

Similarly, the finding agrees with Adams, Ogbu, Ugbechie and Odor (2026), who reported a significant relationship between digital skills acquisition and youth self-employment in South-South Nigeria. Their study found that technical digital skills, digital marketing and e-commerce skills, and soft digital literacy jointly explained 52.0% of the variance in youth self-employment. Although the dependent variable in their study was youth self-employment rather than techno-preneurial skill acquisition, both studies demonstrate the relevance of digital competencies to youth economic participation. The difference in the explained variance may be attributable to differences in the dependent variables, study populations, geographical coverage, measurement instruments and analytical models. The finding, however, differs in emphasis from Egajivwie and Omorojie (2026), who reported that exposure of Business Education students to digital entrepreneurial skills training and their readiness for participation in the 21st-century economy remained low. While the present study recorded a high level of digital transformation and techno-preneurial skill acquisition, the earlier study identified inadequate exposure to practical digital entrepreneurial training among its respondents. The difference may be explained by the fact that Egajivwie and Omorojie focused on final-year Business Education students in public universities in Delta State, whereas the present study considered youth more broadly. It may also reflect differences in access to digital technologies, training opportunities and the specific indicators used to measure digital competence.

Overall, the finding suggests that digital transformation constitutes an important contextual factor in the development of techno-preneurial competencies among Nigerian youth. However, the R^2 of 0.271 also indicates that digital transformation alone does not account for all variations in techno-preneurial skill acquisition. Other factors, such as quality of training, access to finance, mentorship, educational background, entrepreneurial motivation, infrastructure and availability of markets, may also contribute to differences in the skills acquired by young people.

Digital Literacy, Digital Technology Adoption, Digital Connectivity and Digital Platform Utilisation as Predictors of Techno-preneurial Skill Acquisition

The second finding showed that digital literacy, digital technology adoption, digital connectivity and digital platform utilisation jointly significantly predicted techno-preneurial skill acquisition among youth in Nigeria. The four predictors jointly explained 37.6% of the variance in techno-preneurial skill acquisition. All four predictors made statistically significant positive contributions. Digital platform utilisation had the largest standardized regression coefficient ($\beta = 0.291$), followed by digital technology adoption ($\beta = 0.236$), digital literacy ($\beta = 0.184$) and digital connectivity ($\beta = 0.141$). This finding agrees with Enang (2023), who identified digital entrepreneurial competencies as necessary for individuals to function effectively in the digital economy. The significant contribution of digital literacy in the present study supports the view that basic knowledge and ability to use digital technologies constitute an important foundation for the development of higher-level entrepreneurial competencies. A young person who can effectively search for information, communicate digitally, navigate online platforms and use digital applications is better positioned to exploit technology-enabled entrepreneurial opportunities.

The finding also agrees with the study of Adams et al. (2026), which demonstrated that technical digital skills, digital marketing and e-commerce skills, and soft digital literacy significantly contributed to youth self-employment. The present study similarly found that digital technology adoption and digital platform utilisation significantly predicted techno-preneurial skill acquisition. The agreement is particularly evident in the importance attached to practical use of digital technologies rather than mere awareness of their existence. The relatively stronger contribution of digital platform utilisation in the present study is noteworthy. It suggests that the ability to move beyond knowing about technology to actually using digital platforms for marketing, communication, transactions and business development may be particularly relevant to the acquisition of techno-preneurial competencies. This observation is consistent with the emphasis on digital marketing, e-commerce and other practical digital competencies in the literature reviewed. The result is also consistent with the work of Falobi, Ishola and Owodolu (2023), which examined skills acquired by Business Education students for exploring digital entrepreneurship opportunities. Their findings pointed to the need for further development of skills in areas such as digital marketing and e-content writing and for universities to provide appropriate training and education. The present study extends this argument by demonstrating statistically that digital platform utilisation and other dimensions of digital transformation are significant predictors of techno-preneurial skill acquisition.

However, the present finding differs from Egajivwie and Omorojie's (2026) finding of generally low exposure to digital entrepreneurial skill training among Business Education students. The difference may arise from differences in population, geographical context and the nature of the variables examined. While their study concentrated on formal training received by university Business Education students, the present study considered broader dimensions of digital transformation, including self-directed use of digital platforms, connectivity and technology adoption among Nigerian youth. Consequently, the high level of reported digital engagement in the present study does not necessarily imply that all young people receive adequate formal digital entrepreneurial training. Taken together, the findings indicate that techno-preneurial skill acquisition is likely to be strengthened when young people have not only digital knowledge but also regular access to digital technologies, reliable connectivity and opportunities to use digital platforms for productive and entrepreneurial purposes. The results therefore support a shift from viewing digital competence solely as a technical skill towards understanding it as an enabling component of contemporary entrepreneurial capability.

Conclusion

Based on the findings, the study concludes that digital transformation is significantly associated with techno-preneurial skill acquisition among youth in Nigeria. The respondents reported a high extent of digital transformation and a high level of techno-preneurial skill acquisition. The study further established that digital transformation significantly contributed to techno-preneurial skill acquisition, while digital literacy, digital technology adoption, digital connectivity and digital platform utilisation jointly and significantly predicted the acquisition of techno-preneurial skills. The findings demonstrate that

digital competence and entrepreneurial competence are increasingly interconnected in the contemporary Nigerian economy. Young people require more than general knowledge of digital technologies; they need the ability to apply those technologies to identify opportunities, develop ideas, market products and services, manage transactions, solve business problems and participate in digital markets. Nevertheless, the proportion of variance not explained by the models indicates that digital transformation is only one component of the broader environment influencing techno-preneurial skill acquisition. Educational quality, infrastructure, finance, mentorship, entrepreneurial motivation and other socioeconomic factors may also be relevant.

Recommendations

Based on the findings, the study recommends that:

1. Business Education and entrepreneurship programmes should integrate practical techno-preneurial competencies into their curricula, with emphasis on digital marketing, e-commerce, social media management, digital financial tools, content creation and online business management.
2. Universities and other tertiary institutions should provide practical digital entrepreneurship laboratories and innovation spaces where students and young people can develop, test and market technology-enabled business ideas.
3. Government should expand affordable and reliable digital connectivity for young people, particularly by supporting broadband infrastructure, affordable internet access and digital access programmes.
4. Youth empowerment programmes should combine digital literacy with entrepreneurial training. Training should focus not only on how to use digital technologies but also on how to convert digital knowledge into marketable products, services and business opportunities.
5. Technology companies, financial institutions and educational institutions should strengthen industry–academia partnerships to provide mentorship, internships, practical projects and exposure to contemporary digital business practices.
6. Digital entrepreneurship training should emphasise continuous practical application. Young people should be encouraged to undertake projects involving online marketing, e-commerce, digital payments, customer engagement and technology-based business development.
7. Government and educational institutions should provide targeted support for young digital entrepreneurs, including access to finance, mentorship, incubation programmes and business-development services.

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DIGITAL COMPETENCIES REQUIRED BY BUSINESS EDUCATION GRADUATES FOR OPTIMUM ENTREPRENEURIAL PRODUCTIVITY IN KOGI STATE

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Abstract

In today's digital age, the role of technology in entrepreneurship has become indispensable. Business education graduates must possess relevant digital competencies to effectively navigate and thrive in entrepreneurial ventures. This paper explores some of the key digital skills required by Business Education graduates to enhance their entrepreneurial productivity. The findings show that digital enterprise software, cyber security, communication, financial management tools and data analyses competencies are required by business education graduates for optimum productivity in Kogi State. It was concluded that integrating relevant digital skills into Business Education is critical for preparing graduates who are not only employable but also capable of launching and managing innovative, secure, and efficient business ventures. It was therefore recommended that lecturers should undergo continuous professional development in digital competencies, particularly in digital enterprise software, financial tools, and cyber security among others. In addition, Business Education curriculum should be revised to include up-to-date digital modules that reflect the current demands of entrepreneurship and the digital economy.

Keywords: Digital Competencies, Business Education, Graduates, Entrepreneurial Productivity

Introduction

The role of technology in today's entrepreneurial activities has become indispensable. Business education graduates must possess relevant digital competencies to effectively navigate and thrive in entrepreneurial ventures. This paper explores some of the key digital competencies required by Business Education graduates to enhance their entrepreneurial productivity.

According to Garry (2020), the term "business" refers to the organized efforts and activities of individuals to produce and sell goods and services for profit. This means that business is not just about making profit but one must have something of value to give to the society or a need of the society they intend solving. Aremu (2015) also stated that business is an integral part of the modern society. It is an organized and systematic activity for earning profit. Modern society cannot exist without business. This is because business improves the standard of living of the people by providing better quality and large variety of goods and services at the right time and at the right place. Entrepreneurship is therefore defined as any activities set aside to provide goods or render services to people at a profit. Business education graduates needs to acquire digital competencies to enable them fit into the world of business majorly through education.

Education is a process that begins at birth and continues until the end of life. Durkheim in Hasan (2018) states that "education is the influence exercised by adult generations on those that are not yet ready for social life". In other words, the primary objective of education is to help children develop intellectual skills and improve their physical capabilities. Additionally, they should be motivated at school to acquire the moral values and skills that are demanded by business world. According to Adesemowo and Olufunmilayo (2022), education is also defined as the act or process of applying discipline on the mind or a process of character training. Operationally, business education is a form of teaching and learning that is being impacted by a teacher to a student for the purpose of optimal performance in entrepreneurial activities. This definition speaks a lot about business people as their discipline, skills and characters display at work are so high to be gotten without passing through business education.

Business Education has been defined by many authors but basically mean the same thing. Business Education refers to the study of courses that are technology related and the acquisition of functional and practical skills required to function efficiently and effectively as employees or employers of labour (Titiloye in Seyi, Elizabeth and Victoria, 2023). Jimoh-Kadiri and Bupo in Njoku (2020) also

described business education as the transfer of pedagogical and business competencies necessary for teaching business attitudes, concepts, skills and knowledge. Okoye and Ashibogwu (2018) defined Business education as that aspect of educational training which an individual receives with the primary motive of enabling him to acquire adequate attitudes, concepts, knowledge, understanding and skills in business activities for vocational usage in careers as an administrator, entrepreneurship manager or teacher wherever he may find himself in the business world. When someone has passed through business education in formal educational programme in any tertiary institution, it qualifies the person to be addressed as a business education graduate.

Business Education graduate is defined as individual who went through a formal training session for the purpose of understanding business and how it works (Titiloye and Muhammed, 2016). Seyi, Elizabeth and Victoria (2023) agree with the definition above when they stated that, Business Education graduates are students who graduated from formal education and underwent Business Education as a programme of study both in universities and colleges of education. Business Education graduates therefore refers to those individuals who have undergone training through formal education to learn about business for the purpose of filling the business technology space in the world of work. With the growth in business technology, graduates that lack the digital competencies may likely find it difficult getting along with business duties and roles hence this work is focused on digital competencies of business education graduates for optimum productivity.

Digital competency is the most recent concept describing technology-related skills. During the recent years, several terms have been used to describe the skills and competence of using digital technologies, such as Information Communication Technology (ICT) skills, technology skills, information technology skills, 21st century skills, information literacy, digital literacy, and digital skills. These terms are also often used as synonyms; that is, digital competence and digital literacy. This study is specifically focused on digital competencies.

According to South & City College Birmingham (2018), digital competence is the ability to keep abreast with the rapid changes in ICT. It comprises the related knowledge and skills one needs to optimize ICT efficiently for one's own purposes, be it for personal or professional life. This definition is similar to the definition of Nitin (2018) who postulated that digital competency is the ability to use digital technologies in a meaningful way for studying, working and for everyday life. To understand digital competency proper, the meaning of digital and competency has to be looked into separately.

The word digital has been defined by many authors such as Yasar (2023) who defined digital as electronic technology that generates stores and processes data in terms of positive and non-positive states. Positive is expressed or represented by the number 1 and non-positive by the number 0. Thus, data transmitted or stored with digital technology is expressed as a string of 0s and 1s. This means that digital is an electronic and computer technology that can be used to store data, process data, retrieve data and communicate information from one source to another.

Competence on the other hand according to the European Commission in Rizza (2014), is a combination of knowledge, skills and attitudes appropriate to context of work. Therefore, digital competency is the general term used to describe or explain the ability of a person to use electronic and computer technology in a specific context in business and entrepreneurial activities. The digital competencies as listed by Rizza (2014) are digital enterprise software competencies, digital information security competencies, digital communication competencies, digital financial management tools competencies and digital data analyses competencies among others. All these competencies combined will lead to entrepreneurial productivity.

Entrepreneurial productivity is not only the key of competitiveness, but also the main driver for economic growth and employment (Prasetyo, 2019). According to Yadav and Marwah (2015) productivity is commonly defined as a ratio between the output volume and the volume of inputs. In other words, it measures how efficiently production inputs, such as labour and capital, are being used in an economy to produce a given level of output. Productivity is considered a key source of economic growth and competitiveness and, as such, is basic statistical information for many international comparisons and country performance assessments. Productivity is an overall measure of the ability to produce a good or service (Tsai and Tang, 2012). More specifically, productivity is the measure of how specified resources are managed to accomplish timely objectives as stated in terms of quantity and quality. Therefore, entrepreneurial productivity is the measure of how entrepreneurial activities are managed to accomplish timely entrepreneurial objectives of the business or company.

Digital Enterprises Software Competency

Westerman, Bonnet, and McAfee (2021) defined digital enterprise competencies as the ability of individuals to effectively use digital tools, technologies, and strategies to drive business efficiency,

innovation, and transformation**.** These competencies include skills in digital marketing, enterprise resource planning (ERP) systems, and customer relationship management (CRM) software, enabling business professionals to optimize processes and maintain a competitive advantage in the digital economy. Nambisan et al. (2019) also defined digital enterprise competencies as the ability to leverage digital technologies, platforms, and tools to drive business innovation, optimize processes, and improve organizational performance. Parviainen et al. (2017) further described digital enterprise competencies as the skills required to integrate digital solutions into traditional business processes to enhance performance, decision-making, and operational efficiency. These competencies encompass knowledge of cloud computing, digital collaboration tools, and automated business processes, which are essential for sustaining competitiveness in modern enterprises. Digital enterprise competencies are the knowledge, skills, and abilities required by entrepreneurs and business professionals to adapt to digital transformations in the business environment (Teece, 2020).

These competencies encompass the ability to use enterprise resource planning (ERP) systems, customer relationship management (CRM) tools, and artificial intelligence-driven business analytics to enhance decision-making and operational efficiency. Warner and Wäger (2019) defined digital enterprise competencies as the critical skills needed for businesses to integrate digital transformation strategies, including data-driven decision-making, automation, and digital communication. The authors argue that these competencies are necessary for businesses to remain competitive in the digital economy. Similar to the definition above is the definition put forward by Vial (2019) who defines digital enterprise competencies as the knowledge and skills necessary for leveraging digital transformation within business environments**.** These competencies involve the ability to implement digital business models, manage enterprise-wide technology adoption, and use analytics for business optimization**.** Business education graduates operating in Kogi State will find it difficult joining the business world of work without competency in enterprise software. Some of the digital enterprise competencies as listed by Teece (2020) are: Ability to use ERP software like SAP, Oracle, or Microsoft Dynamics to manage business processes such as finance, supply chain, and human resources; Competence in using CRM tools like Salesforce, HubSpot, or Zoho CRM for managing customer interactions, sales, and marketing; Knowledge of cloud-based enterprise applications such as Google Workspace, Microsoft 365, and AWS for remote collaboration and business operations; Ability to automate workflows and repetitive tasks using software like UiPath, Power Automate, or Zapier; Competence in using business intelligence tools like Power BI, Tableau, or Google Data Studio to analyze enterprise data for decision-making; Ability to manage business finances using tools like QuickBooks, Xero, or Sage for budgeting, invoicing, and payroll; Understanding enterprise software security measures, including encryption, multi-factor authentication (MFA), and compliance with data protection regulations; Skill in managing online business operations using platforms like Shopify, Magento, or WooCommerce; Competence in using digital inventory systems like Oracle NetSuite, TradeGecko, or Fishbowl for tracking and managing stock and ability to use tools like Asana, Trello, Monday.com, or Jira for project planning, task management, and team collaboration.

Digital Information Security Competencies

Digital information security has been one of the top security issues both in developed and developing countries. Everyone tries to keep digital information secured against unauthorized access. According to Global Interagency Security Forum (2020), Digital Security competency is the capability to the measure, strategize and process technology that aim to mitigate risks related to organizations' and individuals' digital footprints and use of technologies. The UK Government Department of Business Innovation and Skills survey, inadvertent human error was the cause of 50% of the worst security breaches in 2015. IT security is 10% technology and 90% people and processes – Everyone is responsible. To guide one in personal quest for digital security, The University of Aberdeen (2020) has compiled a list of best practices and tips for applications (apps), passwords, devices, personal information and money. These are: Configure individual app permissions: Most apps offer privacy settings for users, enabling one to determine what types of information and how much of it one needs to share and store. There is the need to always choose the least amount of data sharing possible to avoid sharing information that are private. These also serve as digital information security to an extent. Check push notifications: Using applications that use push notifications, review settings to ensure that sensitive data is not shared unexpectedly on home screen. Health or banking data is not supposed to be in full view. Do not over-share**:** Sharing too much personal information on social media apps can be dangerous. For instance, many hackers have successfully guessed passwords through trial-and-error, using combinations of common information (such as children's names, addresses, and other details) easily found on social media profiles.

Two-step verification/authentication: Many sites and apps now offer members the ability to turn on two-step verification for their email, banking and social media accounts. This requires a password, as well as verification of a numeric code sent to phone via SMS. This ensures that even if password is compromised, individual accounts cannot be accessed unless the hacker also has the phone where the verification code will be sent (Hiatshwayo, 2023).

Passwords: Never write them down or share them. It is tempting to write password on a post-it, or in a notebook, but this is on a par with keeping house key sellotaped to front door – there is no easier way for data to be stolen (The University of Aberdeen, 2020).

Use multiple passwords: It is a good idea to have different passwords for different sites, or at least have a special password for most sensitive information. This way, if a hacker cracks user password on one website, they will not have instantly cracked user password for a dozen more.

Use password managers**:** Many people find it impossible to remember all the different passwords they use on a daily basis, so they use a password manager such as LastPass and Sticky Password. Password managers can generate strong passwords for all your accounts, with no need for user to remember any of them.

Data Encryption used to be the sole province of IT programmers and mathematicians, but a lot has changed in recent years. It is a highly effective method of protecting data stored on portable devices, encoding data so that it can only be read by someone who has the right encryption key (password) to decode it. User could use Bitlocker for a Windows device or Concealer for Mac. On an Android, encrypt user phone within the Security section of the Settings menu. On iOS devices, set a passcode and custom alphanumeric code in the Settings menu to enable encryption (The University of Aberdeen, 2020).

Backup your data**:** Often overlooked, one of the most basic data protection tips is backing up data. This creates a duplicate copy of data so that if device is lost, stolen, or compromised, user do not also loose important files. Backup could be on personal network files pace – the H: drive. one might also consider using an external hard drive or Cloud storage.

Install Updates**:** Although system updates can be a pain, always popping up when user are at their busiest, failing to install them leaves computer at risk. Programmers build these updates to bolster security and fight off known attackers by installing critical security patches.

Secure your wireless network: By setting a password for wireless network one prevent unauthorized individuals within the area hacking into the network. Log out of accounts and turn off computer**:** Leaving computers on and connected to the internet leaves device open to attacks from malware and cybercrimes. It is also a good idea to log out of online accounts when finished.

Cover webcam: Some sophisticated hackers can hijack webcam and use it to collect keystrokes and other details about user's life. Even Mark Zuckerberg tapes over his webcam for security – user might want to do the same. Be selfie aware: Worryingly, hackers have also managed to recreate fingerprints from images where the subject is holding their hand up in a peace sign. Most threats exploiting Bluetooth connectivity are dependent on the active Bluetooth connection, and while they aren't typically devastating or dangerous, they are certainly inconvenient and can be serious (Olaoye and Adedokun, 2023).Set automatic lock**:** It's a good idea to set up devices to lock automatically after a specified period of inactivity, prompting one to re-enter ones password or pin code when the user want to use it – just in case the user's phone or tablet falls into the wrong hands. Personal information: Vigilance about impersonators**.** Do not give out personal information on the phone, through the mail or over the Internet unless user have initiated the contact or know who they are dealing with. According to Olaoye and Adedokun (2023), if a company that claims to have an account with user sends email asking for personal information, don't click on links in the email. Instead, type the company name into web browser, go to their site, and contact them through customer service. Use a firewall: Firewalls assist in blocking dangerous programs, viruses or spyware before they infiltrate user's system. User can also install firewalls on personal devices .Anti-virus: When it comes to computers, anti-virus and anti-malware is now ubiquitous; but users do not know that mobile devices can also be protected? Consider using AVG Free or McAfee LiveSafe. Use PIN**:** Using PIN instead of contactless payments mean user can keep better track of outgoings. Contactless payments can take up to 10 working days to show on statement and balance, whereas a PIN payment shows within 24 hours. Review your accounts**:** Look at user's bank and store card statements regularly for suspicious transactions. There have been cases in Britain recently where small amounts of between £1 and £3 were taken every month. While this might not seem like much, if scammers can count on as few as 500 people per month not noticing, they can make thousands of pounds. Be vigilant with own finances. Get a credit report**:**

User can get a free credit report which allows user to check for suspicious activity and identify any accounts or services that were opened maliciously

Digital Communication Competencies

Digital communication hugely impacts how we connect. From emails and instant messages to video calls and social media, it's the primary way we communicate. Digital Communication has since then emerged as a powerful tool that connects individuals and organizations across the globe. It has revolutionized how we interact, collaborate, and share information and opened up endless possibilities by eliminating geographical boundaries (Taylor, 2023). According to Ashraf (2023), digital communication is the electronic exchange of information, data, or messages. It takes many forms and has become the communication standard for individuals and organizations over the past few decades. This definition is supported by Taylor (2023) when the author stated that digital Communication is the process of exchanging information, messages, and ideas using digital technologies and platforms. It involves the transmission and reception of data through electronic devices and networks. Digital Communication enables real-time interaction, instant messaging, video conferencing, and sharing of multimedia content across vast distances. When one sends an email, text a friend, or post on social media, one is using digital communication. Communication through digital tools has come a long way since the introduction of the telegraph in the early 19th century. Some key moments in the evolution of digital communication as postulated by Ashraf (2023): Telegraph: The telegraph revolutionized communications, making it possible to send messages across continents in a matter of hours.Telephone: The early 20th century saw the introduction of the telephone, which enabled people to talk in real time over long distances. By the mid-20th century, it was a regular fixture in homes and offices worldwide. Internet**:** The internet came onto the scene in 1983, making it possible to exchange information and communicate with others instantly and worldwide. Email, Instant Messaging, and Social Media: The internet paved the way for email, instant messaging, and online forums. Social media platforms like Facebook, Twitter, and Instagram made it easy to communicate with friends and family around the world Mobile Phones**:** The first call from a mobile device was made in 1973. Known as "the brick," the Motorola DynaTAC 8000x weighed nearly two pounds! Smartphones: The world's first smartphone was launched in 1994. The IBM Simon Personal Communicator featured a touch screen, address book, calendar, and email (it could even send a fax!). Apple introduced the iPhone in 2007, and the first Android phone was released in 2008 and Artificial Intelligence (AI): The rise of AI and chatbots have also changed the communication game, especially how companies interact with customers.

Types of Digital Communication: Digital medium are used as communication channels every day. According to Doyle (2019), here are some of the most common types of digital communication — bound to recognize most (if not all) of them: Email: Email is one of the most popular digital communication mediums, allowing users to send and receive messages, documents, and other files over the internet. Even if user don't use email in personal life, it's probably one of the primary ways one can communicate at work. Instant Messaging: One can probably also received an instant message (IM) or two. Instant messaging enables users to send and receive messages over the internet using apps like WhatsApp, Facebook Messenger, and iMessage.Video Conferencing: With the rise of remote work, video conferencing tools have become absolutely essential. Remote workers, businesses, educational institutions, and more use video conferencing to collaborate and communicate across time zones. Social Media: 59% of the world's population uses social media. Facebook, Instagram, and Twitter are just a few examples of social media platforms where users share information, photos, and videos with friends and followers. VoIP: WhatsApp, Skype, or Zoom are apps that use VoIP (Voice over Internet Protocol) technology, which allows user to place and receive calls over the internet — a cost-effective alternative to long-distance telephone calls.

Chatbots: One must have probably noticed that many of all these favorite brands have a chat feature. These are often powered by AI chatbots that use instant messaging to provide customer service support.SMS (Short Text Message Service): The technical difference between SMS and instant messaging is that it uses user cellular data rather than the internet to send and receive messages. According to Ashraf (2023), digital communication competencies are essential skills for effectively navigating and utilizing digital platforms for communication. These competencies typically include: ***Digital Literacy***: Understanding how to use digital tools and platforms, including basic computer skills, internet navigation, and familiarity with digital devices. ***Information Literacy*****:** Ability to find, evaluate, and use information from digital sources responsibly and ethically. This includes understanding how to assess the credibility of online information. ***Media Literacy***: Understanding how media content is created, distributed, and interpreted. This includes recognizing biases, understanding the impact of

media on public opinion, and creating media content responsibly. ***Technical Proficiency*****:** Skills in using specific digital communication tools and software, such as word processors, presentation software, social media platforms, video conferencing tools, and content management systems.

Communication Skills: Effective written and verbal communication tailored for digital contexts, including email etiquette, social media communication, and professional online interactions. ***Collaboration****:* Ability to work effectively with others using digital tools, such as cloud-based collaboration platforms, project management software, and online meeting tools. ***Creativity***: Using digital tools to create engaging and innovative content, such as multimedia presentations, videos, graphics, and interactive media. ***Critical Thinking***: Analyzing and evaluating digital content, understanding digital footprints, and making informed decisions based on digital data. ***Ethical Understanding***: Awareness of ethical issues related to digital communication, such as privacy, intellectual property, and cyber security. ***Adaptability***: Ability to quickly learn and adapt to new digital tools and platforms as technology evolves. ***Interpersonal Skills*****:** Managing digital relationships and understanding digital etiquette, including maintaining professionalism in online interactions and understanding cultural differences in digital communication. ***Digital Well-being***: Managing one's own digital presence and mental health, understanding the impact of digital communication on well-being, and promoting healthy digital habits. These competencies are crucial for personal, academic, and professional success in today's digital world

Digital Financial Management Tools Competencies

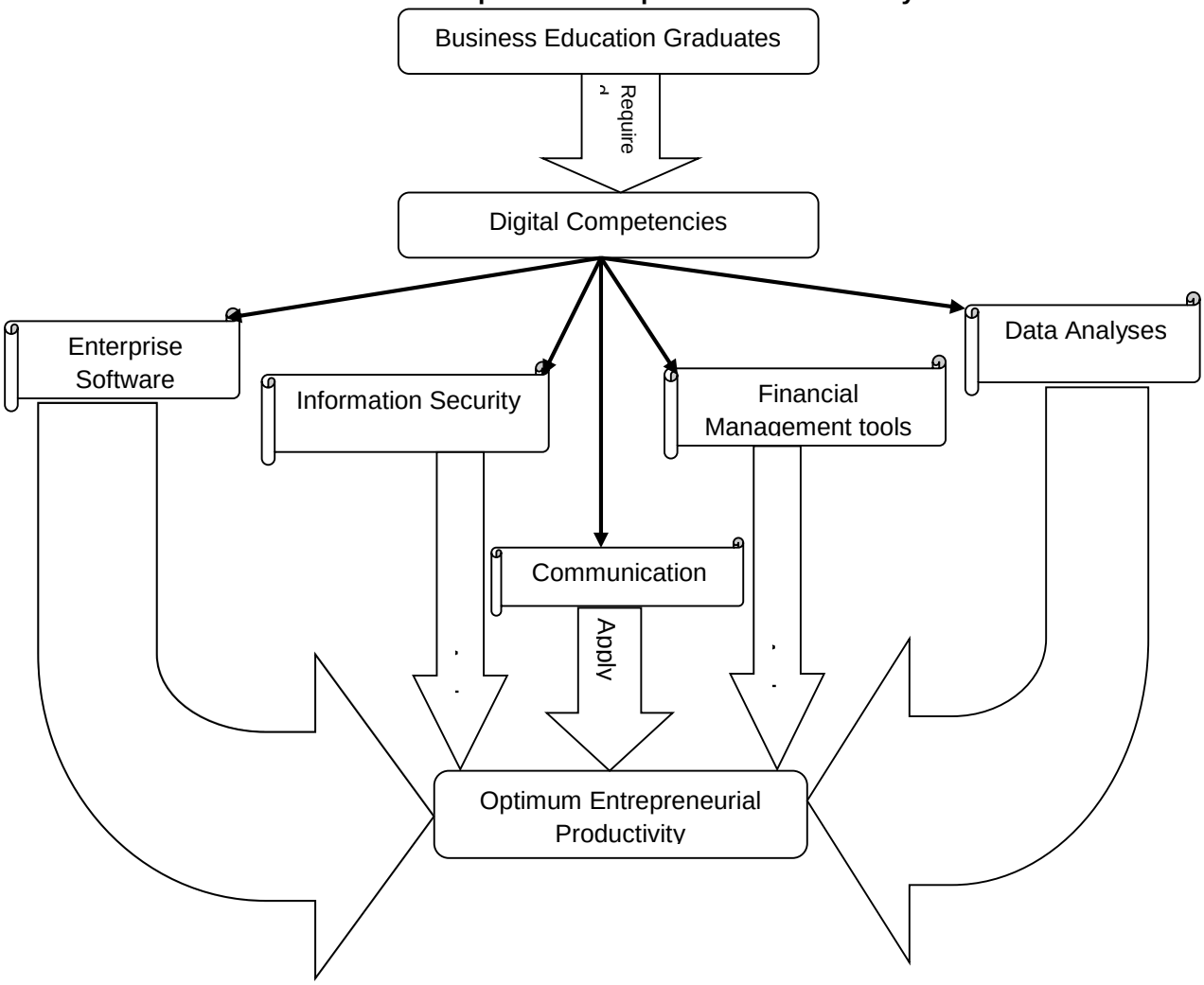
Schermann, Sonnenberg, and Bucher (2021) defined digital financial management tools competencies as the ability to use financial software and digital solutions to analyze, track, and manage business finances**.** According to Brynjolfsson and McElheran (2019) who describe digital financial management tools competencies **as** the technical and analytical skills required to effectively manage digital financial systems, including budgeting software, financial forecasting applications, and AI-driven accounting tools**.** They argue that these competencies are essential for improving financial decision-making and risk management in business enterprises. Tiron-Tudor and Deliu (2022) defined digital financial management tools competencies **as** the expertise required to utilize digital financial platforms for real-time transaction processing, financial reporting, and strategic financial planning. They emphasize that businesses leveraging these competencies can enhance operational efficiency, reduce financial errors, and improve cash flow management**.** Digital financial management tools competencies is the ability to utilize cloud-based financial applications, fintech solutions, and automated accounting software for efficient business operations (Puschmann, 2020). These competencies include proficiency in using platforms such as QuickBooks, SAP, and blockchain-based financial systems. Some of the digital financial management tools competencies as listed by Gomber et al. (2018) are ability to use financial tools like QuickBooks, Xero, or FreshBooks for bookkeeping, payroll, and tax management; Competence in using apps like Mint, YNAB (You Need a Budget), or Microsoft Excel for managing business finances and forecasting; Knowledge of processing transactions through digital banking platforms, PayPal, Stripe, and Square; Awareness of how blockchain technology and digital currencies like Bitcoin and Ethereum impact financial management; Ability to use tools like Power BI, Google Sheets, or SAP Financials to analyze business financial data and generate reports; Skills in creating and managing invoices digitally using software like Wave, Zoho Invoice, or Payoneer; Proficiency in managing finances through cloud accounting software for real-time financial tracking and collaboration; Ability to use digital tools to calculate taxes, file returns, and ensure compliance with financial regulations; Competence in using digital tools to monitor and control business expenses, ensuring financial stability and Understanding cyber security measures in financial transactions, such as fraud detection software and two-factor authentication.

Digital Data Analysis Competencies

Provost and Fawcett (2021) define digital data analysis competencies as the skills required to collect, process, and interpret large volumes of data using digital tools and statistical methods. These competencies include proficiency in programming languages such as Python and R, as well as expertise in machine learning and artificial intelligence for data-driven decision-making. Witten et al. (2020) describe digital data analysis competencies as the technical and analytical skills necessary for handling structured and unstructured data to derive business insights. McKinney (2018) defines digital data analysis competencies as the ability to manipulate and analyze data using digital tools such as SQL, Excel, and business intelligence software. He emphasizes that these competencies are crucial for making data-driven decisions in business and entrepreneurship. According to Wamba et al. (2017) the Digital Data Analysis Competencies are: ability to gather and organize structured and unstructured

data using databases like MySQL, PostgreSQL, and Google Sheets; Competence in using tools like Python (Pandas), OpenRefine, or Microsoft Excel to remove inconsistencies and prepare data for analysis; Proficiency in using statistical tools such as SPSS, R, or STATA to analyze business data (Brynjolfsson and McAfee, 2021); Ability to use visualization tools like Tableau, Power BI, or Google Data Studio for creating reports and dashboards; Understanding AI-driven analytics using platforms like TensorFlow, Scikit-learn, or IBM Watson for business forecasting; Knowledge of handling large datasets using Apache Hadoop, Spark, or Google BigQuery; Competence in using Google Analytics, Hotjar, and SEMrush to track online customer behaviour (Gandomi and Haider,2019); Awareness of best practices for securing business data, including GDPR compliance and encryption techniques; ability to analyze online trends and customer feedback using tools like Brandwatch, Hootsuite, or Sprout Social and skills in handling streaming data for immediate business insights using Apache Kafka or AWS Kinesis.

Figure 1: Diagrammatical Presentation of Digital Competencies Required by Business Education Graduates for Optimum Entrepreneurial Productivity



Source: Researcher

The above diagram is a schematic representation of the conceptual framework. From the diagram, one can see how the flow goes using the arrows. It depicts that business education graduates requires digital competencies. These digital competencies were further discussed one after another from the left side to the right. Then when entrepreneurs apply these digital competencies, it leads to

optimum entrepreneurial productivity. This is because, the level of technological growth in Nigeria and Kogi State in particular are so high that the population of those with online presents are far higher than those offline. Therefore, to increase productivities, customers are required and are mostly online. Using these digital technologies in the diagram above, business tends to have more potential customers and more people to know about the product they offer or the services they render.

Conclusion

This study was conducted to determine the digital competencies required by Business Education graduates for optimum entrepreneurial productivity in Kogi State, Nigeria. Specifically, it explored the competencies related to enterprise software, information security, communication, financial management tools, and data analysis.

The findings revealed that digital competencies are indeed essential for enhancing the entrepreneurial productivity of Business Education graduates. Although digital enterprise software competencies were found to be moderately required, competencies in digital information security, communication, financial management tools, and data analysis were mostly required. These results highlight a significant shift in the demands of the modern entrepreneurial and business landscape, where digital literacy and technical proficiency are becoming a necessity for success.

The study, therefore, concludes that integrating relevant digital skills into Business Education is critical for preparing graduates who are not only employable but also capable of launching and managing innovative, secure, and efficient business ventures. This calls for a collaborative effort among lecturers, curriculum planners, and students to embrace the digital transformation currently shaping the world of work and entrepreneurship.

Recommendations

From the related literature reviewed under this discourse, the researchers made the following recommendations:

1. Lecturers should undergo continuous professional development in digital competencies, particularly in enterprise software, financial tools, and cyber security. This will enable them to effectively teach and guide students in applying these tools for entrepreneurial purposes.

2. Students should take advantage of digital learning platforms and certifications to enhance their competencies in the key areas identified in this study especially digital communication, data analysis, and financial management tools. Developing these skills will improve their readiness for entrepreneurial ventures and employment.

3. Business Education curriculum should be revised to include up-to-date digital modules that reflect the current demands of entrepreneurship and the digital economy.

4. Educational institutions and policymakers should invest in ICT infrastructure, provide access to relevant digital tools, and support initiatives that promote digital literacy and entrepreneurship among students.

5 Business Education Graduates should engage in continuous self-development by seeking training in emerging digital tools and trends.

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LOCAL BUSINESS EDUCATION PRACTICES AND COOPERATIVE SKILL DEVELOPMENT FOR GLOBAL IMPACT IN TERTIARY INSTITUTIONS IN SOUTHEAST, NIGERIA

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ABSTRACT

This study examined business education practices and cooperative skill development for global impact in tertiary institutions in Southeast, Nigeria. The objective was to determine how collaborative pedagogies influence students' teamwork, communication competencies and global employability. Three research questions guided the study and corresponding hypotheses were tested. A mixed-methods design was employed, integrating quantitative surveys and qualitative interviews to generate comprehensive evidence on educational practices and outcomes. The population consists of 1,260 respondents (1,200 final-year business education students and 60 lecturers) who represents key stakeholders in business education within tertiary institutions in Southeast, Nigeria. The sample size of 380 respondents (350 students and 30 lecturers) were determined using Cochran's formula for proportionate sampling, ensuring statistical reliability. Experts in business education and educational research reviewed the instruments. Cronbach Alpha was used to test the reliability of the instruments and coefficient values of 0.83, 0.89 and 0.81 were obtained. Quantitative findings revealed a strong positive relationship between business education practices and cooperative skill development ($r = 0.68$, $p < 0.05$), indicating that experiential and collaborative learning strategies enhance professional competencies. Regression analysis further demonstrated that cooperative skills significantly predict global employability ($\beta = 0.53$, $p < 0.05$). Qualitative results supported these findings, with participants reporting that group-based activities and experiential learning improve communication, problem-solving, and interpersonal skills. However, institutional constraints such as large class sizes and limited learning resources were identified as barriers to effective skill development. The study concludes that business education practices play a critical role in fostering cooperative competencies and preparing students for global workplaces. Curriculum reform, industry partnerships and investment in experiential learning infrastructure are recommended to enhance educational outcomes and graduate employability. These interventions will strengthen human capital development and improve professional readiness in competitive labour markets.

Keywords: Business education, cooperative skills, experiential learning, global employability, tertiary institutions.

Introduction

Business education is a strategic discipline designed to equip individuals with the knowledge and competencies required for effective participation in modern economic systems. In contemporary labour markets, success is determined not only by technical expertise but also by soft skills such as teamwork, communication, problem-solving, and adaptability (Adeniji & Osibanjo, 2020). These competencies enable professionals to collaborate effectively within organisations and contribute to innovation and economic growth (World Economic Forum, 2020).

In Nigeria, tertiary institutions play a central role in human capital development and professional preparation. Universities and polytechnics offering business education programmes are expected to produce graduates who can function in diverse organisational settings and compete in international markets (Igwe & Eze, 2021). However, persistent concerns exist regarding the extent to which these institutions foster cooperative skills and global readiness. Empirical studies indicate that many graduates experience deficiencies in teamwork, communication and collaborative problem-solving competencies that employers increasingly regard as essential for organisational effectiveness (Chukwu & Amadi, 2024).

The demands of globalisation further underscore the importance of cooperative competencies. Modern workplaces operate within interconnected and multicultural environments that require professionals to

work collaboratively across cultural and organisational boundaries (UNESCO, 2020). Graduates who possess strong cooperative skills are better positioned to engage in international business activities, adapt to diverse professional contexts, and contribute to organisational innovation (Okeke, 2022). Consequently, educational institutions must align pedagogical practices with global competency standards to enhance student employability and professional success.

Business education programmes are uniquely positioned to foster these competencies through experiential and collaborative learning strategies. Pedagogies such as group projects, case studies, internships, and business simulations enable students to apply theoretical knowledge in practical settings and develop interpersonal skills (Eze & Obi, 2023). Such approaches encourage active learning, critical thinking, and teamwork—skills that are transferable to professional environments. Nevertheless, traditional lecture-based instruction remains prevalent in many institutions, limiting opportunities for interactive learning and practical skill development (Nwankwo, 2021).

The relationship between local business education practices and cooperative skill development therefore warrants systematic investigation. While theoretical knowledge remains fundamental, the absence of practical and collaborative learning experiences may hinder students' ability to acquire competencies required in contemporary workplaces (Olalekan & Chika, 2022). Understanding how pedagogical strategies influence skill acquisition and global readiness is essential for educational reform and curriculum development. This study examines business education practices in tertiary institutions in Southeast Nigeria and their impact on cooperative skill development and global employability. By analyzing pedagogical strategies and identifying challenges, the research seeks to generate evidence-based recommendations for enhancing educational outcomes. The findings are expected to contribute to academic discourse and inform policy initiatives aimed at strengthening business education and human capital development.

The significance of this investigation extends beyond academic inquiry. Cooperative skills are indispensable for professional success and organizational innovation in global economies. Graduates with strong collaborative competencies are better equipped to secure employment, advance in their careers, and contribute to economic development (Chukwu & Amadi, 2024). Educational institutions must therefore prioritize teaching strategies that foster teamwork and practical problem-solving. This study provides insights that can guide curriculum reform, pedagogical innovation, and policy development aimed at improving business education and global competitiveness. Business education remains a vital instrument for human capital development and economic progress. However, gaps in cooperative skill acquisition and global readiness persist within many tertiary institutions. By exploring the relationship between pedagogical practices and skill development, this research contributes to understanding how education can better prepare students for contemporary professional environments.

Statement of the Problem

Although business education programmes aim to prepare students for economic participation and professional success, empirical evidence indicates persistent skill gaps among graduates. Employers frequently report deficiencies in cooperative competencies such as teamwork, communication and problem-solving. These deficiencies hinder graduates' ability to function effectively in organizational and global business environments. Several factors may contribute to these challenges. First, traditional lecture-based teaching methods dominate many tertiary institutions, limiting opportunities for collaborative learning and practical engagement. Second, outdated curricula may not adequately reflect modern workplace requirements or global competency standards. Third, insufficient industry partnerships and experiential learning opportunities restrict students' exposure to real-world business challenges.

In Southeast Nigeria, these issues raise questions about the effectiveness of local business education practices in developing cooperative skills. If graduates are to compete successfully in global markets, educational institutions must prioritize teaching strategies that foster collaboration and practical skill acquisition. This study addresses the problem by systematically examining the relationship between business education practices and cooperative skill development. It seeks to determine whether existing pedagogical approaches contribute to global readiness and identify strategies for improvement.

Purpose of the Study

The purpose of this study is to examine the local business education practices and cooperative skill development for global impact in tertiary institutions in Southeast Nigeria. Specifically, the study sought to:

10. Examine local business education practices in tertiary institutions in Southeast Nigeria and their contribution to cooperative skill development.
11. Determine the relationship between cooperative skill development and students' readiness for global opportunities.

12. Identify challenges affecting the effective development of cooperative skills through business education.

Research Questions

The following research questions guided the study:

37. What business education practices are implemented in tertiary institutions in Southeast Nigeria, and how do they contribute to cooperative skill development?
38. What is the relationship between cooperative skill development and students' readiness for global opportunities?
39. What challenges hinder the effective development of cooperative skills through business education?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

1. There is no significant relationship between local business education practices and cooperative skill development among students in tertiary institutions in Southeast Nigeria.
2. Cooperative skill development does not significantly influence students' readiness for global opportunities.
3. There are no significant challenges affecting cooperative skill development in business education.

Literature Review

Business Education Practices in Tertiary Institutions

Business education is a component of human capital development that prepares individuals for professional and entrepreneurial roles. Human capital theory advanced by Gary Becker posits that investment in education enhances productivity and economic opportunities (Becker, 1993). Recent studies reinforce this perspective by demonstrating that business education programmes improve employability and professional competencies (Adebayo & Mutula, 2022; Dacre Pool & Sewell, 2020). Business education practices refer to the instructional strategies, curricular structures and pedagogical methods used in teaching business-related disciplines in tertiary institutions. These practices shape how students acquire both theoretical knowledge and practical competencies necessary for professional success. In tertiary institutions within Nigeria, business education programmes aim to prepare learners for careers in management, entrepreneurship, accounting, and organizational administration (Adeniji & Osibanjo, 2020).

Traditional business education practices in many institutions remain predominantly lecture-based and teacher-centred. This approach emphasizes knowledge transmission rather than active student participation and experiential learning (Eze & Obi, 2023). While lectures facilitate theoretical understanding, they often limit opportunities for interaction, collaboration and practical application. Consequently, students may graduate with sufficient academic knowledge but inadequate competencies for professional environments where problem-solving and teamwork are essential.

Modern perspectives on business education advocate for experiential and student-centred pedagogies. Experiential learning enables students to apply theoretical concepts in real-world contexts through simulations, case studies, internships and project-based tasks (Kolb, 2014). These strategies encourage critical thinking and active engagement, allowing learners to develop practical competencies alongside academic understanding (Okeke, 2022). For instance, business simulations provide opportunities for students to manage virtual enterprises and make strategic decisions, mirroring professional organizational environments.

Collaborative pedagogies further enhance learning outcomes by promoting teamwork and interpersonal interaction. Group projects and team-based assignments encourage students to share ideas, negotiate perspectives, and solve problems collectively (Johnson & Johnson, 2019). Such activities mirror workplace environments where cooperation and collective decision-making are essential. Research indicates that students engaged in collaborative learning demonstrate improved communication skills and higher academic achievement compared to those in traditional instructional settings (Olalekan & Chika, 2022).

Despite the recognized benefits of experiential and collaborative pedagogies, implementation challenges persist. Large class sizes, inadequate resources, and limited infrastructure constrain the delivery of interactive learning activities (Nwankwo, 2021). Overcrowded classrooms reduce opportunities for meaningful student participation and group work, limiting skill development. Additionally, insufficient access to technological tools and business laboratories restricts experiential learning opportunities.

Curriculum design also influences the effectiveness of business education practices. Effective curricula should balance theoretical content with practical skill development to meet industry expectations (World Economic Forum, 2020). However, some programmes prioritize academic knowledge at the expense

of experiential learning, creating gaps between educational outcomes and workplace requirements. Curriculum reforms that integrate practical competencies and industry engagement can enhance the relevance of business education programmes and improve graduate employability.

Teacher competence and professional development further impact pedagogical effectiveness. Educators require training in innovative instructional strategies that promote active learning and student participation (Igwe & Eze, 2021). Professional development programmes can equip teachers with skills in collaborative pedagogy, technology integration and experiential learning. Such initiatives improve instructional quality and support the implementation of modern educational practices.

Industry collaboration is another critical dimension of business education. Partnerships between educational institutions and businesses provide students with opportunities for internships, mentorship, and workplace learning (Chukwu & Amadi, 2024). Industry engagement exposes learners to professional environments and enhances their understanding of organisational practices. These experiences bridge the gap between academic learning and practical application, improving graduate preparedness for employment.

Business education practices significantly influence student learning outcomes and skill development. Traditional lecture-based instruction, while useful for theoretical understanding, may limit opportunities for experiential learning and practical engagement. Modern pedagogical strategies that emphasise collaboration and real-world application are essential for preparing students for professional success and global competitiveness. Addressing implementation challenges and strengthening industry partnerships can enhance the effectiveness of business education programmes in tertiary institutions.

Cooperative Skill Development in Business Education

Cooperative skill development refers to the acquisition of competencies that enable individuals to collaborate effectively, communicate ideas, and achieve shared objectives. These skills include teamwork, interpersonal communication, leadership, and problem-solving attributes that are essential for professional success and organisational productivity (Olalekan & Chika, 2022). In contemporary workplaces, employers increasingly prioritise soft skills alongside technical knowledge because teamwork and collaboration enhance organizational innovation and efficiency (World Economic Forum, 2020).

Business education programmes are uniquely positioned to foster cooperative skill development because they emphasize practical application and experiential learning. Activities such as group projects, case studies, business simulations and internships provide opportunities for students to work collaboratively and apply theoretical knowledge in real-world contexts (Eze & Obi, 2023). For example, group assignments require students to divide responsibilities, communicate ideas and coordinate efforts to achieve shared objectives. These experiences mirror professional environments where teamwork and collective problem-solving are essential.

Educational research demonstrates that cooperative learning strategies enhance both academic performance and skill acquisition. Students who participate in collaborative learning activities exhibit higher levels of engagement and critical thinking compared to those in traditional instructional settings (Johnson & Johnson, 2019). Group-based tasks encourage learners to evaluate diverse perspectives, negotiate solutions and develop interpersonal competencies. These processes contribute to holistic learning and professional preparedness.

Cooperative skill development also improves employability and career advancement. Employers report that graduates with strong interpersonal competencies are better equipped to function in team-oriented workplaces and contribute to organizational success (Chukwu & Amadi, 2024; Holmes & Tran, 2021). Skills such as communication, leadership, and conflict resolution enhance professional effectiveness and adaptability. Educational institutions therefore have a responsibility to integrate skill development into business education curricula to improve graduate outcomes.

Despite the recognized benefits of cooperative learning, implementation challenges remain. Large class sizes and limited instructional resources restrict opportunities for interactive learning and group activities (Nwankwo, 2021). Overcrowded classrooms may hinder meaningful participation and reduce the effectiveness of collaborative tasks. Additionally, insufficient access to technological tools and learning infrastructure limits opportunities for experiential skill development.

Teacher competence and pedagogical strategies also influence cooperative skill acquisition. Educators require training in student-centred instructional methods that promote active learning and collaboration (Igwe & Eze, 2021). Professional development programmes can equip teachers with skills in facilitating group activities, integrating technology, and assessing collaborative outcomes. Such initiatives enhance instructional quality and support the effective implementation of cooperative learning strategies.

Assessment methods further shape skill development outcomes. Traditional examination-based assessments prioritize theoretical knowledge and may neglect practical competencies (Chukwu &

Amadi, 2024). Alternative assessment strategies such as project-based evaluations, group presentations, and portfolio assessments provide more comprehensive measures of student learning. These methods encourage learners to demonstrate collaborative competencies and practical application of knowledge.

Cooperative skill development is a fundamental objective of business education that enhances professional readiness and organizational effectiveness. Collaborative learning strategies promote interpersonal competencies and prepare students for team-oriented workplaces. However, challenges such as resource constraints and traditional pedagogical practices may limit skill acquisition. Addressing these barriers through curriculum reform, teacher training, and innovative assessment strategies can improve educational outcomes and graduate employability.

Global Competency and Educational Outcomes

Global competency refers to the knowledge, skills, and attitudes that enable individuals to engage effectively in diverse cultural, social, and professional environments. In an increasingly interconnected world, global competency encompasses cross-cultural communication, adaptability, critical thinking, and collaborative problem-solving competencies that enhance professional effectiveness and societal engagement (UNESCO, 2020). Educational systems play a central role in developing these competencies by equipping learners with the skills required to navigate global challenges and contribute to international cooperation.

In tertiary institutions, global competency is increasingly recognized as a critical component of educational outcomes. Graduates are expected not only to possess discipline-specific knowledge but also to demonstrate the ability to work in multicultural teams and adapt to dynamic professional environments (World Economic Forum, 2020). Business education programmes are particularly well positioned to foster global competency because they integrate theoretical knowledge with practical applications that reflect real-world economic and organizational contexts (Chukwu & Amadi, 2024). Through experiential learning and collaborative pedagogies, students acquire competencies that enhance their readiness for global engagement.

Global competency is closely linked to educational outcomes because it influences graduate employability and professional success. Employers increasingly prioritize candidates who can operate effectively in diverse teams and respond to complex workplace challenges (Olalekan & Chika, 2022). Skills such as communication, teamwork and cultural awareness enable employees to collaborate across organizational boundaries and contribute to innovation. Research indicates that graduates with strong global competencies are more likely to secure employment and progress in their careers compared to peers lacking such skills (Eze & Obi, 2023). These findings underscore the importance of integrating global perspectives into educational curricula.

Educational outcomes refer to the knowledge, skills, and competencies acquired by learners as a result of instructional processes. In contemporary education systems, outcomes extend beyond academic achievement to include transferable skills that enhance professional and social participation (Yorke & Knight, 2006). Global competency represents an important dimension of educational outcomes because it prepares students for participation in international economies and multicultural workplaces. Institutions that prioritize global learning experiences contribute to the development of graduates who are adaptable and socially responsible.

Business education programmes contribute to global competency by exposing students to international business practices and cross-cultural perspectives. Courses in management, entrepreneurship, and organizational behaviour often incorporate case studies and simulations that reflect global economic realities (Igwe & Eze, 2021). These learning experiences encourage students to analyze diverse business environments and develop solutions to complex problems. For example, case studies involving multinational corporations expose learners to organizational strategies and cultural considerations that influence decision-making. Such pedagogies enhance critical thinking and global awareness.

Experiential learning strategies further support the development of global competencies. Internships, industry placements, and collaborative projects provide opportunities for students to engage with professional environments and apply theoretical knowledge (Eze & Obi, 2023). These experiences bridge the gap between academic learning and workplace expectations by exposing learners to real-world challenges. Students who participate in internships often report improved professional confidence and skill acquisition (Johnson & Johnson, 2019). Such findings demonstrate the value of experiential learning in promoting educational outcomes and global readiness.

Global competency also enhances educational outcomes by fostering personal and social development. Cross-cultural interactions and collaborative learning experiences encourage empathy and interpersonal understanding. Students who engage with diverse perspectives develop social

awareness and emotional intelligence attributes that contribute to professional and societal engagement (UNESCO, 2020). These competencies enable individuals to navigate complex social environments and contribute to community development. Despite its importance, the integration of global competency into educational systems faces challenges. Traditional curricula may prioritize discipline-specific knowledge at the expense of transferable skills (Nwankwo, 2021). Limited opportunities for international exposure and cross-cultural learning can restrict the development of global awareness. Addressing these challenges requires curriculum reform and institutional investment in global learning initiatives. Educational programmes that incorporate international perspectives and collaborative learning experiences enhance student competencies and educational outcomes.

Teacher competence and pedagogical strategies also influence global competency development. Educators require training in instructional methods that promote critical thinking and cultural awareness (Olalekan & Chika, 2022). Professional development programmes can equip teachers with skills in experiential learning and collaborative pedagogy. Such initiatives improve instructional quality and support the implementation of global learning strategies. Institutions that prioritize teacher development contribute to enhanced educational outcomes and student preparedness. Global competency is increasingly recognized as a determinant of national economic development. Economies with skilled and adaptable workforces are better positioned to compete in international markets and attract investment (World Economic Forum, 2020). Educational systems that prioritize global competencies contribute to human capital development and economic growth. By equipping learners with skills relevant to global challenges, institutions support national development and international cooperation.

Global competency is a critical dimension of educational outcomes because it enhances employability and professional effectiveness. Business education programmes provide opportunities for global learning through experiential pedagogies and international perspectives. However, challenges such as traditional curricula and limited cross-cultural exposure may hinder competency development. Addressing these barriers through curriculum reform and institutional investment can strengthen educational outcomes and global readiness.

Theoretical Framework

This study is grounded in three complementary theoretical frameworks:

Experiential Learning Theory (David A. Kolb). Knowledge is constructed through practical engagement and reflection. Experiential strategies enhance skill development and professional competencies (Kolb, 2014).

Human Capital Theory (Gary Becker). Investment in education increases productivity and career opportunities. Skill development improves employability and economic outcomes (Becker, 1993).

Social Learning Theory (Lev Vygotsky). Knowledge is constructed through social interaction and peer learning. Collaborative environments enhance cognitive development and interpersonal skills (Vygotsky, 1978).

These frameworks provide explanatory insights into the relationships between business education practices, cooperative skills and employability.

Methods

A mixed-methods approach is employed to capture both quantitative and qualitative dimensions of the research problem, enabling comprehensive understanding of pedagogical practices and educational outcomes. The quantitative component examined relationships among variables using statistical techniques, while the qualitative component explored participants' experiences and perceptions through interviews and thematic analysis. The population consists of 1,260 respondents (1,200 final-year business education students and 60 lecturers) who represents key stakeholders in business education within tertiary institutions in Southeast, Nigeria. Final-year students are selected because they have completed most of their coursework and are best positioned to evaluate the effectiveness of business education practices and cooperative skill development. Lecturers and administrators are included because they implement pedagogical strategies and possess insights into curriculum delivery and institutional challenges. A stratified random sampling technique was employed to ensure representation across institutions and demographic categories. Stratification reduces sampling bias and enhances generalisability (Bryman, 2016). The sample size of 380 respondents (350 students and 30 lecturers) were determined using Cochran's formula for proportionate sampling, ensuring statistical reliability.

Data were obtained from primary sources- questionnaires and interviews and secondary sources- academic journals, institutional reports and curriculum documents. Two instruments were used for data collection. A structured questionnaire measured business education practices, cooperative skill development and perceptions of global employability. Semi-structured interview explored lecturers' perspectives on pedagogical strategies, challenges in implementing collaborative learning and

recommendations for curriculum improvement. Experts in business education and educational research reviewed the instruments. Cronbach Alpha was used to test the reliability of the instruments and coefficient values of 0.83, 0.89 and 0.81 were obtained. Quantitative data were analyzed using descriptive statistics (mean, standard deviation), correlation analysis to examine relationships among variables and regression analysis to predict outcomes. Qualitative data were analyzed using thematic analysis to identify recurring patterns and insights.

Results

Quantitative Results

Research Question 1

What business education practices are implemented in tertiary institutions and how do they contribute to cooperative skill development?

Table 1: Business Education Practices

Variable	Mean	SD	Interpretation
44. Emphasis on theoretical instruction	4.12	0.78	High
45. Use of group projects for collaboration	3.98	0.85	High
46. Case studies for problem-solving	3.87	0.92	High
47. Internship programmes for professional skills	3.75	0.89	Moderate
48. Traditional methods limit skill acquisition	4.05	0.81	High
Grand Mean	**3.95**		**High**

The high grand mean in (3.95) Table 1 indicated that business education practices emphasized both theoretical instruction and collaborative learning. Group projects and case studies were rated highly, suggesting that pedagogical strategies promote cooperative skill development. However, internship programmes received a moderate rating (mean = 3.75), implying limited practical exposure.

Research Question 2

What is the relationship between cooperative skill development and students' readiness for global opportunities?

Table 2: Cooperative Skills and Global Readiness

Variable	Mean	SD	Interpretation
49. Teamwork improves problem-solving	4.20	0.74	High
50. Communication skills enhance employability	4.15	0.79	High
51. Collaborative learning promotes global readiness	4.05	0.83	High
52. Cross-cultural understanding improves professional success	3.92	0.88	High
53. Students possess adequate global skills	3.68	0.91	Moderate
Grand Mean	**4. 00**		**High**

The results in Table 2 show a strong positive relationship between cooperative skills and global readiness. High ratings for teamwork and communication competencies indicate that students perceive these skills as essential for professional success. However, the moderate rating for global skill adequacy (mean = 3.68) suggests the need for additional training in international competencies.

Research Question 3

What challenges affect cooperative skill development through business education?

Table 3: Challenges to Skill Development

Variable	Mean	SD	Interpretation
54. Large class sizes hinder collaboration	4.18	0.76	High
55. Limited resources restrict experiential learning	4.10	0.81	High
56. Traditional teaching methods reduce participation	4.05	0.84	High
57. Lack of industry partnerships limits exposure	3.97	0.88	High

58. Assessment focuses on theoretical knowledge	4.12	0.79	High
Grand Mean	**4.08**		**High**

The high grand mean (4.08) in Table 3 indicated significant institutional challenges. Large class sizes and resource limitations restrict opportunities for interactive learning. Traditional assessment methods that prioritize theory over practice further limit experiential learning.

Test of Hypotheses

Hypothesis 1

There is no significant relationship between business education practices and cooperative skill development.

Table 4: Pearson Correlation Analysis

Variable	r-value	p-value	Decision
Business education practices and cooperative skills	0.68	0.000	Significant

The correlation coefficient ($r = 0.68$, $p < 0.05$) in Table 4 indicated a strong positive relationship between business education practices and cooperative skill development. Collaborative pedagogies enhance teamwork and problem-solving competencies. The null hypothesis is therefore rejected.

Hypothesis 2

Cooperative skill development does not significantly influence students' readiness for global opportunities.

Table 5: Regression Analysis

Variable	Beta (β)	t-value	p-value	Decision
Cooperative skills → global readiness	0.53	6.72	0.000	Significant

The regression result ($\beta = 0.53$, $p < 0.05$) in Table 5 shows that cooperative skill development significantly predicts global readiness. Students with teamwork and communication competencies are better prepared for professional environments. The null hypothesis is therefore rejected.

Hypothesis 3

There are no significant challenges affecting cooperative skill development.

Table 6: Mean Scores of Challenges

Variable	Mean	SD	Decision
Institutional challenges	4.08	0.79	Significant

The mean score (4.08) in Table 6 indicated that institutional challenges significantly affect skill development. Large class sizes and limited resources reduce opportunities for experiential learning. The null hypothesis is therefore rejected. Institutional investment and curriculum reform are required to address these barriers and enhance educational outcomes.

Qualitative Results

Theme 1: Experiential Learning and Skill Development

Participants consistently reported that experiential learning strategies—such as group projects, simulations, and case studies enhance cooperative skills and professional competencies. Lecturers emphasized that practical engagement enables students to apply theoretical knowledge in real-world contexts. One lecturer remarked:

"When students work in groups and solve problems together, they become more confident and better prepared for workplace challenges."

This perspective aligns with experiential learning theory advanced by David A. Kolb, which posits that knowledge is constructed through active participation and reflection. Students reported that collaborative tasks improved their ability to share ideas, negotiate solutions, and work in teams. A student participant stated:

"Group assignments teach us how to communicate and work with others. It helps us understand different perspectives."

These findings corroborate empirical studies demonstrating that experiential learning enhances skill acquisition and employability (Eze & Obi, 2023; Adeyemi & Ojo, 2022). Collaborative activities foster critical thinking and problem-solving competencies, which are essential for professional success. However, participants noted that experiential opportunities are not uniformly available across institutions. Some programmes rely heavily on theoretical instruction, limiting practical skill

development. This inconsistency underscores the need for curriculum reform that prioritizes experiential strategies.

Theme 2: Institutional Constraints

Institutional barriers emerged as a significant challenge to effective skill development. Participants identified large class sizes, inadequate learning resources, and limited technological infrastructure as constraints. A lecturer explained:

"It is difficult to engage students in group activities when classes are overcrowded. Individual attention becomes impossible."

This observation supports quantitative findings indicating that institutional constraints reduce opportunities for interactive learning. Nwankwo (2021) similarly reported that overcrowded classrooms hinder pedagogical innovation and student participation in Nigerian institutions. Large class sizes restrict meaningful interaction and limit the effectiveness of collaborative pedagogies.

Resource limitations further exacerbate these challenges. Participants noted that insufficient access to digital tools and learning materials reduces experiential learning opportunities. One student stated:

"We rarely use technology for learning. If we had more digital tools, group work and simulations would be easier."

Technology-enabled learning environments can enhance skill development by providing interactive experiences and collaborative platforms. Investment in educational infrastructure is therefore essential for improving learning outcomes. Institutional policies should prioritize resource allocation and infrastructure development to address these barriers.

Theme 3: Global Competency and Employability

The theme of global competency highlights the importance of skills required for international and multicultural workplaces. Participants agreed that teamwork, communication, and adaptability enhance employability. A lecturer observed:

"Employers value students who can work in teams and communicate effectively. These skills are essential in global workplaces."

This perspective aligns with human capital theory, which asserts that skill development increases productivity and career opportunities (Gary Becker). Global competencies enable graduates to participate in professional environments and international collaborations. Empirical studies support this view, demonstrating that teamwork and communication skills improve employment outcomes (Chukwu & Amadi, 2024).

However, participants indicated that additional training in cross-cultural competencies is needed. Global workplaces require cultural awareness and adaptability, skills that may not be fully developed through traditional curricula. A student noted:

"We learn teamwork, but we need more exposure to different cultures and international practices."

Educational programmes should therefore integrate global perspectives and experiential opportunities that expose students to multicultural contexts. Industry partnerships and international collaborations can enhance global readiness by providing practical exposure to diverse professional environments.

Theme 4: Pedagogical Effectiveness

Participants emphasized the importance of student-centred pedagogies in promoting skill development. Collaborative learning strategies were perceived as more effective than traditional lecture-based instruction. A lecturer stated:

"Students learn better when they participate actively. Group discussions and problem-solving activities improve understanding."

This finding aligns with social learning theory advanced by Lev Vygotsky, which emphasizes knowledge construction through social interaction. Group activities encourage peer learning and critical thinking, enhancing educational outcomes. Johnson and Johnson (2019) similarly reported that cooperative learning improves academic performance and interpersonal competencies.

Despite these benefits, participants acknowledged variability in pedagogical effectiveness. Some lecturers lack training in modern teaching strategies, limiting the implementation of experiential learning. A lecturer remarked:

"Professional development is necessary. Many educators need training in collaborative teaching methods."

Professional development programmes can equip educators with skills in student-centred pedagogy and technology integration. Such initiatives enhance instructional quality and support educational innovation. Institutions should prioritize educator training to improve teaching effectiveness and learning outcomes.

Integration of Themes

The qualitative themes complement quantitative results by providing contextual insights. Experiential learning enhances cooperative skills, while institutional constraints hinder skill development. Global competencies improve employability and pedagogical effectiveness depends on modern teaching strategies. Participants' experiences underscore the importance of curriculum reform and educational investment. Addressing institutional challenges and promoting experiential learning will strengthen professional competencies and global readiness. Educational institutions must adopt pedagogical innovations that enhance student engagement and skill acquisition.

Discussion of Findings

The findings of this study on business education practices and cooperative skill development for global impact in tertiary institutions in Southeast Nigeria, Nigeria, demonstrate that experiential and collaborative pedagogies significantly enhance students' professional competencies and employability. Quantitative results revealed a strong positive relationship ($r = 0.68$, $p < 0.05$) between business education practices and cooperative skill development. This finding supports experiential learning theory advanced by David A. Kolb, which posits that knowledge is constructed through active engagement and reflection (Kolb, 2014). Students exposed to group projects, case studies, and simulations reported improved teamwork and problem-solving abilities- skills essential for workplace success (Eze & Obi, 2023). Similar studies confirm that experiential pedagogies strengthen professional competencies and critical thinking (Adeyemi & Ojo, 2022; Bahrami & Rabie, 2021).

Qualitative findings reinforced quantitative results by highlighting participants' perceptions of collaborative learning as a catalyst for skill development. Lecturers and students reported that group activities promote communication and interpersonal competencies. One lecturer observed that "students learn better when they work in teams and solve problems together," reflecting the pedagogical value of peer learning. This aligns with social learning theory advanced by Lev Vygotsky, which emphasizes knowledge construction through social interaction (Vygotsky, 1978). Research further demonstrates that cooperative learning enhances academic engagement and interpersonal skills (Din & Higgins, 2021; Sarikaya & Erdoğan, 2022). Participants' experiences therefore validate the importance of student-centred pedagogies in business education.

The study also established a significant relationship between cooperative skill development and global employability ($\beta = 0.53$, $p < 0.05$). Students with teamwork and communication competencies are better prepared for professional environments and international workplaces. Human capital theory advanced by Gary Becker explains this relationship by asserting that investment in education increases productivity and career opportunities (Becker, 1993). Employers increasingly prioritise soft skills because they enhance organisational performance and adaptability (World Economic Forum, 2020). Recent empirical studies support this perspective, demonstrating that graduates with cooperative competencies experience improved employment outcomes (Chukwu & Amadi, 2024; Holmes & Tran, 2021). These findings confirm that skill development is essential for employability in competitive labour markets.

Global competencies emerged as an important dimension of educational outcomes. Quantitative data revealed moderate ratings for global skill adequacy (mean = 3.68), indicating the need for additional training in international competencies. Qualitative participants emphasised cross-cultural learning as critical for professional success. A lecturer stated that "students need more exposure to international practices," highlighting gaps in global readiness. This aligns with global education frameworks advocated by UNESCO, which emphasized global citizenship and multicultural engagement (UNESCO, 2020). Research further demonstrates that international exposure and virtual collaboration enhance cross-cultural competencies (Han & Wang, 2023; Laing & Frost, 2021). Educational programmes must therefore integrate global perspectives and experiential opportunities to strengthen employability.

Institutional challenges were identified as significant barriers to skill development. Quantitative results indicated that large class sizes (mean = 4.18) and limited resources (mean = 4.10) restrict experiential learning opportunities. Qualitative participants reported that overcrowded classrooms reduce student participation and limit collaborative activities. These findings corroborate research by Nwankwo (2021), which highlights resource constraints as impediments to pedagogical innovation in Nigerian institutions. Similar studies emphasized that institutional investment in learning infrastructure is necessary for effective skill development (Adebayo & Mutula, 2022; Pegg et al., 2020). Technology-enabled pedagogies and smaller class sizes can enhance interactive learning and educational outcomes.

The integration of quantitative and qualitative evidence supports the study's central argument that business education practices significantly influence cooperative skill development and global employability. Collaborative pedagogies enhance professional competencies, while institutional challenges require targeted interventions. Curriculum reform and industry partnerships are essential for bridging the gap between academic learning and workplace requirements (Barraket & Loosemore,

2021). Experiential learning opportunities such as internships and simulations provide practical exposure that strengthens skill acquisition (Nguyen & Doctor, 2022). Institutions must therefore prioritize pedagogical innovation and industry engagement.

The findings also reinforce theoretical frameworks underpinning the study. Experiential learning theory explains knowledge construction through practical engagement (Kolb, 2014), while human capital theory demonstrates the economic value of skill development (Becker, 1993). Social learning theory further highlights the importance of collaborative environments for skill acquisition (Vygotsky, 1978). These frameworks provide explanatory insights into the relationships observed and validate the study's conclusions. Recent empirical studies support the study's findings. Cooperative learning enhances academic success and interpersonal competencies (Sarikaya & Erdoğan, 2022). Industry-linked learning improves employability and professional readiness (Adewale & Usman, 2021). Global competencies are essential for professional success in interconnected economies (Sharif & Sharif, 2023). These studies reinforce the importance of experiential pedagogies and curriculum alignment with labour market demands.

Finally, the discussion demonstrates that business education practices significantly influence cooperative skill development and global employability. Quantitative evidence established strong statistical relationships, while qualitative insights contextualized participants' experiences. Institutional challenges must be addressed through curriculum reform and infrastructure investment. Global competencies and experiential learning are essential for professional success in modern workplaces. Educational institutions should adopt pedagogical innovations that enhance skill development and employability.

Conclusion

This study concludes that business education practices play a crucial role in developing cooperative skills and enhancing global employability. Collaborative pedagogies such as group projects and experiential learning significantly improve teamwork and problem-solving competencies. Quantitative results confirmed a strong relationship between business education practices and skill development, while qualitative findings highlighted participants' positive perceptions of experiential learning. Institutional challenges remain significant barriers to educational outcomes. Large class sizes and limited resources restrict opportunities for interactive learning. Addressing these constraints through curriculum reform and infrastructure investment will enhance skill development and professional readiness. Global competencies are essential in modern workplaces, and educational programmes must integrate international perspectives to prepare students for professional success.

The integration of quantitative and qualitative evidence supports the study's theoretical frameworks. Experiential learning theory explains knowledge construction through active engagement, while human capital theory demonstrates the economic value of skill development. Social learning theory further highlights the importance of collaborative environments. These frameworks provide explanatory insights into the relationships observed. In summary, business education practices significantly influence cooperative skill development and global employability. Educational reforms that prioritise experiential learning and institutional investment will strengthen graduate competencies and professional outcomes.

Recommendations

Based on the findings, the following recommendations are proposed:

1. Business education curricula should prioritize collaborative pedagogies and experiential strategies. Group projects, simulations and problem-based learning enhance skill development and professional competencies.
2. Institutions should collaborate with businesses to provide internships and practical exposure. Industry engagement bridges the gap between academic knowledge and workplace requirements.
3. Educational institutions must invest in technology-enabled learning environments. Digital simulations and collaborative platforms enhance student engagement and experiential learning.
4. Lecturers require training in modern pedagogical strategies. Professional development programmes should focus on student-centred learning and technology integration.
5. Business education programmes must incorporate international perspectives and cross-cultural learning. Global competencies enhance students' readiness for international workplaces.
6. Smaller class sizes promote interactive learning and student participation. Institutions should adopt policies that improve teacher-student engagement.
7. Evaluation methods should measure both theoretical knowledge and practical competencies. Portfolio assessments and group evaluations encourage skill development.

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DIGITAL SKILLS TRAINING IN TVET AS A CATALYST FOR INCLUSIVE ECONOMIC GROWTH IN EMERGING AFRICAN ECONOMIES

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Abstract
Young people in emerging African economies are still struggling with endemic unemployment, increasing digital gaps, and an ever-expanding gap between labour market requirements informed by the Fourth Industrial Revolution (4IR) and the few digital skills instilled in most Technical and Vocational Education and Training (TVET) frameworks. The ability of digitalised TVET to stimulate inclusive economic growth is further limited by structural rigidities, poor infrastructure, and poor industry alignment. It is against this background that the research investigated how the digital skills training in TVET institutions can be used as a driver of inclusive economic development, especially the efficacy of enterprise-TVET relationships and curriculum changes in incorporating 4IR skills to promote employability and workforce preparedness. The research design was a qualitative study based on the Human Capital Theory. The secondary sources were used to obtain data, such as peer-reviewed journal articles, policy documents, textbooks, and credible institutional reports. Content analysis was applied to these data in a systematic manner to determine prevailing themes associated with the integration of digital skills, partnership models, infrastructural constraints, and inclusive growth outcomes. The results showed that enterprise-TVET partnerships enhanced graduate employability when collaboration entailed curriculum co-design, structured apprenticeships, and common infrastructure. Curriculum changes enhanced the incorporation of digital literacy, AI awareness, and industry standards. Nevertheless, fragmentation in governance, poor digital infrastructure, lecturer capacity disparities, and socio-economic disparities restricted fair access and extended economic influence. The paper has found that digital skills training in TVET has a considerable yet conditional potential to drive inclusive economic growth, provided that there is coherent policy alignment and institutional investment. It suggested the institutionalisation of enterprise partnerships, faster curriculum innovation through ongoing lecturer upskilling, and structural and socio-economic barriers to achieve inclusive and sustainable results.
Keywords: Digital skills training; TVET; Inclusive economic growth; 4IR; emerging economies

Introduction
The concept of digital skills summarizes the skills needed to be able to successfully implement digital technologies throughout the range of learning, occupational activity, innovations, and active engagement in the digital economy. They include basic ICT literacy, data manipulation, digital communication, automation consciousness, and, increasingly, artificial intelligence and the functionality of the Fourth Industrial Revolution (4IR). Technical and Vocational Education and Training (TVET) is defined as structured programmes that aim at imparting practical and occupation-specific skills to learners that are aligned to current imperatives of the labor market. Inclusive economic growth on the other hand refers to a developmental pathway whereby economic growth creates equal job opportunities, curbs inequality, and assimilates the marginalised groups into productive models. In the emerging African economies, where the population is young, the level of informal employment is high, and the pace of digitalisation is rapid, these ideas have an intersection, which is strategically important. The recent evidence shows that the adoption of digital competencies in TVET curricula improves graduate employability and strengthens the competitiveness of local businesses (Irungu, 2025; Ajeniweni & Bamgbowu, 2024).
Within the framework of shifting the African economies to knowledge-based and technology-driven economies, the traditional craft-based models of vocational training are not sufficient to meet the modern requirements. Online enhancement of TVET systems is becoming more and more considered

as the boost that can be used to fill skills gaps and to spur micro-, small-, and medium-sized enterprises. Empirical evidence on sub-Saharan Africa shows that inclusive TVET reforms have increased the rate of workforce participation and reduced structural unemployment, especially among women and the youth (Leong, 2024). Additionally, the World Bank emphasizes that the digital literacy programs integrated into the skill development frameworks make them more labor market-aligned and more productive (Elzir & Morgandi, 2024). Therefore, the training of digital skills in TVET is a radical convergence of educational reform and economic modernisation in the emerging markets of Africa.

The pressing need of digital transformation in African TVET systems is also compounded by the high rate of technological diffusion and the spread of platform-based economies. Reducing the digital divide, which can be described as the lack of equal access to digital infrastructure, skills, and opportunities, has become a central element of inclusive growth policies. Comparative analysis of the South African and Kenyan TVET reforms shows that the introduction of 4IR technologies and digital pedagogy in vocational education enhances entrepreneurial potential and wage opportunities (Seleke & Teis, 2025; Cheruiyot, 2024). Digital competence is no longer associated with the use of technical tools, but they involve problem-solving, innovation literacy, and adaptive learning, which are all crucial to navigate volatile labour markets. Systematic reviews affirm that organizations and TVET institutions collaborations can speed up digital transformation and improve curriculum responsiveness (Niwamanya et al., 2025).

Bibliometric reviews of sub-Saharan literature also underscore an increased focus on the digital integration as a factor in institutional stability and economic applicability (Perumal and Orji, 2024). In the new African economies that are informalized in terms of employment, digitalised vocational paths open up opportunities of formalisation, productivity, and scalable entrepreneurship. TVET institutions become the incubators of inclusive industrial involvement by providing learners with transferable digital skills. Based on this, the training of digital skills goes beyond pedagogical reform, presupposing macro-economic importance, and serves as a channel through which the development of human-capitals is transformed into quantifiable economic inclusion.

The economic growth in the emerging African economies should be inclusive, which means that it should not be based solely on job creation but on the equal access to high-quality skill ecosystems. Inclusive TVET focuses on gender equality, access in rural areas, inclusion of the disabled, and affordability. Studies show that vocational education that is digitally enriched increases the engagement of underserved communities through the provision of flexible learning models and remote training (Folson and Awuah, 2025). Vocational programmes associated with technological modernization have led to the development of enterprises and regional competitiveness in Nigeria (Ajeniweni and Bamgbowu, 2024).

The parallel systematic literature reviews reveal that digital transformation can increase institutional efficiency, teacher capacity, and learner engagement, which can strengthen long-term economic returns (Mante et al., 2025). The meaningful introduction of digital technologies into TVET can create the ecosystem of innovation that can help to diversify industries (Mbatha, 2024). With Africa moving towards the global digital economy, the lack of digital capabilities in the vocational systems is likely to continue with inequality and skills gaps. On the other hand, an adequately crafted digital skills training agenda can speed up productivity, catalyze inclusive entrepreneurship, and decent work opportunities. In this respect, the analysis of digital skills training in TVET as the driver of inclusive economic development is timely and necessary to map sustainable development trajectories in the emerging African economies.

Statement of the Problem

Digital Skills Training in the Technical and Vocational Education and Training (TVET) systems of new African economies are increasingly being projected as a key channel through which exclusive economic development can be achieved; however, there is a lot of structural and systemic challenge that continues to erode its transformative potential. Regardless of the high policy promises, a good number of the TVET institutions still have outdated infrastructure, low internet connections, and no access to current digital tools. This technological gap reduces the successful integration of digital skills into vocational education, thus creating a failure to keep skills of graduates in line with the changing labour market. In Kenya and other sub-Saharan African nations, evidence shows that insufficient integration of technology undermines the preparedness of the workforce and slows the processes of digital inclusion (Irungu, 2025).

In addition, the lack of equalization in the funding mechanisms and the weak collaboration between industries and institutions limits the responsiveness of TVET programmes to the new digital domains. According to the World Bank, despite the understanding that digital literacy is a key to competitiveness, the gap in implementation is caused by the lack of coordination in policy and overall teacher training

(Elzir and Morgandi, 2024). Placed in a context where the youth unemployment level is still highly problematic, the fact that TVET systems fail to integrate into the digital skills that are being considered relevant runs the risk of promoting the cycle of exclusion instead of breaking it. Besides, the rural urban disparity in access to infrastructure also deepens inequality, and these populations in marginalised groups are not able to receive digital transformation initiatives equally. These structural flaws hold real questions concerning the strength of the existing digital skills plans in driving the economic inclusion of the masses, within the emergent African economies.

In addition to the infrastructural shortcomings, there is also another layer of concern the pedagogical and institutional preparedness of TVET systems. Implementation of the Fourth Industrial Revolution technologies artificial intelligence, automation, and digital entrepreneurship change demands curriculum adjustment, ongoing instructor up-skilling and effective enterprise relationships. However, empirical evidence confirms that most educators working in TVET are not technologically advanced, which restricts them in the process of providing industry-relevant education (Seleke & Teis, 2025). Enterprise-TVET partnerships are not systemic at all, despite being extensively promoted, and are likely to continue to be pilot projects instead of systems redesign (Niwamanya et al., 2025).

Therefore, graduates can obtain partial digital exposure without the competence for the depth of the innovation sectors. In case of the uneven implementation of digital skills training, is it really possible to act as a facilitator of inclusive growth instead of benefiting already privileged urban learners? And in case the relationships to industry are only superficial, how do the TVET institutions expect to react to quickly changing digital labour-market needs when graduates are out of date? These unfinished tensions highlight the precariousness of the existing reformation pathways. Devoid of conscious alignment between policy, pedagogy and industrial ecosystems, digital TVET will be more of an aspirational rhetoric as opposed to structural economic change driver. The survival of inclusive growth thus depends on the attainment of digital competencies not presented as additional units, but as pillars in vocational education systems of African economies.

Another issue of concern is the fact that access to digital skills education in TVET systems is characterized by the seemingly long-standing socio-economic inequality. Inclusive economic development assumes fair involvement; however, gender inequality, affordability inequalities, and regional inequity remain barriers to beneficiaries of digitised vocational education. Studies in sub-Saharan Africa have shown that despite the role that TVET expansion plays in job creation, the quality and digital up-to-dateness of training have a major impact on the economic performance (Mante et al., 2025).

Digital skill deficits are also paradoxically linked to a high unemployment rate among graduates in a number of situations, indicating an industry-wide imbalance between the supply of training and demand. Further, the digital transformation projects tend to focus more on hardware purchasing rather than on sustainable capacity building without taking into account the teacher support systems and maintenance systems over the long term. This asymmetry weakens the scalability of the digital TVET reforms. With the growing presence of new African economies in the digital value chains of the global economy, the inability to build a solution to these equity and quality disparities would lead to the normalization of new types of digital exclusions. The prospect of digital skills training as an engine of inclusive development will thus continue to be dependent on the successful solution of institutional root causes of inefficiencies and socio-economic inequalities. It is on this background that this study was conducted to evaluate the concept of digital skills training in TVET as an indicator of an inclusive economic growth in the emerging African economies. To this end, the following research questions were stated to guide the study:

4) what extent does digital skills training within TVET institutions influence employability and workforce readiness in emerging African economies?
5) how effectively do enterprise–TVET partnerships and curriculum reforms integrate Fourth Industrial Revolution (4IR) competencies to promote inclusive economic participation?
6) what structural, infrastructural, and socio-economic factors constrain the capacity of digitalized TVET systems to serve as catalysts for inclusive economic growth in emerging African economies?

Conceptual Clarification

Digital Skills Training

The rapidly growing wave of digital transformation in the educational and labour market has spawned increased interest in academic research on digital-skills training, particularly with policy-makers attempting to align human-capital development with accelerated technological advancement. Ahead of trying to provide such a rigorous definition, it is well advised to consider the understanding that digital -skills training goes far beyond mere computer literacy; it is the composite of systematic learning

experiences that are orchestrated in such a way as to nurture the kinds of competencies that are necessary to work successfully in digitally mediated settings. Recently, Molla, Gekara, and Karanasios (2025) conceptualise digital skills as a multidimensional construct, which transcends the technical IT proficiency, information processing, communication, problem-solving, and digital innovation capabilities able to create value in organisations.

Kappeler (2024) defines the digital skills as a cluster of quantifiable skills that allow people to navigate, assess, and produce information using digital technologies both in their daily lives and professional activities. Socio-economically, Labudova and Fodranova (2024) present the concept of digital-skills training as structured educational interventions designed to increase the level of digital competence on the population level and subsequently reduce the structural disparities associated with access to technology. Within the context of vocationaleducation, Zervas and Stiakakis (2024) support the idea of developing digital-skills that consists of incorporating digital tools, platforms, and pedagogical novelties into the training systems in order to enhance the employability results. More so, Munawar, Detlor, La Rose, Perkovic, and Ghilic (2025) consider digital-skills training to be focused programmes aimed at reducing digital exclusion to empower especially vulnerable populations with operational, informational, and strategic competences related to using technologies. These views, when put together, are also always associated with a systematic, capability-building model that increases adaptability, employability, and involvement in the digital world in the modern economies.

Although there is this convergence, there are still some fine-grained definitional differences with respect to scope, depth and intended outcomes of digital-skills training. Other researchers predict economic productivity and value creation in organisations (Molla et al., 2025), whereas others predict daily digital citizenship and social engagement (Kappeler, 2024). Other individuals incorporate digital-ability training into other equity and inclusion models that seek to reduce socio-economic disparities (Munawar et al, 2025; Labudova and Fodranova, 2024). Such conflicting priorities reveal a gap in the conceptualization: the existing literature is either more functional-technological or socio-economic consequences, but when it comes to a combination of pedagogical process, technological adaptability, and inclusive economic intent, it is infrequent to much of the literature. Based on this, a more integrative conceptualisation is justified. The concept of digital-skills training used in this paper refers to a context-responsive, systematic process of facilitating the development of foundational, intermediate, and advanced types of digital skills, such as technical, cognitive, and socio-communicative skills, to make people active, innovative, and inclusive in digitally intensive economies. This definition combines operational competence, criticality and economic topicality, with not situating training in digital-skills as a competence-acquisition process but rather as transitional capacity-building that should generate labour-market and social-inclusion goals in line with evolving labour markets.

TVET

It is becoming undoubtedly clear that Technical and Vocational Education and Training (TVET) has gained a strategic position in the global and regional development discourses, particularly in the areas that aim to align the education systems with the changing demands of the labour market. It has to be noted before drawing a clear definition that TVET is not just a sub-system of education, but a highly organised scheme designed to prepare people with occupational, technical and entrepreneurial skills which are directly and specifically industry and societal-linked. Mante, Okoye and Hui (2025) define TVET as a structured form of education that integrates theoretical knowledge with practical skills acquisition, which equips students to a particular trade, profession and technical careers in dynamic economic settings.

Likewise, Pharamela and Singh-Pillay (2025) assume that TVET is one of the foundations of the workforce development that develops the 21st-century competency, harmonises the expectations of the industry, and improves employability via competency-based training models. Determining TVET in a systematic review, Hamid, Kamaruzaman, and Rasul (2024) consider it as an applied educational path that focuses on providing learners with technical skills and sustainability-orientation skills that they can not do without to be actively engaged in modern economies. Zhang, Ismail, Omar, and Rashid (2025) also indicate that TVET includes institutional and workplace learning activities, which are formal and integrate classroom-based teaching with hands-on industrial exposure with the aim of making an individual job-ready. In terms of reform, Irabor, Muhammad and Diya (2025) note that TVET is a revolutionary structure of education that can address the gulf between skills, create entrepreneurship, as well as enhance national competitiveness with its pragmatic and technical training. Through all these diverse views, the application of TVET has consistently been placed as a demand-based education model that aims to bridge the formal schooling and the employment systems.

Although there is a convergence on the use of employability and practical competence, some definitional differences evoke conceptual disintegration. Other scholars predict the role of TVET in

supplying workforce (Pharamela and Singh-Pillay, 2025), and others emphasize the introduction of sustainability and reform of the system (Hamid et al., 2024). In the meantime, Mante et al. (2025) focus on comparative and structural aspects as it is argued that TVET systems vary significantly depending on the socio-political context, thus affecting their orientation and impact. Zhang et al. (2025) highlight the importance of pedagogical integration and ICT infusion, thus, making TVET look more digitised and innovation-based. Such diverse emphases hint at a definitional loophole: current definitions tend to focus on one of the following aspects: employability, sustainability, digitalisation, or structural reform without integrating these components into an overall conceptual framework that captures modern changes in the world labour markets.

This leaves a wide room in which a more integrative definition can be made to encompass both the educational and socio-economic aspect of TVET in the dynamic technological settings. In the given research paper, TVET is characterized as an organized, competency-based educational and training framework that combines theoretical knowledge, professional work-related skills, digital flexibility, and entrepreneurial potentials in the form of institutional and workplace-based education with the main task of promoting employability, innovation, and socio-economic inclusion. This definition puts TVET not just as a skills-delivery tool, but as an active developmental tool that is attuned to technological change, labour market change, and sustainable growth demands.

Inclusive Economic Growth

An all-inclusive economic growth has become one of the central goals in the modern developmental discussion, especially as states are struggling with increasing inequality, population stress, and structural change. It is imperative to place this concept in a wider context of arguments about the quality of not just the quantity of economic growth before defining it. The classical growth models showed preference to expansion in gross domestic product (GDP) as the main measure of development but as research and institutions of development continue to argue, growth should also be just, inclusive and sustainable. Included growth is conceptualised by the World Bank (2022) as an economic growth that generates productive jobs and a wide access to markets, resources and services, particularly among disadvantaged groups of people.

On the same note, according to Organisation for Economic Co-operation and Development (OECD, 2021), inclusive growth refers to economic growth that shares the fruits of prosperity equally throughout the society and allowing everyone to participate in and benefit the economic activity. According to Ranieri and Ramos (2021), inclusive growth is a phenomenon, which involves a combination of both long-term economic growth with specific policies designed to decrease poverty and inequality. Inclusive growth is presented in the United Nations Development Programme (UNDP, 2023) as the part of a human-development paradigm, with equity, enhancement of capabilities, and social protection as the vital complements to economic performance. The macroeconomic perspective of inclusive growth is considered by the International Monetary Fund (IMF, 2022) as its growth that is enduring, employment-generating, and alleviates income inequality by the means of structural reforms and redistributive policy. In these views, inclusive economic development is always connected with fair involvement, decrease of poverty, and the creation of opportunities along with overall economic development.

Although there is consensus regarding its normative aspirations, differences in the scope and operation focus on definitions. Other institutions and scholars focus more on income distribution and alleviation of poverty (Ranieri, and Ramos, 2021), whereas others predict labour-market engagement, productivity and structural change (IMF, 2022). The OECD (2021) highlights multidimensional well-being and places social mobility, education, and health outcomes in the context of growth analysis, but the UNDP (2023) locates the concept of inclusivity in the context of capability expansion and resilience-building.

In the meantime, the World Bank (2022) identifies access to infrastructure, finance, and digital connectivity as the force of equitable economic participation. These diverse definitions indicate a conceptual divide: currently in use the ideas of distributive justice tend to focus on economic participation or vice versa, and rarely combine structural change, capacity building among human beings, and intergenerational sustainability into a single package. Therefore, a broader definition, according to the current economic realities of digitalisation, globalisation, and climate shifts, is possible. Inclusive economic growth is in this study, a process of economic growth that is sustained and expansive in terms of access to productive opportunities, expansion of human prospective, decrease of structural inequalities as well as equitable sharing of the gains of expansion among the current and future generations. This definition integrates the definitions of participation, equity, sustainability and structural transformation, making inclusive growth not just a consequence of redistribution but a redirection of economic systems in terms of developmental policy.

Theoretical Underpinning

The research is based on Human Capital Theory which was initially developed by Theodore W. Schultz (1961) and later followed by Gary S. Becker (1964) according to which investment in skills and education increases the productivity of individuals and, by extension, national economic development. The theory has its roots in the early 1960s when economists attempted to interpret the variation in earnings, productivity and economic performance other than accumulation in physical capital. The Human Capital Theory presupposes that education and training are the types of investments that bring about direct economic benefits in the form of improved productivity and ability to innovate as well as employability (Becker, 1964). The reinterpretations of the present day focus on its potential usefulness in knowledge and digital economies, in which intangible resources, like skills and competencies, become the sources of competitiveness (World Bank, 2022). The main assumption is that productive abilities are learned in a systematic way by people and such skills are converted into increased wages, better job opportunities and aggregate economic growth. The build-up of digital capacity as part of Technical and Vocational Education and Training (TVET) in the emerging African economies marked by youthful population and high unemployment rates can, consequently, be theorised as a micro-economic and macro-economic investment in human capital.

Human Capital Theory uses rates of return as the measure of investment in education, productivity gains, earnings differentials, and other measures of the economy. To Becker (1964), a quantification of returns to education was possible by lifetime income differentials between the trained and the untrained, whereas Schultz (1961) associated national expenditure on education with gross domestic product growth. In modern usage, such measures are expanded to consist of skills acquisition, technological adaptability, and labour-market participation rates (World Bank, 2022). The theory presupposes rational decision-making of people and governments, who will invest in education in case the benefits are greater than the costs. It also assumes that labour markets compensate the greater skill with better wages and greater job security. Applied to the digital transformation, this assumption means that digital skills training integrated into the system of TVET improves the productivity of workers and promotes the structural change. With the growing dependence of industries on digital tools, automation, and data systems, economies with digital competent vocational graduates will be more appealing to investors, enable entrepreneurship, and fit in global value chains.

The applicability of the Human Capital Theory to the research article; Digital skills training in TVET as a catalyst to inclusive economic growth in emerging African economies can be explained by the fact that the theory can be used to explain the relationship between skills development and inclusive growth. Digital skills training is a strategic investment in technologically relevant human capital, providing the ability of the learner with the competencies required to meet the needs of the Fourth Industrial Revolution. The World Bank (2022) states that those countries, which are more focused on the development of skills and digital inclusion, will have more opportunities to attain both productivity growth and poverty reduction. Human Capital Theory can therefore be used to give a coherent explanation as to why digitalised TVET can diminish unemployment, increase earning capacity and broaden economic inclusion of marginalised communities. The theory highlights the catalytic role of TVET in supporting inclusive economic development by referring to the acquisition of digital skills as an investment in the economy, but not in educational achievement. It describes the way systematic upskilling is not only a way of helping the individual rise but also the country to develop as a result of innovation, competitiveness, and providing equal opportunities.

Method and Materials

The qualitative research method was used in the study in order to provide an in-depth insight into problems related to digital skills training in TVET and its consequences in relation to inclusive economic growth. Only secondary sources such as textbooks, peer-reviewed journal articles, newspapers, governmental publications, policy reports, and reliable international news sources were used to get access to the data. These different materials were very informative contextually and empirically about the topic. All the data held were methodically coded and meticulously examined with content analysis methods whereby the identification of recurring themes, patterns, relationships, and policy implications consistent with the emerging African economies was achieved.

Results and Discussion

What extent does digital skills training within TVET institutions influence employability and workforce readiness in emerging African economies?

The degree of impact of digital skills training in Technical and Vocational Education and Training (TVET) institutions on the level of employability and workforce preparedness has become the focal point of modern economic development discourse especially in the emerging African economies. The rapid change in technology, automation, and digitalisation is changing labour markets, requiring new skills that are beyond the conventional vocational specialisation. The context against which this background

is presented, digital skills training in the context of TVET is no longer viewed solely as an aspect of curricular advancement but rather as an instrument of labour-market integration. As it is emphasized by the World Bank (2019), economies that invest in digital capabilities are in a better place to support productivity, innovation, and employment performance.

In a similar manner, the International Labour Organization (ILO, 2021) highlights that youth have limited chances of being employed in various parts of the developing world due to skill mismatches; particularly in digital skills. In most African economies, where the percentage of youth unemployment is still overly high, it has been necessary to integrate digital literacy, data management, and technological flexibility into TVET curriculums in order to enhance transition rates between training and employment. Training in digital skills provides learners with lower-level ICT skills, as well as upper-level problem-solving skills that are demanded in modern workplaces. In turn, to determine the scope of its impact, it is important to consider not only the statistics related to employment but also the qualitative aspects of labor preparation, such as flexibility, ability to think critically, and digital literacy. Digitisation of the vocational systems as hubs therefore has substantial consequences in terms of inclusive involvement of labour-markets and future economic competitiveness.

Empirical research has indicated that the training on digital skills has a crucial role of improving the employability of graduates because of its ability to align graduate competencies with employer expectations. UNESCO (2021) emphasizes the fact that TVET systems that integrate digital technologies are related to a better gradient of graduate employability, especially when training is based on industry standards and has models of work-based learning. Employers are more focused on digital literacy and occupation-specific, thus considering technological competency as a key to operation efficiency and innovation. Digital skills have the capacity to help enter the formal sector and become an entrepreneur in the case of sub-Saharan Africa where informal employment continues to be common.

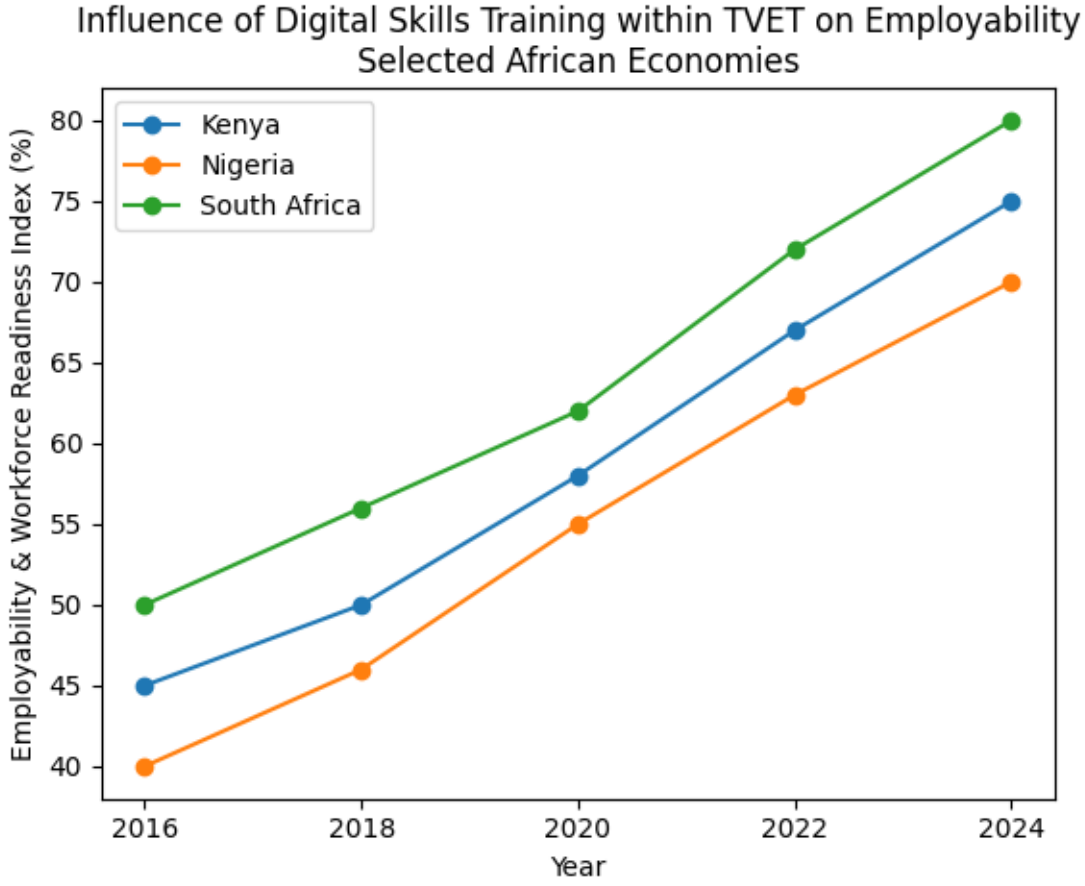
According to the ILO (2021), digital competencies have a higher probability of enabling the youth to get higher-quality jobs, especially those in urban and developing technology-oriented sectors. Moreover, digital capabilities make flexibility in occupational flows possible, thus enhancing resilience in unstable labour markets. According to the World Bank (2019), when incorporated in an educational system, digital inclusion efforts will lower the costs of labour-market participation and promote productivity. The scale of this influence however is subject to the contextual factors including infrastructure, competence of the instructor and industry collaboration. In the cases of shallow or under-resourced digital training, the effects of this training on employability can be minimal. Thus, institutional quality, labour-market demand, and the digital ecosystem in general that TVET is situated in mediate the degree of influence.

Workforce preparedness does not just stop in employment acquisition, but also the ability to work effectively in dynamic workplaces. Digital skills training is one factor that will contribute to this preparedness by creating technological confidence, collaborative skills, and innovation abilities. According to OECD (2019), digital proficiency is becoming more often combined with cognitive and socio-emotional competencies and creates a complex of abilities that are needed to work in modern areas. In the new African economies, the digital TVET programmes that involve the use of simulation technologies, online collaboration systems, and industry-standard software can equip learners better to the realities of the workplace.

UNESCO (2021) also argues that digitally enriched TVET has the ability to improve practical skills and problem-solving abilities, needed to fill the gap between theory and practice. The result of this integration is a smoother school-to-work transitions and lowering the expenses of onboarding of employees by companies. Additionally, online skills can support entrepreneurial activities, thus, graduates can exploit the online opportunities to develop business and gain access to markets. These results expand the idea of workforce preparedness in extra frames beyond wage occupation to self-employment and online entrepreneurship. However, these benefits might be mediated by the existence of inequalities in digital infrastructure access and gender differences in technology training. Therefore, although the training of digital skills repeatedly enhances the preparedness of the workforce, its transformative potential depends on equality of access and long-term institutional investment.

This effect of digital skills training is also reflected in the fact that it has brought productivity and innovation to the emerging African labour markets. According to the Human Capital Theory by Becker (1993), the inputs in the area of education and training increase the individual productivity as well as the overall economy performance. Digital practitioners prepared to work in technologically changing industries like fintech, agritech, and e-commerce can be equipped to make a difference in technological upgrading and optimisation of processes. As noted by the World Bank (2019), the digital skills will facilitate the process of structural change, as they allow economies to shift to higher-value activities. In the African context, where economic diversification is an item of development agenda, digitally trained TVET graduates can act as an agent of industrial modernisation. The ILO (2021) also records that skill

upgrading, especially in digital areas, facilitates processes of moving low-productivity informal activities to more formalised and innovative areas. But in order to gain measurable productivity, there must be coherent policy alignment as well as the long-term funding and efficient monitoring structures. In the absence of them, the training of digital skills can be just formal and not actual. Therefore, the magnitude of its impact on workforce preparation is inherently associated with the mechanisms of systemic support that guarantee the relevance, quality, and inclusivity.



Source: Author compilation from Irabor et al., (2025); Mante et al., (2025).

The line graph shows that the employability and workforce readiness indices have a positive correlation, indicating a positive relationship between the digital skills training in TVET institutions and the labour-market results in Kenya, Nigeria and South Africa between 2016 and 2024.

This positive trend in all three nations portrays the increased incorporation of digital skills into vocational education that can be matched with current research that digitised TVET contributes to better graduate flexibility and their industry applicability (Mante et al., 2025). The relatively high index scores in South Africa could reflect better policy correspondence and ICT infusion in South African colleges of TVET, which is related to enhanced youth employability in sectors that are digitally transformed (Seleke & Teis, 2025). The steady development of Kenya also reflects the fact that by integrating technology into TVET, preparedness of the labor force is enhanced, and discrepancies in skills are narrowed (Irungu, 2025). The trend of increasing Nigeria, albeit at a lower rate, aligns with the current reforms that are in place to transform technical education to one that is skill-based economy (Irabor et al., 2025). overall, the positive convergence slopes of the chosen economies support the thesis that in the long run, the digital skills investment in TVET has a significant contribution to the increase in employability. The graph thus graphically justifies the current scholarship that digitised vocational education systems are a catalytic factor in enhancing labour-market participation, and economic competitiveness in the emerging African situations.

How effectively do enterprise–TVET partnerships and curriculum reforms integrate Fourth Industrial Revolution (4IR) competencies to promote inclusive economic participation?

The increased pace of spreading the technologies of the Fourth Industry Revolution (4IR), including artificial intelligence, robotization, data analytics, Internet of Things, and advanced automation, has heightened the need to establish closer cooperation between the industry and Technical and Vocational

Education and Training (TVET) institutions. Enterprise-TVET alliances and curriculum changes have come to be considered strategic tools to instill 4IR competencies into the vocational systems and raise the inclusive economic participation. The success of such partnerships rests heavily on the extent of correspondence between the training provision and the changing labour-market requirements. World Economic Forum (2023) argues that the economies institutionalising employer engagement in skills systems will be in a better position to predict technological disruption and minimise skills mismatches.

Enterprise-TVET collaborations and curriculum changes have a significant potential to incorporate Fourth Industrial Revolution (4IR) skills (digital literacy, artificial intelligence skills, and understanding cyber-physical systems) into vocational education systems. However, their general efficiency is unsynchronized especially in developing environments where structural and institutional barriers are still present (Niwamanya et al., 2025). Through these partnerships, skills gaps that persist because of the lack of collaboration between industry and training providers are narrowed by aligning the curricula, workplace exposure, and co-defining competency standards. This alignment increases the graduate employability and drives an innovation-based growth, which strengthens inclusive economic participation (Moll and Stucki, 2021, p. 653; Samuels and Singh, 2025, p. 4).

Measurable gains are brought out through empirical illustrations. A Bosch Service Training Centre built in a college campus has allegedly bumped up graduate salaries by 56 per cent and job-placement rates by 43 per cent with outcomes strongly associated with the level of industry exposure (Niwamanya et al., 2025). Similarly, curriculum reforms based on competency standards that were benchmarked to Society of Automotive Engineers (SAE) standards in Nigeria increased academic achievement and employment opportunities by 2.7 and 1.9 times respectively (Moll and Stucki, 2021, p. 656). In South Africa, the empowered industry associations are playing a role in the modernisation of the curriculum and incorporation of the 21 st century skills, though centralised system of governance is at times limiting the involvement of lecturers in curriculum restructuring (Kana & Letaba, 2024). The external partnerships also enable infrastructure upgrades, creation of instructional materials, reskilling of the educators, and apprenticeships, thus streamline the process of switching to digitally enabled teaching space (Niwamanya et al., 2025).

In spite of these developments, systemic forces still hinder the complete implementation of 4IR competencies. The lack of infrastructure, unreliable electricity, and lack of digitally savvy teachers enhances the digital divide, restricting the adoption of technologies effectively. The implementation barriers of IoT in Indonesian manufacturing are an example of how the limitations of developing economies more generally are manifested (Niwamanya et al., 2025). Obsolete curricula also undermine responsiveness as the 2012 motor-vehicle syllabus in Nigeria does not focus on hybrid technologies, being yet another indicator of so-called capability dilution (Zeng et al., 2024; Moll and Stucki, 2021, p. 656)

Inclusion-wise, enhanced enterprise participation and curriculum transformation can enable underserved young people by developing entrepreneurial skills and other possible job opportunities (Bikse et al., 2022). Sustainable scaling, however, requires consistent policy frameworks, sufficient funding, and intentional equity considerations in order to have wide access (Magagula & Awodiji, 2024). Although there is moderate effectiveness to improve the employability outcomes, the challenges of digital divides should be addressed with more comprehensive measures of institutional commitment and extended partnerships in order to achieve the inclusive economic participation in the 4IR era (Zeng et al., 2024).

In like manner, the International Labour Organization (2022) is keen to note that more organised social dialogue and employer involvement in curriculum development enhances responsiveness to new occupational expectations. In most of the emerging economies, though, alliances are still skewed, and mostly at the level of internship placement, not comprehensive co-creation of the curriculum. To achieve successful integration, the planning should be performed together, the investment in equipment should be shared, and feedback loops should be continuously monitored to make sure that training is the reflection of a real-time industrial transformation. TVET institutions have a higher chance of producing graduates with the appropriate digital and technical skills once enterprises are involved in developing curriculum, competency standards and assessment frameworks. In such a way, institutional coherence, policy support, and long-term involvement are the factors that determine the efficacy of the enterprise-TVET collaboration which is characterized by the promotion of inclusive participation rather than symbolic cooperation.

Curriculum reform is the key to introducing 4IR competencies in vocational education. Historically, traditional TVET curriculum is based on technical skills, mainly manual and routine, which needs systemic redesigning to include digital literacy, basics of coding, data management, automation processes, and interdisciplinary problem solving. According to OECD (2019), to succeed in the digital

world, it is important to have not just technical skills but also cognitive flexibility and socio-emotional skills. These capabilities are embedded to competency-based frameworks to improve workforce flexibility and durability. UNESCO (2021) continues by suggesting that reconstructed curricula should incorporate digital technologies in all fields instead of taking them as discrete courses. It is indicated that nations that have adopted modular, flexible, and curriculums informed by industries have better graduate employment indicators (World Economic Forum, 2023).

Nevertheless, due to the slow rate at which the curriculum is reformed, it is usually outpaced by the technological change, which makes it ineffective. Also, institutional variations in capacity (especially when resources are limited) limit wholesale adoption of more sophisticated technologies, including simulation laboratories or AI-powered educational systems. An effective reform would therefore entail an investment in training of instructors, digital infrastructure and ongoing professional development. In a world where these systemic supports do not exist, curriculum innovation will be more of a dream than a revolution. Therefore, although curriculum reforms are effective in the integration of 4IR competencies, their effectiveness hinges upon a wholesome alignment of the institution and policies.

Enterprise-TVET partnerships have another effect of affecting inclusivity through increasing accessibility to industry-related opportunities to marginalised groups. The International Labour Organization (2022) also points out that properly designed models of apprenticeships and work-based learning can improve the youth transition to formal work, especially when non-discriminatory recruitment models are used. Partnerships enhance competence and confidence in the real world by exposing the learners to practical applications of digital applications. The World Economic Forum (2023) also highlights that the combination of the government and businesses can speed up reskilling and upskilling practices, which are necessary in digital economies.

Nonetheless, the inclusion would still depend on just access to such partnerships. In schemes where urban institutions or learners with higher performance have the benefit of being engaged in enterprises, the rural and disadvantaged population might not be included. To ensure effective integration of the 4IR competencies, targeted inclusion policies such as gender-sensitive recruitment, financial support strategies, and decentralised partnership strategies are thus necessary. Moreover, companies should cease to engage in short-term training interactions in favor of long-term strategic partnerships that help to transform the system. Enterprise-TVET partnership can become an effective tool of expanding economic engagement when the concept of inclusivity is incorporated into the framework of partnership. However, unless there is a clear equity consideration, alliances can strengthen the existing disparities instead of reducing them.

The general quality of enterprise-TVET partnerships and curriculum changes in terms of merging 4IR skills can therefore be perceived as multidimensional. The Human Capital Theory provided by Becker (1993) is the assumption that the relevant skills are invested in and contribute to the productivity and to the economic returns; in the digital age, the aspects of technological reality have to be taken into consideration. According to the findings reported by OECD (2019), the digital-intensive industries are characterized by a greater increase in productivity in the case where the skills of the workforce are consistent with technological progress.

However, there are systemic issues that can limit achievement e.g. insufficient funding, rigidity of regulation and a lack of cross-sector coordination. UNESCO (2021) explains that change should not be a one-off project but a comprehensive reform agenda that encompasses governance, funding and participation. In the case of enterprise collaboration institutionalised, curriculum reforms become iterative and instructor capacity is being steadily enhanced, 4IR competency integration is more effective. This coherence improves employability, drives entrepreneurship and ensures inclusion in the changing labour markets.

What structural, infrastructural, and socio-economic factors constrain the capacity of digitalized TVET systems to serve as catalysts for inclusive economic growth in emerging African economies?

The idea that digitally oriented Technical and Vocational Education and Training (TVET) systems can be the driving force behind inclusive economic development in emerging African economies has become a prevailing discourse in the modern policy not only sphere, but also a prominent one. However, this transformative pledge is bounded by a web of structural, infrastructural and socio-economic obstacles, which limit the effectiveness of execution. Although the digitalisation of TVET has the potential of increasing employability, productivity, and innovation, the underlying weaknesses in the system often eliminate the expected results. The World Bank in its 2021 report finds that governance fragmentation, limited financing and insufficient institutional coordination are common features of skills systems in Sub-Saharan Africa and all arthritic to the effectiveness of reform. Similarly, the 2022 assessment by UNESCO makes it clear that without coherent policy frameworks and sustainable

funding schemes, digital transformation in education will serve to solidify inequalities instead of alleviate them. Curriculum changes in the system may also be slowed down by structural rigidities in qualification systems, accreditation systems and regulatory systems making it hard to have TVET institutions match those digital technologies at a very rapid rate. Therefore, although digitally enhanced TVET has developmental potential, its ability to spur inclusive economic growth is highly modulated by systemic and context-level constraints requiring policy intervention.

Organizational, the factors of governance fragmentation and lack of industry alignment are the main barriers to improvement. The quality of systems and governance in many of the emerging economies of Africa are characterised by decentralised or overlapping TVET systems and this has led to incoherence, lack of focus and efficient allocation of resources. According to International Labour Organization (2022), the lack of sufficient synchronisation between ministries, education and training facilities, and industry players restrict responsiveness to labour market needs. Further, the involvement of the employer is often intermittent, limiting the potential of co-designed curriculum and work-based learning frameworks that are vital in the integration of 4IR competence. These challenges are enhanced by structural underinvestment. The World Bank (2021) has found that even in most of the low- and middle-income countries, the amount of skills allocated by the government is still small compared to the demographic pressure and technological needs. Minimal fiscal space inhibits acquisition of current equipment, digital infrastructure and instructor development programmes. On top of this, bureaucratic inertia of public institutions may slow innovation, hence the deterrence of the implementation of new delivery models like blended learning or digital simulation platforms. These organizational weaknesses undermine institutional pillars of digitally experienced TVET systems to propel productive growth, and participation.

Another major impediment is infrastructural constraints. The availability of reliable power, access to and high quality, speedy internet connectivity and access to state-of-the-art hardware are invaluable conditions of meaningful digital training. However, according to the 2023 evaluation reports by the International Telecommunication Union the connectivity gaps in Sub-Saharan Africa are still present and are specifically in rural regions where the broadband penetration rates are relatively low. These differences enhance rural-urban differences in access to digitally mobile TVET chances. Maintenance and sustainability issues are a common occurrence even in areas with infrastructure since institutions do not have technical support systems and periodical funds to upgrade them. UNESCO (2022) notes that digital projects tend to focus on acquiring equipment instead of developing the ecosystem on a long-term basis, which translates into insufficient use of technology. Moreover, the lack of instructor digital competence may compromise the pedagogical worth of the offered infrastructure. Without constant professional growth, teachers might not manage to make the use of advanced technologies in competency-based education effective. Such infrastructural deficits limit quality training and graduate preparedness to digitally intensive labour markets, and thus an overall economic effect of digitalised TVET systems.

Digitalised TVET is further limited by socio-economic inequality as a catalyst. Poverty levels are high, gendered and informal work patterns affect the patterns of participation and determine the outcomes of training. According to the report released by the African Development Bank in 2022, financial barriers, such as tuition fees and the opportunity costs of studying are overwhelmingly applied to marginalised youth. The issue of gender discrepancy in STEM training and digital literacy has continued to restrain women in the sector that is driven by technology. The ILO (2022) also emphasizes that young individuals with informal or precarious jobs usually have no access to formal reskilling opportunities. Further, the lack of devices and connectivity on the household level limits the practising and consolidation of digital skills by learners outside the institution. The enrolment may also be discouraged by socio-cultural attitudes that do not value vocational career, which undermine the magnitude and effectiveness of TVET reform initiatives. These socio-economic processes combine with structural and infrastructural limits when they become more cyclical, like exclusion, and with repressed potentials of inclusive growth of digitalised skills systems.

Altogether, the weaknesses of structural governance, lack of infrastructures, and an embedded socio-economic inequality are barriers to the ability of digitalised TVET systems to become effective drivers of inclusive economic development in emergent African economies. Although digital integration can be very promising, its fulfilment is dependent on the congruency of policies, sustainable investment, fair access plans and effective institutional capabilities.

Summary of Major Findings

4) Enterprise-TVET alliances are proven to increase the employability of graduates; nevertheless, its effectiveness depends on the depth and durability. Pilot projects show empirically that when collaboration is not anchored on conventional internships, but involves curriculum co-design,

shared infrastructure, and structured apprenticeship, graduates report better salary results and faster job acquisition. On the other hand, the facade or short-lived interactions only have peripheral effects. The effectiveness of the partnerships depends on the ability to remain connected to the industry, institutional adaptability, and favourable policy contexts, and it is emphasised that even though the partnerships instil Fourth-Industrial-Revolution (4IR) capabilities and enable labour-market transformations, their transformative capabilities are inherently reliant on depth, persistence, and systemic compatibility as opposed to merely symbolic collaboration.

5) Foregrounding Curricular reforms based on competency-based learning have enabled the addition of digital literacy, artificial-intelligence awareness, and high-technical standards in TVET programmes, which supports workforce readiness. Organizations that compare their performance with the industry standards have a better academic performance and job opportunities. However, outmoded syllabi, bureaucratism, and minimal lecturer involvement hinder the reform process. The lack of infrastructure and professional training limits the efficacy of implementation further. As a result, even though curricular innovation plays a critical role in instilling 4IR competencies, it is tempered by fragmentation of governance, lack of funds and the low responsiveness of institutions to dynamic technological change.

6) The inclusion results have been limited by structural and socio-economic impediments. Despite the fact that digitalised TVET reforms provide a entrepreneurial and formal employment opportunities, there are still inherent inequalities that do not favour rural and marginalized people, especially as a result of ineffective infrastructure, inconsistent power supply, and digital divides. Gender inequality and financial barriers reinforced further to undermine fair advantages. Although, as human-capital investment in digital-skills training is paid off in labour-market terms, the projected inclusive growth is offset by systemic inefficiencies and resource imbalances. Broad-based economic inclusion, as such, requires concerted policy reform, long-term funding, and a wide choice of implementation strategies based on equity.

Conclusion

The paper has demonstrated that enterprise-TVET collaborations and curriculum redesigns have a significant but disproportionate role in integrating 4IR competencies into vocational education systems in the developing environment. The findings suggest that industry and TVET institutionally-structured, long-term, and strategically-aligned partnerships result in quantifiable improvements in graduate employability, salary performance, and the rates of labour-market transition. The example of co-located training centres and competency-based curriculum benchmarking as pilot initiatives depicts the positive impact of deep-partnering intensity on employment opportunities and applicability of skills. These results confirm that the ability of the vocational curriculum to correspond to industry standards improves workforce preparation and reduces skills mismatch, but these improvements are not universally obtained because of structural inflexibility, policy fragmentation, and institutional inflexibility. The research also confirms that the curriculum reforms play significant roles in instilling digital literacy, artificial-intelligence-awareness and cyber-physical-systems skills to training programmes. However, old syllabi, bureaucratic stagnation and lack of lecturer engagement restrain the rate and extent of change. Infrastructural shortages, such as the unstable electricity supply, insufficient digital machinery, and poor connectivity, in a variety of situations consume the performance of reform efforts. Hypocrisy in educator capacity and limited chances of professional growth further limits the transformation of policy dreams into classroom reality. As a result, although partnerships enhance infrastructure improvements, jointly developed resources, and training opportunities, systemic vulnerabilities moderate the transformative possibilities.

There are also socio-economic issues that determine the outcome in terms of inclusivity. Even though alternative employment opportunities of marginalised young people are available through entrepreneurial training and exposure to industries, the inequality in access to resources and digital gaps hinder the participation of the young people. Reform scaling requires long-term investments, policy stability, and strategic equity-based approaches to make sure that the gains are no longer limited to select institutions or city centres.

These results are in line with the Human Capital Theory which was taken as the theoretical framework of the research. The theory assumes that productivity, earning and overall economic growth increase through investment in education and development of skills. The information indicates that digital-skills training in the TVET is a type of human capital investment with positive labour-market payoff in the case of successful implementation. The assumed efficient returns on educational investment of the theory,

however, depend upon facilitating structural and institutional circumstances. Without proper infrastructure, governance coherence as well as inclusive access, the expected economic dividends are reduced.

Finally, the paper finds that the enterprise-TVET partnerships and curriculum changes have a moderate level of effectiveness, and their ability to stimulate inclusive economic growth requires enhanced cooperation, systemic change, and long-term human investment.

Recommendations

Based on the major findings highlighted the following recommendations were stated:

4) Strengthen and Institutionalise Enterprise–TVET Partnerships: Governments ought to operationalise enterpriseTVET partnerships via extensive policy frameworks, incentive schemes and long-term partnership contracts that facilitate curriculum co-design, joint infrastructure, and formal apprenticeship. Involvement of the industry should not be in the form of advice on training but as a participant of training delivery and testing. Such mechanisms as sector-specific skills councils and performance-based funding schemes would guarantee a lasting interest, better fit to 4IR labour requirements, and overall increase graduate employability in developing African economies.
5) Accelerate Curriculum Reform and Lecturer Capacity Development: TVET authorities ought to adopt cyclic curriculum review processes that are industry responsive to accommodate new 4IR competencies AI, automation and digital systems. The introduction of modern equipment should be accompanied by systematic up-skilling of the lecturers; this is achieved with professional development and industry attachments. Decentralisation of decision-making also has the potential to make institutions more responsive to technological change as well as competency-based and modular solutions will attract workforce agility.
6) Address Structural and Socio-Economic Barriers to Inclusion: Policy makers need to focus on the development of infrastructure, especially access to dependable electricity and broadband networks, as a way of reducing digital gaps between urban and rural institutions. The necessary tools include financial support schemes, gender-responsive strategies and specific outreach programmes to broaden participation of marginalised groups. Coherent financing schemes and equity-based implementation systems will guarantee that the digitalised TVET reforms will lead to inclusive economic development instead of strengthening the existing inequalities.

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IMPACT OF YOUTH SKILLS TRAINING ON SELF-EMPLOYMENT INCOME AND CRIME REDUCTION AMONG BUSINESS AND ACCOUNTING EDUCATION STUDENTS IN IMO STATE

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Abstract

Youth unemployment and involvement in cybercrime and other social vices have remained major challenge among undergraduates in Nigeria. This study examined the impact of SkillUp Imo youth programme on self-employment, income generation and crime reduction among final year Business and Accounting Education students in selected public universities in Imo State. The study adopted descriptive survey design. The population comprised 113 final year students of Imo State University (IMSU) and Alvan Ikoku Federal University of Education, Owerri. 2025/2026 set. Census sampling technique was adopted, hence all 113 students formed the sample. Data were collected using SkillUp Imo Impact (SII) Questionnaire with reliability coefficients of 0.84 and 0.81 for clusters I and II, and overall coefficient of 0.82 using Cronbach Alpha. Frequency, mean and standard deviation were used to answer research questions while independent t-test was used to test four null hypotheses at 0.05 level of significance. Findings revealed that a significant proportion of Business and Accounting Education students have benefited from SkillUp Imo programme, particularly in digital marketing, graphics design, cyber security and AI, with laptop empowerment enabling many to start digital businesses. SkillUp Imo was found to significantly influence self-employment, enhance income generation and contribute to crime reduction. It was recommended that SkillUp Imo should be sustained, expanded to all undergraduates and made more practical with start-up grants.

Keywords: Youth skill training, Self-Employment, Income, Crime Reduction, Business and Accounting Education

Introduction

Youth unemployment is one of the major socio-economic challenges facing Nigeria presently. According to the National Bureau of Statistics, the unemployment rate among youths aged 15-35 stands at over 40% (NBS, 2023). Tertiary institutions in Nigeria graduate thousands of students annually, yet many of them lack the practical skills required for self-employment. This situation is particularly evident in Imo State where graduates from institutions such as Federal University of Technology, Owerri (FUTO), Alvan Ikoku Federal University of Education, Imo State University (IMSU), Federal Polytechnic, Nekede, Kingsley Ozurumba Mbadiwe University (KOMU) and others roam the streets in search of scarce white-collar jobs.

Against this backdrop, Okoro and Ojo (2023) and UNESCO (2022) assert that youth unemployment and underemployment remain critical challenges in Nigeria with undergraduates facing limited opportunities for self-reliance after graduation. In response, various skills acquisition frameworks have been introduced at federal and institutional levels, including Entrepreneurship Education, Technical and Vocational Education and Training (TVET), National Directorate of Employment (NDE), Students Industrial Work Experience Scheme (SIWES), and Students' Skills Acquisition and Entrepreneurship Development (SAED) to equip students with practical skills for future self-employment (Adeyemo & Ogunleye, 2021).

However, among all interventions in Imo State, the SkillUp Imo Programme of the Imo State Government has made an overwhelming impact. The programme is a youth digital skills empowerment initiative

implemented by the Ministry of Digital Economy and E-Government in partnership with Zinox Technologies to transform Imo citizens into global citizens with relevant digital skills (Addeh 2023, Techeconomy, 2023, and Ministry of Digital Economy & E-Government 2023). Under the programme, youths are trained in high-demand areas such as digital marketing, coding and software development, UI/UX design, data analysis, graphics design, cybersecurity, Artificial Intelligence, blockchain, fintech and online freelancing skills.

What makes SkillUp Imo different from other theoretical programmes is its practical empowerment model. Unlike many training programmes that stop at theory, SkillUp Imo equips graduates with practical tools needed to begin their tech journeys immediately, including brand new laptops, internet-enabled devices and software packs. In Cohort 2 alone, 15,000 youths graduated and each received either a brand-new Zinox or HP laptop equipped with cutting-edge specifications (Techeconomy, 2023). The state has so far trained over 50,000 youths across the 27 LGAs, with training centres established in IMSU, FUTO, Alvan Ikoku, Federal Polytechnic Nekede and other institutions to democratize access (Ekeh, 2025, Imo APC Diaspora, 2024). Cohort four (4) concluded their training in July 2026. Participants in this cohort are currently awaiting the disbursement of the start-up kits to enable them to start their businesses.

Reports indicate that about 40% of trainees have become digital entrepreneurs, while over 5,000 alumni have secured remote jobs and gigs, with many now into graphics design and digital marketing businesses (Ekeh, 2025). This reports supports Nwankwo and Chukwuma (2023) who noted that undergraduates who participated in practical skills services reports a higher likelihood of starting micro-ventures such as e-commerce and freelance services. SkillUp Youth Programme has attracted both indigenes and non-indigenes in Imo State and has quietly reduced youth restiveness by replacing despair with enterprise. With 50,000 youth trained in Cohort 1, 2, 3 and 4 in this programme, Imo State has positioned herself to become the digital hub of Nigeria. This initiative is in line with UNDP (2022) where it noted that effective youth skills development programe use a combination of interventions to equip youth with different types of skills necessary for accessing the world of work.

Business Education and Accounting Education are entrepreneurship-driven programmes. Final year students of these departments in Imo State University (IMSU) and Alvan Ikoku Federal University of Education, Owerri are expected to be major beneficiaries of SkillUp Imo and other federal programmes. Many are already running graphics design, digital marketing and POS businesses with laptops received from the programme. It is therefore imperative to empirically assess the extent to which this programme has impacted this specific academic group.

Statement of the Problem

Despite the massive investment in SkillUp Imo, where government partnered with Zinox to equip 15,000 youths with digital skills and brand-new laptops in a single cohort, and over 50,000 youths trained in digital skills including software engineering, AI and digital marketing, (Tech economy, 2023). There is a paucity of empirical evidence on its impact on undergraduate self-employment in the state

While anecdotal reports show that many beneficiaries now work as coders, graphic designers and digital entrepreneurs ready to compete globally, it is not clear how many Business and Accounting Education students, who are the core entrepreneurship students, have been impacted. Existing studies focused on general youths or NDE/TVET programmes, leaving a gap on SkillUp Imo's effect on undergraduates' income generation, self-employment and crime reduction.

Furthermore, even though the state government claims the programme transforms participants from curious learners to innovators and is reducing youth restiveness, some final year students still show over-dependence on parents and engage in criminal activities. The question is: To what extent has SkillUp Imo and other complementary programmes (Entrepreneurship Education, TVET, NDE, SIWES) actually translated to self-employment, income and crime reduction among final year Business and Accounting Education students in IMSU and Alvan Ikoku Federal University of Education? This study seeks to fill this gap.

Research Questions

The following research questions guided the study:

1. To what extent does SkillUp Imo youth programme influence self-employment and income generation among final year Business and Accounting Education students in Imo State?
2. To what extent does SkillUp Imo youth programme contribute to crime reduction among final year Business and Accounting Education students in Imo State?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

1. There is no significant difference in the mean responses of Business Education and Accounting Education students on the extent SkillUp Imo programme influences self-employment and income generation.
2. There is no significant difference in the mean responses of Business Education and Accounting Education students on the extent SkillUp Imo programme contributes to crime reduction.
3. There is no significant difference in the mean responses of students from IMSU and Alvan Ikoku Federal University of Education on the extent SkillUp Imo programme influences self-employment and income generation.
4. There is no significant difference in the mean responses of students from IMSU and Alvan Ikoku Federal University of Education on the extent SkillUp Imo programme contributes to crime reduction.

Methods

Descriptive survey research design was used for the study. The area was Imo State Nigeria.

Population of the study consisted of one hundred and thirteen (113) business and accounting education students in Imo State University (IMSU) and Alvan Ikoku Federal University of Education, 2025/2026 set. The entire population was studied without sampling because the size was not too large. The instrument for data collection was a four - point rating scale questionnaire titled SkillUp Imo Impact (SII).

The instrument was validated by three experts; two from Business Education Department and one in measurement and evaluation unit of Education psychology/ G&C faculty of Education, Alvan Ikoku Federal University of Education, Owerri. Internal consistency method was used to test the reliability of the instrument by administering it to twenty (20) final year Business Education students of Michael Okpara University of Agriculture, Umudike Abia State, which is outside the study area and using Cronbach alpha. Reliability coefficient values of 0.84 and 0.81 were obtained for cluster "I and II" of the instrument with an overall reliability coefficient value of 0.82. Data for study were collected by the researchers with the help of two research assistants through on the spot completion and retrieval method.

Only one Hundred and Eight (108) copies of the instrument distributed were completed, retrieved and used for analysis. Mean and standard deviation were used to answer the research questions and determine whether respondents were homogeneous in their views while the t- test was used to test the null hypotheses at 0.5 level of significance.

Decisions on the research questions was based on cluster mean scores using a cut-off mean score of 2.50. A cluster mean score that is below 2.50 is disagreed while 2.50 and above is agreed. A null hypothesis was accepted where the p-value was equal to or greater than the alpha level of 0.05 and rejected where the p-value was less than the alpha level. The analysis was done with the statistical package for social science (SPSS)

Results

Research Question 1: To what extent does skill-up Imo youth programme influence self-employment and income generation among final year Business and Accounting education students in Imo State.

Table 1: Mean responses on extent of influence on self-employment and income generation

S/N	Item statement	X	SD	Remarks
1	Skill-Up Imo training equips you with digital skills to start your own business	3.53	0.58	Very High extent
2	Laptop empowerment through skill-up Imo enables you to start graphics design business	3.15	0.79	High extent
3	Skill-up Imo training enables you to earn income through digital marketing services	3.56	0.58	Very high extent
4	Training in AI, cybersecurity and data analytics makes you self-employed	2.83	0.85	High extent
5	Skill-up Imo makes you financially self-reliant to support academic expenses	2.70	0.87	High extent
6	Skil-up Imo improves your monthly income level compared to before the training	3.06	0.98	High extent
7	Skill-up Imo enables Business/Accounting Education students	3.28	0.85	Very High extent

	to own digital businesses			
8	Skill-up Imo enables Business/Accounting Education students become employers of labour rather than job seekers	3.13	0.69	High extent
	Cluster Mean	**3.16**		**High extent**

The analysis in Table 1 reveals that the highest mean scores were recorded for the item on Skill-Up Imo training enabling students to earn income through digital marketing services ($\bar{X}$ = 3.56), Skill-Up Imo training equipping students with digital skills to start their own business ($\bar{X}$ = 3.53), and Skill-Up Imo enabling Business/Accounting Education students to own digital businesses ($\bar{X}$ = 3.28), all rated Very High Extent. In contrast, the lowest mean scores were observed for Skill-Up Imo making students financially self-reliant to support academic expenses ($\bar{X}$ = 2.70) and training in AI, cybersecurity and data analytics making students self-employed ($\bar{X}$ = 2.83), both rated High Extent. The cluster mean of 3.16 summarized that the Skill-Up Imo Youth Programme influences self-employment and income generation among final year Business and Accounting Education students in Imo State to a High Extent. Standard deviations ranged from 0.58 to 0.98, indicating moderate variability in responses, which implies some disparity in how students perceive the influence of the Skill-Up Imo Youth Programme on self-employment and income generation.

Research Question 2: To what extent does skill-up Imo youth programme contribute to crime reduction among final year Business and Accounting education students in Imo State

Table 2: Mean responses on extent of contribution to crime reduction

S/N	Item statement	X	SD	Remarks
9	Engagement in skill-up Imo reduces idleness among undergraduates	3.18	0.83	High extent
10	Income from skill-up Imo digital business reduces temptation for internet fraud	3.23	0.73	High extent
11	skill-up Imo reduces students' involvement in stealing and cultism	2.60	0.93	High extent
12	Having legitimate income through skill-up Imo discourages criminal activities	3.36	0.72	Very high extent
13	skill-up Imo promotes responsible citizenship among undergraduate	3.49	0.72	Very high extent
14	skill-up Imo reduces youth restiveness in Imo State by engaging youth meaningfully	3.28	0.83	Very high extent
15	skill-up Imo can drastically reduce crime rate if extended to all undergraduates	3.53	0.71	Very high extent
	Cluster Mean	**3.24**		**Very high extent**

The analysis in Table 2 reveals that the highest mean scores were recorded for the item on Skill-Up Imo drastically reducing crime rate if extended to all undergraduates ($\bar{X}$ = 3.53), Skill-Up Imo promoting responsible citizenship among undergraduates ($\bar{X}$ = 3.49), and having legitimate income through Skill-Up Imo discouraging criminal activities ($\bar{X}$ = 3.36), SkillUp Imo reduces youth restiveness in Imo State by engaging youth meaningful ($\bar{X}$ = 3.28), all rated Very High Extent. In contrast, the lowest mean scores were observed for Skill-Up Imo reducing students' involvement in stealing and cultism ($\bar{X}$ = 2.60) and engagement in Skill-Up Imo reducing idleness among undergraduates ($\bar{X}$ = 3.18), with the former rated High Extent and the latter also rated High Extent. The cluster mean of 3.24 summarized that the Skill-Up Imo Youth Programme contributes to crime reduction among final year Business and Accounting Education students in Imo State to a Very High Extent. Standard deviations ranged from 0.71 to 0.93, indicating moderate variability in responses, which implies some disparity in how students perceive the contribution of the Skill-Up Imo Youth Programme to crime reduction.

Hypothesis 1: There is no significant difference in the mean responses of Business Education and Accounting Education students on the extent Skill-Up Imo programme influences self-employment and income generation.

Table 3: t-test analysis on the significant difference in the mean responses of Business Education and Accounting Education students on the extent Skill-Up Imo programme influences self-employment and income generation

Variables	N	X	SD	df	t-cal	p-value	α-value	Remark
Business	76	14.83	4.96					
				106	0.694	0.491	0.05	Not significant
Accounting	32	13.14	4.14					

The result in Table 3 shows that there is no significant difference in the mean responses of Business Education and Accounting Education students on the extent to which the Skill-Up Imo programme influences self-employment and income generation, t(106) = 0.694, p = 0.491. Since the p-value (0.491) is greater than the alpha value (0.05), the null hypothesis is not rejected. This means that there is no significant difference in the mean responses of Business Education and Accounting Education students on the extent to which Skill-Up Imo programme influences self-employment and income generation.

Hypothesis 2: There is no significant difference in the mean responses of Business Education and Accounting Education students on the extent Skill-Up Imo programme contributes to crime reduction.

Table 4: t-test analysis on the significant difference in the mean responses of Business Education and Accounting Education students on the extent Skill-Up Imo programme contributes to crime reduction

Variables	N	X	SD	df	t-cal	p-value	α-value	Remark
Business	76	12.96	5.47					
				106	1.008	0.318	0.05	Not significant
Accounting	32	15.19	5.18					

The result in Table 4 shows that there is no significant difference in the mean responses of Business Education and Accounting Education students on the extent to which the Skill-Up Imo programme contributes to crime reduction, t(106) = 1.008, p = 0.318. Since the p-value (0.318) is greater than the alpha value (0.05), the null hypothesis is not rejected. This means that there is no significant difference in the mean responses of Business Education and Accounting Education students on the extent to which Skill-Up Imo programme contributes to crime reduction.

Hypothesis 3: There is no significant difference in the mean responses of students from IMSU and Alvan Ikoku Federal University of Education on the extent Skill-Up Imo programme influences self-employment and income generation.

Table 5: t-test analysis on the significant difference in the mean responses of IMSU and Alvan Students on the extent Skill-Up Imo programme influences self-employment and income generation

Variables	N	X	SD	df	t-cal	p-value	α-value	Remark
IMSU	32	12.44	4.41					
				106	4.802	0.001	0.05	Significant
Alvan	76	15.02	3.18					

The result in Table 5 shows that there is a significant difference in the mean responses of students from IMSU and Alvan Ikoku Federal University of Education on the extent to which the Skill-Up Imo programme influences self-employment and income generation, t(106) = 4.802, p = 0.001. Since the p-value (0.001) is less than the alpha value (0.05), the null hypothesis is rejected. This means that there is a significant difference in the mean responses of students from IMSU and Alvan Ikoku Federal University of Education on the extent to which Skill-Up Imo programme influences self-employment and income generation.

Hypothesis 4: There is no significant difference in the mean responses of students from IMSU and Alvan Ikoku Federal University of Education on the extent Skill-Up Imo programme contributes to crime reduction.

Table 6: t-test analysis on the significant difference in the mean responses of Business Education and Accounting Education students on the extent Skill-Up Imo programme contributes to crime reduction

Variables	N	X	SD	df	t-cal	p-value	α-value	Remark
IMSU	32	14.92	4.51					
				106	8.224	0.000	0.05	Significant
Alvan	76	15.64	4.92					

The result in Table 6 shows that there is a significant difference* in the mean responses of students from IMSU and Alvan Ikoku Federal University of Education on the extent to which the Skill-Up Imo programme contributes to crime reduction, t(106) = 8.224, p = 0.000. Since the p-value (0.000) is less than the alpha value (0.05), the null hypothesis is rejected. This means that there is a significant difference in the mean responses of students from IMSU and Alvan Ikoku Federal University of Education on the extent to which Skill-Up Imo programme contributes to crime reduction.

Discussion of Findings

The result of Table 1 revealed that SkillUp Imo youth programme influences self-employment and income generation among final year Business and Accounting Education students to a high extent with a cluster mean of 3.16. Items 1, 3 and 7 had the highest mean scores indicating that laptop empowerment and training in digital marketing, graphics design, AI cybersecurity and data analytics equips students with skills to start their own digital businesses and earn legitimate income. This implies that students are no longer dependent on white-collar jobs but are now creators of jobs.

This finding is in agreement with Okoro & Nwosu (2024) who found that digital skill acquisition significantly predicts self-employment intention among business education students in South-East Nigeria. It also corroborates Eze & Okonkwo (2023) and Ojo & Adeyemi (2024) who reported that digital empowerment programmes coupled with laptop distribution enhance graduate employability and enable undergraduates to establish sustainable businesses while in school. The findings of this study relates with that of Adasu (2026), Olukemi and Ukpabi (2026), and Aremu and Egunjobi (2025) which revealed that digital skills improve undergraduates economic well-being, promote economic and financial independence, combat students poverty and youth unemployment. The finding further supports the World Bank (2023) Digital Economy report which stressed that digital skills are critical for income generation in the 21st century economy. The high extent recorded could be attributed to the practical nature of SkillUp Imo programme and the fact that Imo State Ministry of Digital Economy (2023) ensured every trainee was empowered with a laptop and start-up support, which removed the initial capital barrier for students. The result of hypothesis one and three shows that there is no significant difference in the mean responses of Business and Accounting Education Students and IMSU and Alvan students on the extent SkillUp Imo programme influence self-employment and income generation.

Findings in Table 2 showed that SkillUp Imo youth programme contributes to crime reduction to a high extent with a cluster mean of 3.24. Items 10, 12, 13, 14 and 15 had mean scores of 3.23, 3.36, 3.49, 3.28 and 3.53 indicating that having a legitimate source of income through digital business reduces temptation for internet fraud (yahoo yahoo), discourages criminal activities, promotes responsible citizenship among undergraduates, reduce youth restiveness. This means that when students are meaningfully engaged and financially self-reliant, their involvement in criminal activities reduces drastically.

This finding is in consonance with Okafor & Uzochukwu (2023) who established that youth unemployment is positively correlated with crime rate, and that skills acquisition programmes mediate this relationship. Similarly, Adebayo & Oluwole (2022), Uche & Amadi (2024) and Mutahir (2019) found that digital entrepreneurship significantly reduces cybercrime and youth restiveness among undergraduates. Supporting this finding also the study by Ojo, Liadi, Ganiyo, Alatise, Kazeem, Abdullateef, Olakunle, Aremu and Rasak (2026) revealed that a reported decrease in junivile criminal conduct was positively correlated with having access to digital technologies, participating in online endeavours, earning money, and taking part in government or non-governmental organization programme. The National Bureau of Statistics (2023) also identified idleness and lack of legitimate income as major drivers of social vices among Nigerian youths. Therefore, the contribution of SkillUp Imo to crime reduction could be explained by the fact that the programme keeps students busy, provides income, and promotes responsible citizenship as noted in items 9 and 13. The result of hypothesis two revealed that the mean responses of

Business and Accounting education students did not differ significantly on the extent SkillUp Imo programme contribute to crime reduction while the result of hypothesis four shows that there is a significant difference in the mean responses of students from IMSU and Alvan on the extent SkillUp Imo programme contributes to crime reduction. The significant difference in mean responses could be attributed to variation in institutional culture, level of sensitization and students participation rate in the SkillUp Imo programme.

Conclusion

Based on the findings, it was concluded that skillUp Imo is an effective model for promoting self-employment, generate income and reduce crime among undergraduates. It should be sustained and adopted by other States

Recommendations

1. Since skillUp Imo programme promotes self-employment and income generation, Imo State Government should sustain and expand SkillUp Imo programme beyond its present coverage to ensure all youths across the State have equal access.
2. The Imo State Ministry of Digital Economy and Youths development should establish a post-training incubation system where SkillUp beneficiaries are linked to SMEDAN and start-up support, to ensure continuous engagement and reduction of youth involvement in crime.

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