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Assessing The Future Of Artificial Intelligence Technologies In Tertiary Education: Implication For The Business Education Programme In Delta State

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ABSTRACT
This study investigated the future of Artificial Intelligence (AI) technologies in tertiary institutions in Delta State and examined their implications for the Business Education programme. The motivation stemmed from the growing global shift toward AI-driven teaching, learning, and workplace practices, and the need to assess how prepared Business Education programmes are for these emerging demands. A descriptive survey design was used, involving 273 students selected from a population of 908 across four tertiary institutions. Data were collected with a validated instrument, and analyzed using mean, standard deviation, and one-way ANOVA. Findings revealed that while basic ICT facilities exist in the institutions, dedicated AI infrastructure is largely inadequate. Students also perceived lecturers as willing to adopt AI but lacking practical competence due to insufficient training. Additionally, the Business Education curriculum contains minimal AI-related content, indicating a need for systematic curriculum renewal. The study concludes that Business Education in Delta State is not fully prepared for meaningful AI integration. It recommends that institutions should increase investment in AI infrastructure, strengthen lecturers' AI competence through continuous professional development, and revise the curriculum to incorporate AI-driven business skills such as automation, analytics, and digital intelligence. These steps are essential for ensuring that Business Education graduates remain competitive in an increasingly AI-enabled economy.
Keywords: Artificial Intelligence, Business Education, Digital Literacy, Curriculum Reform, Tertiary Institutions, Delta State.

INTRODUCTION

The accelerated growth of Artificial Intelligence (AI) has begun to reshape the entire landscape of tertiary education, influencing how institutions teach, assess, and manage their academic systems. AI-driven innovations—ranging from intelligent tutoring systems and machine-learning analytics to automated grading tools and adaptive learning platforms—are gradually altering how students experience learning and how lecturers design and deliver instruction. In many universities around the world, AI is now used to create personalized learning paths, streamline administrative procedures, and support educators in enhancing productivity.

Programmes within Nigerian tertiary institutions, including Business Education in Delta State, are increasingly confronted with these technological shifts. As a field that equips learners with competencies in management, accounting, office technology, entrepreneurship, and digital literacy, Business Education stands at a critical intersection where emerging technologies can significantly influence both teaching and

professional preparation. AI introduces new possibilities for enriching instructional quality, strengthening students' employability skills, and ensuring that business curricula respond to evolving workplace demands.

Okoro (2022) underscored the need for Business Education curricula to continuously evolve in response to technological innovations to remain relevant in a rapidly changing, knowledge-based economy. In a similar vein, Edinowe (2023) maintained that integrating contemporary digital tools is indispensable for nurturing the competencies required of 21st-century business graduates. These arguments become even more compelling as business industries increasingly embrace automated systems, intelligent office software, and AI-enabled managerial tools.

Despite these prospects, the capacity of Nigerian higher institutions to adopt AI remains uncertain. Findings from Okocha (2020) and Umoru (2021) reveal persistent limitations such as inadequate ICT infrastructure, insufficient digital literacy among lecturers, and poor institutional support for advanced technologies. Such challenges highlight the importance of examining how prepared Business Education departments in Delta State are for the transition toward AI-supported teaching and learning.

Okolie (2022) further emphasized that misalignment between technological developments in the business industry and instructional practices in universities often widens skills gaps among graduates. Leveraging AI within Business Education may help reduce this gap by promoting hands-on digital competence and encouraging innovative teaching strategies that mirror the modern workplace.

The impact of AI on higher education extends far beyond basic digital automation. Globally, AI systems are increasingly embedded into learning management platforms where they track student progress, analyze learning behaviour, and recommend individualized study resources. These capabilities represent a shift from conventional ICT tools to more intelligent systems that support decision-making and enable targeted academic interventions.

For Business Education in Nigeria, the significance of these technological changes is even more pronounced. As noted by Anho (2020), today's business environment is highly dynamic and technology-intensive, requiring institutions to integrate emerging digital innovations into their pedagogical practices. AI tools are now widely used in business analytics, online commerce, data management, and office operations, making it essential for graduates to develop a strong foundation in technology-driven business applications.

AI also aligns with the broader movement toward more flexible, learner-centered instructional models. Edozie and Okoye (2021) found that digital transformation in Nigerian universities enhances student motivation and engagement through more interactive learning processes. AI strengthens these outcomes by providing real-time feedback, adaptive assessments, and intelligent scheduling systems that help optimize learning experiences. For Business Education students, who require both conceptual knowledge and practical digital skills, AI offers realistic opportunities to model workplace tasks such as automated bookkeeping, AI-mediated market research, and intelligent office procedures.

However, several institutional barriers continue to inhibit effective AI adoption in Nigerian tertiary education. Aigbedion and Iyere (2019) reported that inadequate funding, unreliable infrastructure, and weak ICT policy implementation remain key challenges to digital reform in universities. Since AI integration requires advanced infrastructure and specialized competencies, lecturer readiness becomes an essential consideration. Oviawe (2020) noted that educators must constantly upgrade their digital proficiency to remain effective in technology-driven instructional environments, particularly in skill-based fields like Business Education.

Curriculum responsiveness is another critical issue. Nwazor (2020) observed that many Business Education curricula in Nigeria are slow to incorporate emerging business technologies, limiting the competitiveness of graduates in global labour markets. Integrating AI therefore demands deliberate curriculum revisions that introduce AI literacy, automation ethics, data-driven decision-making skills, and digital entrepreneurship—all of which are now central to contemporary business practice.

In addition, the digitalization of institutional administrative processes has created new expectations for Business Education graduates, who often progress into administrative, managerial, and office technology roles. As Ezeani and Dike (2019) pointed out, organizations today rely extensively on digital office

systems and automated workflows. AI-powered tools such as robotic process automation, smart scheduling software, and virtual customer-service agents underscore the need for students who are well prepared to operate effectively in technologically advanced office environments.

Given the pace and scope of these developments, it has become increasingly important to assess how prepared tertiary institutions in Delta State are for AI adoption and what this means for the future of the Business Education programme. Such an assessment is vital for aligning academic practices with global trends in digital business operations, AI-enhanced learning, and automated administrative systems. Understanding the degree of AI readiness among these institutions will help determine whether Business Education is positioned to equip learners with the competencies required in a technologically sophisticated economy.

Although Artificial Intelligence is rapidly redefining global higher education, its integration into Nigerian tertiary institutions—particularly in Delta State—remains uncertain and uneven. While many countries now rely on intelligent tutoring systems, adaptive learning platforms, and automated assessment tools to improve teaching and learning, evidence suggests that Business Education programmes in Delta State are yet to fully embrace these innovations. This gap raises concern, especially since the discipline is expected to prepare learners for a business environment increasingly shaped by automation, digital analytics, and AI-driven office technologies.

Despite the clear potential of AI to enhance instructional delivery, personalize learning, and strengthen employability skills, several factors continue to hinder its adoption. Persistent challenges such as inadequate ICT facilities, unreliable digital infrastructure, and limited access to modern technologies make it difficult for lecturers to incorporate AI-based tools into their teaching. Previous studies have also shown that many educators lack the digital competence required to effectively utilize emerging technologies, further slowing the transition toward AI-supported instruction.

At the same time, the business industry is advancing far more quickly than the instructional practices within many tertiary institutions. Employers now demand graduates who can navigate AI-powered business processes, interpret digital data, manage automated systems, and adapt to constantly evolving technological environments. However, Business Education curricula in many Nigerian universities—including those in Delta State—have not fully aligned with these emerging workplace realities. As a result, graduates may enter the labour market with outdated skills, widening the gap between what they learned in school and what modern workplaces expect.

These concerns highlight a deeper issue: the overall readiness of Business Education departments in Delta State to respond to the growing influence of AI. Without a clear understanding of the extent to which institutions, lecturers, and students are prepared for AI adoption, it becomes difficult to plan for effective integration or to redesign curricula in ways that reflect current technological trends. Failure to address this gap may limit the relevance of Business Education programmes, restrict students' career opportunities, and weaken the capacity of institutions to contribute meaningfully to the digital economy.

Therefore, there is a pressing need to examine the future of AI technologies within tertiary institutions in Delta State and to determine their implications for the Business Education programme. Such an investigation is essential for understanding existing gaps, identifying institutional strengths and weaknesses, and providing evidence-based recommendations for enhancing teaching, learning, and administrative practices in an AI-driven educational landscape.

Concept of Artificial Intelligence in Business Education

Artificial Intelligence (AI) refers to the development of computer systems capable of performing tasks that normally require human intelligence, including decision-making, problem-solving, and learning from data. In the context of Business Education, AI can transform teaching and learning by enabling adaptive learning environments, personalized instruction, and intelligent assessment mechanisms. Okudaye and Okolugbo (2025) note that AI tools, such as virtual assistants, automated bookkeeping software, and predictive analytics platforms, can simulate real workplace scenarios for students, enhancing both technical and managerial competencies.

Similarly, Okoro (2022) emphasized that AI integration within Business Education supports digital entrepreneurship, data-driven decision-making, and office technology management—key skills for

modern business graduates. AI applications enable students to interact with virtual business models, analyze data trends, and make informed decisions, bridging the gap between theoretical knowledge and practical workplace skills.

Applications of AI in Business Education

AI has diverse applications within Business Education programmes:

1. **Intelligent Tutoring Systems:** Provide personalized guidance and remedial support based on students' learning patterns (Okudaye & Okolugbo, 2025).
2. **Automated Assessment Tools:** Reduce lecturer workload by grading assignments and providing real-time feedback (Okpue & Ito, 2025).
3. **Data Analytics in Business Learning:** Enable students to practice interpreting business data, predictive analysis, and performance forecasting (Anho, 2020).
4. **Simulated Business Environments:** AI-driven simulations allow students to model entrepreneurship scenarios, office management tasks, and market research, providing experiential learning without real-world risk (Edionwe & Erhirihie, 2024).
5. **Adaptive Learning Platforms:** Tailor learning resources to individual students' strengths and weaknesses, enhancing engagement and retention (Okpue & Ito, 2025).

Digital Infrastructure and ICT Readiness in Business Education

One of the foundational challenges for technological integration in Business Education is the level of ICT infrastructure and digital readiness among institutions. Igberaharha (2024), in his assessment of graduating Business Education students at Delta State University, identified a strong need for skills training in core ICT areas such as word processing, spreadsheet usage, and internet navigation. His study showed that many students lacked confidence in these basic digital skills, underlining a gap that must be bridged before higher-order technologies like AI can be effectively deployed.

In a related institutional perspective, Agwazie and Ordu (2022) emphasized the importance of emerging digital resources—such as data-analysis tools, teleconferencing platforms, and interactive web applications—for teaching employability competencies. They argued that adequate funding, sustained maintenance, and trained personnel are critical enablers for leveraging these digital tools in Business Education contexts.

These local studies suggest that without a sound base of ICT readiness—both in hardware and human capacity—Business Education programmes may struggle to build on them toward more advanced AI-based systems.

Lecturers' Digital Competence and Professional Development

Lecturer readiness is a critical factor in whether institutions can embrace AI-driven pedagogies. In his research on Business Education lecturers in Delta State colleges of education, Okoli (2024) found that while lecturers had acquired basic digital skills (such as using storage devices, printers, and mobile Internet), their proficiency in more advanced tools such as Zoom, Google Classroom, and Microsoft Teams remained low to moderate. This suggests that lecturer training has not kept pace with evolving digital demands, creating a barrier to AI adoption.

Complementing this, Ayemhenre, Okoloe, and Ogidan (2024) investigated the digital skills that Business Educators in Delta State believe are necessary for effective instruction. Their findings revealed that educators perceive a strong need for digital competencies, especially for leveraging new media and interactive platforms in teaching. Crucially, they argued that sustaining and upgrading these skills requires more than one-off workshops — it demands ongoing capacity building tied to institutional visions.

These insights highlight that for AI-infused learning to take root, lecturers must not only be comfortable with digital technologies but also be supported to translate those skills into meaningful pedagogy.

Students' Digital Literacy and Preparedness

Students' readiness to engage with advanced digital and AI-enabled tools depends heavily on their foundational digital literacy. Edionwe and Erhirihie (2024) generated valuable insights from their study of business and entrepreneurship education undergraduates at Delta State University, uncovering generally

positive student perceptions toward using digital technologies in class. However, they also noted that while students feel confident in using basic digital tools, they are less certain about leveraging them for complex or business-specific tasks.

In examining more specialized digital skills, Okpue and Ito (2025) explored how digital literacy contributes to both academic performance and entrepreneurial competence among Business Education students. Their study found that limitations in high-level digital proficiency (such as data interpretation or e-commerce platforms) restrict students' ability to fully exploit their digital learning environment.

Additionally, research by Ikenga and Okpuzor (2025) examined employer expectations for digital skills among Business Education graduates in Delta State. Their survey revealed that employers increasingly demand graduates who can perform digital marketing, data analysis, and project management, underscoring a misalignment between current student digital literacy and industry requirements.

Together, these findings suggest that student digital literacy in Delta State is improving but still not at the level required to support robust AI integration in teaching or business contexts.

Curriculum Responsiveness and Integration of Emerging Technologies

For Business Education to remain relevant in an AI-dominated future, curriculum reform is essential. Okudaye and Okolugbo (2025) conducted one of the few studies in Delta State that speaks directly to this moment: they examined how AI can enhance indigenous knowledge and entrepreneurial training among Business Education students. Their work highlights that AI tools can support the documentation and integration of local business practices into contemporary entrepreneurship education, thereby making curricula more culturally grounded and technologically forward.

Other scholars have underscored the need to embed digital entrepreneurship content in Business Education programmes. For example, a study conducted at the University of Delta by Agwazie (2022) identified critical gaps in e-accounting, digital marketing, and other digital business skills among graduates. This has led to calls for intentional curriculum redesign — integrating data analytics, AI literacy, automation ethics, and real-world simulation into Business Education coursework.

These proposals point to a model of curriculum that does not merely add digital content, but reimagines teaching, learning, and assessment through the lens of technology disruption.

Implications of AI and Emerging Digital Technologies

When infrastructure, lecturer readiness, student competence, and curriculum alignment come together, AI holds transformative promise. According to Okudaye and Okolugbo (2025), AI can support entrepreneurial education by preserving indigenous business wisdom, providing predictive market analytics, and enabling students to experiment with business ideas in virtual environments. These implications are not only educational but also economic: by fusing traditional knowledge with modern AI tools, Business Education can nurture graduates who are both culturally rooted and technologically agile.

Moreover, as emphasized in Delta State research on digital citizenship (Ikenga & Egbule, 2025), digital literacy has broader social and economic implications. Their study showed that digital citizenship — including safe, responsible, and productive use of digital technologies — enhances entrepreneurial success among small-business operators. By extension, AI-driven education must also address ethical, social, and entrepreneurial dimensions, not just technical ones.

However, underlying these potentials are nuanced risks: without institutional support, AI-enhanced learning may reinforce existing inequalities (e.g., students lacking basic Internet access), or over-automate assessment in ways that compromise learning depth. Local researchers warn that the success of AI in Business Education will depend heavily on how well its adoption is adapted to Delta State's institutional realities and educational values.

Purpose of the Study

The purpose of this study was to examine the future of Artificial Intelligence (AI) technologies in tertiary institutions in Delta State and determine their implications for the Business Education programme. Specifically, the study seeks to:

1. Assess the availability and adequacy of AI-related infrastructure in Business Education departments in tertiary institutions in Delta State.

2. Determine the level of AI literacy and readiness among Business Education lecturers, including their competence, willingness, and perceived capacity to integrate AI into teaching and learning.
3. Examine the extent to which Business Education curricula in Delta State tertiary institutions incorporate AI-related content, digital competencies, and emerging business technologies.

Research Questions

The following research questions guided the study:

1. What AI-related infrastructure is available in Business Education departments of tertiary institutions in Delta State, and how adequate is it for teaching and learning?
2. What is the level of AI literacy and readiness among Business Education lecturers in tertiary institutions in Delta State?
3. To what extent do Business Education curricula in Delta State tertiary institutions incorporate AI-related content and emerging digital competencies?

1.5 Research Hypotheses

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

H01: There is no significant difference in the availability of AI-related infrastructure among Business Education departments across tertiary institutions in Delta State.

H02: There is no significant difference in the level of AI literacy and readiness among Business Education lecturers based on institution type (university, college of education, polytechnic).

H03: There is no significant difference in the extent to which Business Education curricula incorporate AI-related content across tertiary institutions in Delta State.

RESEARCH METHODOLOGY

The study employed a descriptive survey research design, which was considered suitable because it enabled the researcher to assess the future of Artificial Intelligence (AI) technologies in tertiary education and explore their implications for the Business Education programme in Delta State. A descriptive survey was appropriate for gathering data from a large population at a single point in time, making it possible to capture the opinions, perceptions, and readiness levels of students across several institutions. The population for the study comprised 908 students offering Business Education across selected tertiary institutions in Delta State. The population distribution, based on departmental reports, included 309 students from Delta State University, Abraka; 127 from the University of Delta, Agbor; 250 from the College of Education, Mosogar; and 222 from the College of Education, Warri, making a total of 908 respondents. This population size was deemed adequate for examining issues related to AI readiness and its potential impact on Business Education programmes in higher institutions. From this population, a sample representing 30% of the total was drawn to ensure that the study remained manageable while still capturing adequate representation from each institution. Proportionate stratified random sampling was applied so that each institution contributed respondents in proportion to its population size. Consequently, the sample consisted of 93 students from Delta State University, Abraka; 38 from the University of Delta, Agbor; 75 from the College of Education, Mosogar; and 67 from the College of Education, Warri, resulting in a total sample size of 273 students. Data were collected using a structured questionnaire titled *AI Readiness and Implications for Business Education Questionnaire (AIRIBEQ)*. The instrument was designed to obtain information on demographic characteristics, availability of AI-related infrastructure, students' digital literacy and AI preparedness, perceived lecturers' digital competence, and curriculum responsiveness to AI trends. All items were constructed on a four-point Likert scale ranging from Strongly Agree to Strongly Disagree. To ensure the validity of the instrument, it underwent face and content validation by three experts a specialist in Business Education with a focus on Curriculum Studies, an expert in Educational Technology, and a Measurement and Evaluation expert. The reliability of the questionnaire was established through a pilot test involving 30 Business Education students from a tertiary institution not included in the main sample (Ignatius Ajuru University of Education). The responses obtained were analyzed using the Cronbach Alpha method. Reliability coefficients for the various sections of the instrument ranged between 0.78 and 0.86, while the overall reliability coefficient stood at 0.82. Data collection was carried out through direct administration of the questionnaire by the

researcher with assistance from trained research helpers. Permission was sought and obtained from the relevant departments before administering the instrument. For data analysis, the research questions were addressed using mean and standard deviation to determine the degree of agreement or disagreement among respondents. A decision mean benchmark of 2.50 was used; scores equal to or above 2.50 indicated agreement, while scores below that threshold indicated disagreement. The study's hypotheses were tested using one-way Analysis of Variance (ANOVA) at a 0.05 level of significance.

DATA PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS

Research Question One

What AI-related infrastructure is available in Business Education departments of tertiary institutions in Delta State, and how adequate is it for teaching and learning?

Table 4.1: Mean Ratings on Availability and Adequacy of AI-related Infrastructure (n = 273)

AI Infrastructure Indicators	Mean	SD	Decision
Availability of functional computer laboratories	2.84	0.91	Agree
Availability of internet connectivity	2.63	0.87	Agree
Availability of AI learning tools (chatbots, LMS analytics)	2.21	0.94	Disagree
Adequacy of computer systems for students	2.45	0.89	Disagree
Availability of AI-enabled software (SPSS, Python, simulation tools)	2.33	0.92	Disagree
Accessibility of digital learning resources	2.71	0.85	Agree

Table 4.1 shows that respondents agreed that functional computer laboratories, internet connectivity, and digital learning resources are available in their institutions. However, they disagreed regarding the availability and adequacy of AI-specific tools, AI-enabled software, and sufficient computer systems for students. This implies that while standard ICT facilities exist, AI-focused infrastructure required for modern Business Education is lacking or inadequate.

This suggests that institutions are yet to fully integrate emerging AI technologies into instructional environments, limiting students' exposure to advanced digital competencies.

4.3 Research Question Two

What is the level of AI literacy and readiness among Business Education lecturers in tertiary institutions in Delta State?

Table 4.2: Mean Ratings on AI Literacy and Readiness of Lecturers

AI Literacy Indicators	Mean	SD	Decision
Lecturers possess basic digital literacy skills	3.05	0.76	Agree
Lecturers are knowledgeable about AI concepts	2.48	0.82	Disagree
Lecturers demonstrate competence in AI-based teaching tools	2.33	0.88	Disagree
Lecturers show willingness to integrate AI into teaching	2.92	0.79	Agree
Lecturers receive training on AI and emerging technologies	2.15	0.94	Disagree

Results in Table 4.2 reveal that lecturers possess strong basic digital skills and show willingness to embrace AI integration in instruction. However, respondents disagreed that lecturers are knowledgeable about AI concepts, competent in AI-based tools, or sufficiently trained in AI.

This indicates a low-to-moderate level of AI readiness among lecturers, suggesting the need for systematic professional development to enhance AI pedagogical competence within Business Education programmes.

4.4 Research Question Three

To what extent do Business Education curricula in Delta State tertiary institutions incorporate AI-related content and emerging digital competencies?

Table 4.3: Mean Ratings on AI Integration in Business Education Curriculum

Curriculum Indicators	Mean	SD	Decision
Curriculum includes digital literacy components	2.89	0.78	Agree
Curriculum contains AI-related topics (automation, analytics, digital business)	2.44	0.91	Disagree
Curriculum prepares students for AI-driven workplace skills	2.38	0.92	Disagree
Courses integrate emerging business technologies	2.57	0.84	Agree
Curriculum requires upgrading to reflect AI advancements	3.11	0.73	Agree

Table 4.3 reveals that while digital literacy and emerging technologies appear in the curriculum, respondents indicate that AI-specific content and workplace AI competencies are not adequately incorporated. Furthermore, a high mean score for curriculum upgrade suggests strong student perception that the curriculum is outdated in relation to global AI trends.

4.5 Hypotheses Testing

Hypothesis One (H01)

There is no significant difference in the availability of AI-related infrastructure among Business Education departments across tertiary institutions in Delta State.

Table 4.4: ANOVA Summary for AI Infrastructure Across Institutions

Source	SS	df	MS	F-cal	F-crit	Sig
Between Groups	4.72	3	1.57	2.41	2.60	0.066
Within Groups	175.33	269	0.65			
Total	180.05	272				

Since F-cal (2.41) < F-crit (2.60) and p = 0.066 > 0.05, the null hypothesis is accepted. There is no significant difference in AI-related infrastructure across the four institutions. This suggests that all institutions experience similar levels of infrastructural development and inadequacies regarding AI technologies.

Hypothesis Two (H02)

There is no significant difference in the level of AI literacy and readiness among Business Education lecturers based on institution type.

Table 4.5: ANOVA Summary for Lecturer AI Literacy

Source	SS	df	MS	F-cal	F-crit	Sig
Between Groups	6.13	3	2.04	3.72	2.60	0.012
Within Groups	147.32	269	0.55			
Total	153.45	272				

Since F-cal (3.72) > F-crit (2.60) and p = 0.012 < 0.05, the null hypothesis is rejected. There is a significant difference in the AI literacy and readiness of lecturers across the institutions. University lecturers appear to demonstrate higher AI readiness compared to those in colleges of education, likely due to better exposure to training and research opportunities.

Hypothesis Three (H03)

There is no significant difference in the extent to which Business Education curricula incorporate AI-related content across tertiary institutions in Delta State.

Table 4.6: ANOVA Summary for Curriculum Incorporation of AI

Source	SS	df	MS	F-cal	F-crit	Sig
Between Groups	3.88	3	1.29	1.52	2.60	0.211
Within Groups	228.71	269	0.85			
Total	232.59	272				

Since F-cal (1.52) < F-crit (2.60) and p = 0.211 > 0.05, the null hypothesis is accepted. There is no significant difference in AI-related curriculum content across the institutions. This suggests that the curriculum is generally similar in structure and exhibits comparable gaps regarding AI integration.

DISCUSSION OF FINDINGS

The purpose of this study was to examine the future of Artificial Intelligence (AI) technologies in tertiary institutions in Delta State and to understand the implications for the Business Education programme. The findings are discussed in relation to the research questions and hypotheses while drawing insights from contemporary empirical literature within the field of Business Education.

The results of the study show that although tertiary institutions in Delta State have made noticeable progress in establishing basic ICT infrastructure, the kinds of technological facilities required for AI-supported teaching and learning remain insufficient. Institutions generally possess computer laboratories, internet connectivity, and some digital learning resources, yet critical AI tools—such as intelligent

tutoring systems, automated grading software, machine-learning platforms, and data-analytics dashboards—are either unavailable or grossly inadequate. This pattern highlights an existing technological gap, suggesting that institutions are still operating primarily within a traditional ICT framework rather than transitioning into AI-driven learning environments. This observation mirrors the conclusions of Okoli (2024), who reported that Business Education departments across Delta State continue to lack the level of technological modernization required for advanced digital pedagogy. Similarly, Igberaharha (2023) found that infrastructural limitations remain a major obstacle to the adoption of emerging technologies, noting that many of the available computers in these institutions cannot support advanced AI applications. These challenges indicate that students may not be receiving adequate exposure to the kinds of AI technologies increasingly shaping modern workplaces.

Findings on lecturers' readiness further show that Business Education lecturers express positive attitudes toward AI and possess basic digital literacy skills, yet their competence in AI-specific applications is limited. The study also revealed that professional development opportunities focused on AI integration are infrequent. These results reinforce the position of Edinowe (2024), who observed that while lecturers are generally comfortable with conventional ICT tools, their practical mastery of advanced technologies such as AI remains low largely due to limited training opportunities. Okoro (2022) similarly argued that enthusiasm alone cannot translate into effective technology adoption without institutional support and structured capacity-building. The present study also found notable differences in readiness across institution types, with universities demonstrating a higher level of AI exposure compared to colleges of education. This is consistent with Oroka (2023), who explained that universities tend to provide better research networks and more technologically enriched environments. The results therefore suggest that although lecturers are willing to adopt AI, the transition toward AI-driven pedagogy requires deliberate investment in staff development.

With regard to curriculum relevance, the findings indicate that the current Business Education curriculum in Delta State provides only minimal AI-related content. While students learn basic digital literacy and some emerging technologies, essential areas such as business analytics, automation, digital business intelligence, and AI-powered office applications are either weakly covered or entirely absent. This reflects the concerns raised by Edionwe and Erhirihie (2024), who argued that the Business Education curriculum remains anchored in traditional practices that do not fully address current workplace technological demands. Supporting this view, Adoh Rossy (2023) emphasized that curriculum renewal is necessary if Business Education programmes are to prepare graduates capable of functioning effectively in digitally automated business environments. Likewise, Igberaharha (2024) maintained that excluding AI competencies from the curriculum limits learners' preparedness for AI-influenced professional roles. The finding that there was no significant difference in curriculum content across institutions suggests a uniform but outdated curriculum structure, underscoring the need for systemic curriculum reform rather than isolated interventions.

Taken together, the findings portray Business Education in Delta State as being in the early stages of AI adoption. There is evidence of progress in basic ICT integration and lecturer willingness, yet meaningful adoption of AI remains constrained by inadequate infrastructure, limited AI expertise among lecturers, and curricular gaps. These results reinforce the concerns expressed by Okpue (2024), who warned that Business Education may lose relevance if it does not adapt to global technological shifts. The situation also reflects the employability concerns noted by Edinowe (2023), who argued that graduates may struggle to compete effectively in technology-driven business environments when their training does not match industry needs.

In summary, the evidence suggests that while the foundation for digital transformation exists within Business Education programmes in Delta State, significant work is required to embed AI technologies meaningfully into teaching, learning, and curriculum development. Enhancing institutional readiness for AI is critical not only for strengthening academic quality but also for ensuring that Business Education graduates remain competitive in a rapidly evolving digital economy.

CONCLUSION

This study set out to explore the future of Artificial Intelligence (AI) technologies in tertiary institutions in Delta State and their implications for the Business Education programme. The findings clearly show that while institutions have made progress in establishing basic ICT resources, they are not yet adequately equipped for full AI integration. Lecturers demonstrate a willingness to adopt AI, but their competence in AI-specific tools remains limited, largely due to insufficient training opportunities. The curriculum, though functional, still reflects traditional orientations and provides minimal exposure to AI-related content.

Overall, Business Education in Delta State stands at the threshold of digital transformation, with a solid foundation but critical gaps that must be addressed. Meaningful integration of AI will require deliberate investment in infrastructure, systematic staff development, and comprehensive curriculum renewal. Without such efforts, the discipline risks falling behind global educational and workplace trends. However, with the right strategies, AI can serve as a powerful catalyst for improving teaching, learning, and graduate employability in the state.

RECOMMENDATIONS

1. Tertiary institutions should invest in modern AI-enabled facilities such as intelligent tutoring systems, analytics dashboards, cloud-based learning platforms, and high-capacity computing systems. Partnerships with technology companies could help reduce costs and improve access to advanced tools.
2. Regular workshops, certifications, and hands-on training in AI applications should be organized to improve lecturers' competence and confidence. Institutions should encourage staff participation in national and international digital-skills programmes.
3. Curriculum planners should integrate key AI competencies—such as automation, machine learning basics, business analytics, and digital decision-making tools—into Business Education courses. Collaborative curriculum development involving industry experts will help ensure relevance.

REFERENCES

Adoh Rossy. (2023). *Curriculum development for the digital age in Nigerian higher education*. Delta State University Press.

Agwazie, F. (2022). Integrating digital entrepreneurship in Business Education curricula. *Nigerian Journal of Business Education, 8*(1), 72–88.

Agwazie, F., & Ordu, M. (2022). Digital resources and ICT readiness in Nigerian tertiary institutions. *International Journal of Educational Technology, 7*(3), 105–119.

Aigbedion, I., & Iyere, F. (2019). Challenges of digital technology adoption in Nigerian universities. *Journal of Educational Technology in Africa, 5*(2), 45–59.

Anho, A. (2020). *Business analytics and digital competency in contemporary Nigerian organizations*. Lagos: TechPress.

Ayemhenre, F., Okoloe, P., & Ogidan, T. (2024). Digital skills for effective Business Education instruction in Delta State. *Delta State Educational Review, 12*(1), 34–50.

Edinowe, N. (2023). Digital tool adoption and employability skills in Nigerian Business Education. *Journal of Vocational and Technical Education, 15*(2), 22–39.

Edionwe, N, & Erhirihie, A. (2024). Curriculum responsiveness to emerging technologies in Delta State tertiary institutions. *International Journal of Business Education Research, 9*(2), 55–68.

Edozie, I., & Okoye, N. (2021). Digital transformation and student engagement in Nigerian universities. *African Journal of Educational Technology, 6*(1), 14–27.

Ezeani, E., & Dike, V. (2019). Digital office systems and workforce preparedness in Nigeria. *Nigerian Journal of Management Studies, 10*(1), 41–56.

Igberaharha, F. (2023). Infrastructural limitations and digital technology adoption in Nigerian tertiary institutions. *Delta State Journal of Educational Research, 8*(2), 50–63.

Igberaharha, F. (2024). Integrating AI into Business Education: Challenges and prospects. *Journal of Nigerian Business Education, 10*(1), 88–102.

Ikenga, L., & Egbule, C. (2025). Digital citizenship and entrepreneurial competence among Nigerian undergraduates. *International Journal of Entrepreneurship Education, 12*(1), 77–93.

Ikenga, L., & Okpuzor, G. (2025). Employer expectations for digital skills in Nigerian graduates. *Delta State Educational Review, 13*(1), 65–81.

Nwazor, F. (2020). Curriculum adaptation in Nigerian Business Education programmes. *Journal of Curriculum Studies in Africa, 5*(1), 30–44.

Okocha, R. (2020). ICT infrastructure challenges in Nigerian universities. *International Journal of Educational Development, 10*(1), 14–28.

Okudaye, A., & Okolugbo, P. (2025). Artificial intelligence applications in Business Education. *Journal of Business Education Technology, 6*(1), 11–29.

Okoli, T. (2024). Lecturer digital competence and AI adoption in Delta State colleges of education. *Journal of Nigerian Educational Research, 11*(2), 42–58.

Okoro, J. (2022). Business Education curriculum and digital entrepreneurship in Nigeria. *Nigerian Journal of Vocational Education, 7*(2), 25–39.

Okpue, R. (2024). Relevance of Business Education in the era of digital transformation. *Journal of Nigerian Vocational Education, 10*(2), 19–34.

Okpue, R., & Ito, I. (2025). Digital literacy, AI adoption, and Business Education students' competence. *International Journal of Technology in Education, 12*(1), 47–62.

Ono, A., & Umoru, J. (2021). Digital literacy and technology adoption in Nigerian higher education. *African Educational Technology Journal, 8*(3), 35–48.

Oviawe, J. (2020). Lecturer readiness for digital pedagogy in skill-based programs. *Nigerian Journal of Educational Management, 8*(2), 51–66.