Afropolitan Journals

ISSN: 3027-2971 www.afropolitanjournals.com

Integrating Emerging Technologies to Enhance Business Education in the Era of Disruption in Delta State

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DOI: *https://doi.org/10.62154/ajmbr.2025.021.01019*

Abstract

This study examined the integration of emerging technologies to enhance the quality of Business Education in the era of disruption in Delta State, Nigeria. Guided by three research questions and corresponding null hypotheses, the study adopted a descriptive survey research design. The population comprised 155 Business Education lecturers from five public tertiary institutions: Delta State University, Abraka; Dennis Osadebe University, Asaba; University of Delta, Agbor; Federal College of Education (Technical), Asaba; and College of Education, Warri. Given the small and manageable population, no sampling was conducted. Data were collected using a 30-item structured questionnaire titled *Integrating Emerging Technologies to Enhance the Quality of Business Education Questionnaire (IETEQBEQ)*. The instrument was validated by three experts and tested for reliability using the test–retest method, yielding a high correlation coefficient of 0.87. Of the 155 questionnaires administered, 111 (71.6%) were duly completed and used for analysis. Data were analysed using means and standard deviations to answer the research questions, while t-tests at the 0.05 significance level tested the null hypotheses. Findings revealed that integrating social media, artificial intelligence (AI), and blockchain technologies significantly enhanced the quality of Business Education. Specifically, mean scores indicated high effectiveness in promoting student engagement (social media M = 3.48), practical skill acquisition (AI M = 3.49), and instructional effectiveness (blockchain M = 3.45), all above the 2.50 threshold. At the same time, t-test results confirmed significant differences ($p < 0.05$) in the adoption and impact of these technologies. The study recommends that institutions integrate these technologies into teaching and learning, train lecturers in digital pedagogy, adopt AI-driven educational tools, and implement blockchain for secure academic record management.

Keywords: Business Education, Delta State, Emerging Technologies, Artificial Intelligence, Blockchain, Digital Pedagogy.

Introduction

The contemporary world is increasingly shaped by disruptions arising from rapid technological advancement, economic instability, and social transformation, which have significantly altered how institutions operate worldwide (Parry & Battista, 2022; Green & Wilson, 2023). Among the sectors most affected by these changes is education, which plays a critical role in human capacity development. As teaching and learning environments continue to evolve, educational systems are under growing pressure to adopt innovative approaches that ensure relevance, flexibility, and quality in response to emerging global demands (Spector, 2023).

Emerging technologies have been widely recognised as key enablers of educational transformation, offering new ways to deliver instruction, enhance learner engagement, and support skill development (Seyedeh, Shahram, & Homayounfar, 2022; Usman, Ahmad, Khurram, & Bahaudin, 2022). Despite their potential, the effective integration of these technologies remains uneven, particularly in skill-oriented disciplines such as Business Education. Business Education is expected to equip learners with practical, managerial, and digital competencies that align with modern workplace requirements (Okolocha & Nwadiani, 2021). However, many institutions continue to rely on traditional instructional methods that may no longer be adequate in a digitally driven economy (Edokpolor & Egbri, 2021).

Although existing studies acknowledge the potential of emerging technologies to enhance teaching and learning outcomes, empirical evidence on their impact on the quality of Business Education in developing contexts remains limited (Dauda & Akingbade, 2021; Gera & Chadha, 2021). Furthermore, little is known about how ongoing educational disruptions influence technology adoption within specific regional settings such as Delta State, Nigeria. Guided by the Technology Acceptance Model (TAM), which explains technology adoption in terms of perceived usefulness and perceived ease of use (Davis, 1989), this study examines how emerging technologies can enhance the quality of Business Education amid ongoing educational disruptions in Delta State.

Statement of the Problem

Graduates of Business Education programs are expected to acquire the knowledge, skills, and attitudes necessary to address societal and workplace challenges, including independence, creativity, flexibility, and digital competence. However, evidence suggests that many institutions fail to deliver these outcomes, mainly due to inadequate, outdated, and underutilised technologies. Traditional facilities such as 'model offices' and 'typing pools' often lack contemporary digital tools, limiting opportunities for practical skill development and reducing students' engagement (Ajuluchukwu, 2021). The absence of Artificial Intelligence (AI) in instructional delivery restricts personalised and adaptive learning, preventing students from receiving targeted feedback that could enhance skill mastery. Limited use of social media platforms reduces collaboration and communication

beyond classroom boundaries, hindering peer learning and creative engagement. The lack of blockchain-enabled systems for secure record-keeping diminishes transparency in academic assessment. Collectively, these gaps result in a disproportionate focus on theoretical instruction (approximately 80%) rather than practical application (20%), as well as an over-reliance on memorisation. Furthermore, high student-to-lecturer ratios, with some lecturers handling over 100 students, exacerbate cognitive fatigue and reduce lecturers' ability to provide personalised support, further undermining students' consistent engagement and learning outcomes (Ajuluchukwu, 2021). These challenges underscore a critical need to explore how emerging technologies such as social media, AI and blockchain can enhance the quality of Business Education in Delta State amid ongoing educational disruptions. Therefore, there is a clear research gap in empirical evidence on how these emerging technologies can be strategically integrated to improve instructional effectiveness, student engagement, and practical skill acquisition in Business Education programs in developing contexts like Delta State.

Purposes of the Study

The general purpose of this study is to examine the extent to which integrating emerging technologies will enhance Business Education in the era of disruptions in Delta State. The study specifically examined the;

1. The extent to which the integration of social media technologies enhances the quality of Business Education in the era of disruption in Delta State.
2. The extent to which the integration of artificial intelligence technologies enhances the quality of Business Education in the era of disruption in Delta State.
3. The extent to which the integration of blockchain technologies enhances the quality of Business Education in the era of disruption in Delta State.

Research Questions

The following research questions were raised to guide the study.

1. To what extent does the integration of social media technologies enhance the quality of Business Education in the era of disruption in Delta State?
2. To what extent does the integration of artificial intelligence technologies enhance the quality of Business Education in the era of disruption in Delta State?
3. To what extent does the integration of blockchain technologies enhance the quality of Business Education in the era of disruption in Delta State?

Hypotheses

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

Ho_1: There is no significant difference in the mean ratings of male and female business education lecturers on the extent to which the integration of social media technologies enhances the quality of Business Education in the era of disruption in Delta State.

Ho_2: There is no significant difference in the mean ratings of male and female business education lecturers on the extent to which the integration of artificial intelligence technologies enhances the quality of Business Education in the era of disruption in Delta State.

Ho_3: There is no significant difference in the mean ratings of male and female business education lecturers on the extent to which the integration of blockchain technologies enhances the quality of Business Education in the era of disruption in Delta State.

Literature Review

Concept of Disruption in Contemporary Society

Disruption has emerged as a defining feature of modern society, reshaping social, economic, and institutional structures globally. Green and Wilson (2023) conceptualised disruption as a force that fundamentally alters existing systems and compels stakeholders to adapt to new realities. While this definition emphasises systemic change, Parry and Battista (2022) extended the concept by identifying multiple sources of disruption, including technological innovation, political instability, economic recessions, social transformations, and natural disasters. This broader perspective suggests that disruption is not a single-event phenomenon but a continuous and multidimensional process.

Although these scholars agree on the transformative nature of disruption, they differ in emphasis. Green and Wilson (2023) focused primarily on systemic adaptation, whereas Parry and Battista (2022) highlighted the diversity of disruptive triggers. This distinction is important for education, as it implies that educational systems must respond not only to technological changes but also to broader socio-economic pressures. Consequently, the literature increasingly positions education as a sector that must develop resilience, adaptability, and innovation to remain functional in the face of ongoing disruptions.

Emerging Technologies and Transformation of Education

Emerging technologies have been widely recognised as critical drivers of change in teaching and learning. Usman et al. (2022) argued that understanding and applying emerging technologies significantly improve instructional quality by supporting innovative pedagogical approaches. Similarly, Seyedeh et al. (2022) emphasised that technology integration enhances flexibility, creativity, and inclusiveness, enabling learners to access educational resources beyond the physical classroom.

While these studies highlight the general benefits of technology in education, Dauda and Akingbade (2021) offered a more outcome-focused perspective, demonstrating that technology integration improves students' conceptual understanding, practical skills, and motivation to learn. However, a critical limitation across these studies is their broad treatment of education as a homogeneous sector. Little attention is given to how emerging technologies affect specific professional and skill-based disciplines such as Business

Education. This gap suggests the need for discipline-focused studies that examine how technology adoption translates into quality outcomes in specialised educational fields.

Business Education in the Era of Technological Disruption

Business Education is particularly vulnerable to technological disruption due to its strong orientation toward workplace skills and professional competence. Okolocha and Nwadiani (2021) described Business Education as a programme designed to equip learners with skills in office administration, record management, accounting practices, and the use of business tools. While this definition captures the traditional scope of the discipline, it reflects an era when digital technologies played a limited role in business operations.

In contrast, Edokpolor and Egbri (2021) argued that Business Education must align with global technological trends to remain relevant and to promote employability, self-reliance, and innovation. This shift in scholarly emphasis—from foundational skills to technology-driven competence—suggests that traditional instructional approaches are no longer sufficient. However, existing studies largely discuss this need at a conceptual level, with limited empirical evidence on how emerging technologies concretely enhance the quality of Business Education, particularly within developing economies such as Nigeria.

Specific Emerging Technologies in Business Education

Social Media in Business Education

Social media platforms facilitate collaboration, communication, and creative engagement beyond traditional classroom settings (Okoro, 2023). They offer flexible learning environments where students can exchange ideas, participate in discussions, and access resources asynchronously. Critical synthesis of prior studies shows benefits such as enhanced peer learning, improved engagement, and promotion of creativity (Chen & Bryer, 2022). Conversely, limitations include distraction, low digital literacy, and inconsistent usage patterns. Importantly, research specifically linking social media use to learning outcomes in Business Education in Nigeria is scarce, highlighting a research gap.

Artificial Intelligence (AI) in Business Education

AI has emerged as a transformative tool in education, enabling personalized learning, adaptive instruction, and inclusive digital environments. Lynch (2022) notes that AI platforms can deliver interactive, learner-centered instruction, providing immediate feedback tailored to individual needs. Empirical studies indicate that AI enhances engagement, concept comprehension, and analytical skill development (Gera & Chadha, 2021; Dauda & Akingbade, 2021). However, challenges such as high implementation costs, limited technical expertise, and resistance to adoption continue to impede its widespread use. Notably, there is limited empirical research on AI adoption in Business Education programs in developing countries, including Nigeria, representing a critical gap this study seeks to address.

Blockchain Technology in Education

Blockchain provides secure, transparent, and tamper-proof methods for academic record-keeping, credentialing, and assessment management (Alsobhi, Alakhtar, & Ubaid, 2023). Its application in education ensures integrity, accountability, and trust in digital systems. While blockchain's potential is recognized, practical adoption is limited due to infrastructure challenges, cost, and insufficient expertise. Few empirical studies explore blockchain's role in enhancing instructional quality or student engagement in Business Education, particularly within Nigerian tertiary institutions.

Theoretical Framework

Technology Acceptance Model (TAM)

This study is anchored on the Technology Acceptance Model (TAM) developed by Davis (1989), which explains how users come to accept and use new technologies. TAM posits that two key factors including Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), determine an individual's attitude toward adopting a technology, which in turn influences actual usage. Perceived usefulness refers to the degree to which an individual believes that using a particular technology will enhance job or learning performance, while perceived ease of use describes the extent to which a person believes that using the technology will be free of effort. In an educational context, these constructs explain why educators and students may accept or resist emerging technologies in teaching and learning processes.

Applied to Business Education, TAM suggests that lecturers and students are more likely to adopt emerging technologies such as Artificial Intelligence, social media platforms, and blockchain systems if they perceive these tools as useful in improving instructional delivery, skill acquisition, and learning outcomes, and if they find them easy to use. When these conditions are met, positive attitudes toward technology adoption are formed, leading to increased utilization and improved quality of Business Education.

The relevance of TAM to this study lies in its ability to explain variations in technology adoption amid educational disruptions. Challenges such as limited ICT infrastructure, low digital competence, and inadequate training can negatively affect perceived ease of use, thereby reducing adoption. Conversely, institutional support, training, and access to digital resources can enhance perceived usefulness and ease of use, leading to effective integration of emerging technologies. Thus, TAM provides a suitable theoretical lens for examining how emerging technologies influence the quality of Business Education in Delta State.

Summary of Literature and Research Gap

The reviewed literature demonstrates that disruption has intensified the need for emerging technologies in education, with scholars largely agreeing on their potential to enhance instructional quality and learning outcomes. However, most existing studies adopt a

generalized approach to education, offer limited critical integration of multiple technologies, and inadequately address contextual realities in developing regions. Therefore, there remains a significant gap in empirical research examining how emerging technologies influence the quality of Business Education amid ongoing educational disruptions in Delta State. This study seeks to fill this gap by assessing the extent to which emerging technologies enhance instructional effectiveness, skill acquisition, and overall educational quality within the context of Business Education.

Methodology

This study adopted a descriptive survey research design to collect detailed information on existing conditions and identify factors influencing the integration of emerging technologies for enhancing the quality of Business Education in Delta State. The study was conducted across five tertiary institutions: Delta State University, Abraka (28 lecturers); Dennis Osadebe University, Asaba (26); University of Delta, Agbor (13); Federal College of Education (Technical), Asaba (67); and College of Education, Warri (21), giving a total population of 155 lecturers from Business Education Departments. Given the relatively small and manageable population, a census approach was adopted, including all lecturers without sampling. Data were collected using a structured questionnaire titled *Integrating Emerging Technologies to Enhance the Quality of Business Education Questionnaire (IETEQBEQ)*. The instrument comprised two sections: Part A, capturing personal data, and Part B, which focused on research items rated on a four-point scale ranging from *Very High Extent (4)* to *Very Low Extent (1)*. The questionnaire underwent face and content validation by three experts—two in Measurement and Evaluation and one in Business Education—who assessed clarity, relevance, and suitability, with their suggestions incorporated into the final instrument. Reliability was established using the test–retest method on 30 Business Education lecturers outside the study area. Analysis of the retest data using Spearman's Rank Order Correlation Coefficient produced a reliability coefficient of 0.87, indicating high consistency and suitability for the study. Before conducting statistical analyses, assumptions for parametric testing were evaluated. Normality of data distribution was checked using the Shapiro–Wilk test, while homogeneity of variances was assessed using Levene's test. Both assumptions were satisfied, confirming the appropriateness of parametric tests. Data collection was conducted personally by the researchers and trained research assistants through on-the-spot distribution and retrieval, yielding 111 completed questionnaires out of 155, representing a 71.6% response rate. Data analysis involved descriptive statistics—frequency, percentage, mean, and standard deviation—to summarize responses. t-test statistics were employed to test the null hypotheses at the 0.05 level of significance. The t-test was justified as the study aimed to compare mean responses against a threshold (2.50) to determine the extent of technology integration and associated factors. For interpretation, mean scores of 2.50 and above indicated a *high extent*, whereas scores below 2.50 indicated a *low extent*. Null hypotheses were accepted when the calculated t-value was less than the critical value and rejected otherwise.

Results

Research Question 1: To what extent does the integration of social media technologies enhance the quality of Business Education in the era of disruption in Delta State?

Table 1: *Mean and Standard Deviation Responses of Respondents on the Extent to Which the Integration of social media Technologies Enhance the Quality of Business Education in the Era of Disruption in Delta State. n = 111*

S/N	Questionnaire Items	Mean ($\bar{x}$)	SD	Remarks
1.	Social media platforms such as Facebook and X (Twitter) facilitate academic collaboration among Business Education lecturers.	3.42	0.77	High Extent
2.	WhatsApp groups enhance communication and resource sharing among Business Education students and lecturers.	3.56	0.68	High Extent
3.	The use of YouTube for instructional videos improves students' understanding of business concepts.	3.68	0.72	High Extent
4.	LinkedIn provides professional exposure and networking opportunities for Business Education students.	3.25	0.83	High Extent
5.	Integrating social media tools promotes blended learning experiences in Business Education.	3.51	0.80	High Extent
6.	Social media enhances access to up-to-date information relevant to Business Education.	3.60	0.71	High Extent
7.	Students' participation in online academic forums increases their engagement and learning outcomes.	3.39	0.85	High Extent
8.	Social media supports research collaboration and peer review among Business Education scholars.	3.47	0.69	High Extent
9.	Social media encourages self-directed learning among Business Education students.	3.33	0.90	High Extent
10.	The use of social media improves interaction between lecturers and students beyond the classroom.	3.58	0.75	High Extent
	Grand Mean	**3.48**		**High Extent**

Source: Author's field survey, 2025.

The data presented in Table 1 show that the respondents agreed to a high extent that social media technologies enhance the quality of Business Education in Delta State. The mean ratings for the ten items ranged between 3.25 and 3.68, all above the benchmark of 2.50, indicating strong agreement. The grand mean of 3.48 suggests that the integration of social media has significantly contributed to teaching, collaboration, and student engagement. The low dispersion of standard deviation values (0.68–0.90) implies consistency in responses across the institutions. These findings reveal that social media platforms such as

WhatsApp, YouTube, and LinkedIn are increasingly becoming instructional aids that facilitate interactive learning and professional growth.

Research Question 2: To what extent does the integration of artificial intelligence technologies enhance the quality of Business Education in the era of disruption in Delta State?

Table 2: *Mean and Standard Deviation Responses of Respondents on the Extent to Which the Integration of Artificial Intelligence Technologies Enhance the Quality of Business Education in the Era of Disruption in Delta State. n = 111*

S/N	Questionnaire Items	Mean ($\bar{x}$)	SD	Remarks
11.	AI-powered tools improve grading accuracy and reduce bias in student assessment.	3.55	0.74	High Extent
12.	The use of AI chatbots enhances student support and academic advisory services.	3.41	0.78	High Extent
13.	AI applications such as plagiarism checkers ensure academic integrity in Business Education research.	3.66	0.70	High Extent
14.	AI-based learning analytics help lecturers monitor student progress effectively.	3.48	0.79	High Extent
15.	AI-driven adaptive learning systems personalize instructional delivery.	3.37	0.85	High Extent
16.	Integration of AI improves administrative efficiency within Business Education departments.	3.42	0.81	High Extent
17.	AI technologies facilitate data-driven decision-making in teaching and learning.	3.59	0.69	High Extent
18.	AI applications stimulate students' creativity and problem-solving ability.	3.29	0.88	High Extent
19.	AI integration helps in automating repetitive academic tasks for lecturers.	3.45	0.73	High Extent
20.	Overall, AI integration improves the quality and relevance of Business Education programs.	3.64	0.77	High Extent
	Grand Mean	**3.49**		**High Extent**

Source: Author's field survey, 2025.

Table 2 shows that the respondents agreed that the integration of Artificial Intelligence technologies enhances the quality of Business Education to a high extent, with a grand mean of 3.49. The mean values ranged from 3.29 to 3.66, indicating general consensus. The low standard deviation values (0.69–0.88) demonstrate uniformity in opinion across respondents. The findings suggest that AI tools ranging from automated grading systems to adaptive learning and data analytics are significantly improving teaching efficiency, personalization, and research integrity. This confirms the growing role of AI as a transformative force that redefines educational delivery in Business Education. However, it also implies a pressing need for continuous AI literacy training among lecturers to maximize its potential in this disruptive educational era.

Research Question 3: To what extent does the integration of blockchain technologies enhance the quality of Business Education in the era of disruption in Delta State?

Table 3: *Mean and Standard Deviation Responses of Respondents on the Extent to Which the Integration of Blockchain Technologies Enhance the Quality of Business Education in the Era of Disruption in Delta State. n = 111*

S/N	Questionnaire Items	Mean ($\bar{x}$)	SD	Remarks
21.	Blockchain enhances the security of academic records and credentials.	3.58	0.73	High Extent
22.	Blockchain supports transparent verification of student certificates.	3.49	0.76	High Extent
23.	The use of blockchain prevents academic fraud and manipulation of grades.	3.61	0.68	High Extent
24.	Blockchain technology promotes trust and accountability in academic transactions.	3.45	0.79	High Extent
25.	Blockchain supports decentralized learning systems and content ownership.	3.32	0.87	High Extent
26.	Integration of blockchain enhances administrative efficiency in record keeping.	3.37	0.81	High Extent
27.	Blockchain improves traceability of research publications and intellectual property.	3.41	0.84	High Extent
28.	Blockchain applications enhance cross-institutional data sharing securely.	3.46	0.77	High Extent
29.	The adoption of blockchain strengthens institutional credibility and reputation.	3.28	0.92	High Extent
30.	Blockchain technology contributes to innovation in Business Education management.	3.52	0.74	High Extent
	Grand Mean	**3.45**		**High Extent**

Source: Author's field survey, 2025.

Table 3 reveals that respondents agreed to a high extent that blockchain technology enhances the quality of Business Education in Delta State, with a grand mean of 3.45. The mean ratings ranged between 3.28 and 3.61, indicating consistent positive responses. The low standard deviations (0.68–0.92) show that opinions were generally stable. These results imply that blockchain is viewed as an emerging yet credible innovation for improving transparency, trust, and record management in Business Education. Respondents recognized its role in ensuring data integrity, preventing certificate fraud, and enhancing the overall reputation of educational institutions. The findings underscore the need for policymakers in Delta State to explore blockchain-based academic record systems and institutional management solutions to strengthen credibility and efficiency in Business Education.

Hypotheses

The hypotheses were tested using the t-test statistical method at a 0.05 level of significance.

Hypothesis One

H_{01}: There is no significant difference in the mean ratings of male and female Business Education lecturers on the extent to which the integration of social media technologies enhances the quality of Business Education in the era of disruption in Delta State.

Table 4: *t-test Analysis of Male and Female Business Education Lecturers on the Extent to which social media Technologies Enhance the Quality of Business Education*.

Gender	n	Mean ($\bar{x}$)	SD	df	t-cal	t-crit (0.05)	Decision
Male	52	3.46	0.71	109	0.82	1.96	Not Significant
Female	59	3.51	0.69				

Source: Author's field survey, 2025.

Table 4 shows that male Business Education lecturers had a mean rating of 3.46 with a standard deviation of 0.71, while their female counterparts had a mean rating of 3.51 with a standard deviation of 0.69. The calculated *t*-value of 0.82 is less than the critical *t*-value of 1.96 at 0.05 level of significance and 109 degrees of freedom. Hence, the null hypothesis was accepted, indicating that there was no significant difference between the mean ratings of male and female lecturers on the extent to which social media technologies enhance the quality of Business Education. This result implies that both male and female lecturers hold similar views regarding the importance of social media tools such as Facebook, YouTube, and WhatsApp in improving collaboration, content delivery, and student engagement. The outcome further suggests that gender does not influence the perception of social media's educational value, possibly because both genders have comparable access to and proficiency in using digital platforms within tertiary institutions.

Hypothesis Two

H_{02}: There is no significant difference in the mean ratings of male and female Business Education lecturers on the extent to which the integration of artificial intelligence technologies enhances the quality of Business Education in the era of disruption in Delta State.

Table 5: *t-test Analysis of Male and Female Business Education Lecturers on the Extent to which Artificial Intelligence Technologies Enhance the Quality of Business Education.*

Gender	n	Mean ($\bar{x}$)	SD	df	t-cal	t-crit (0.05)	Decision
Male	52	3.44	0.76	109	1.23	1.96	Not Significant
Female	59	3.53	0.72				

Source: Author's field survey, 2025.

The result in Table 5 reveals that male lecturers had a mean rating of 3.44 with a standard deviation of 0.76, while female lecturers had a mean rating of 3.53 with a standard deviation

of 0.72. The calculated *t*-value of 1.23 is lower than the critical *t*-value of 1.96, leading to the acceptance of the null hypothesis. This implies that there is no statistically significant difference between the opinions of male and female lecturers regarding the integration of artificial intelligence technologies in Business Education. The findings indicate a general consensus across gender lines that AI tools such as automated grading systems, plagiarism detectors, and adaptive learning technologies enhance instructional efficiency and improve student outcomes. The minimal gender difference may be attributed to the increasing awareness and equal technological exposure of both male and female lecturers, as most academic activities now incorporate AI-based applications for teaching, learning, and assessment.

Hypothesis Three

H_{03}: There is no significant difference in the mean ratings of male and female Business Education lecturers on the extent to which the integration of blockchain technologies enhances the quality of Business Education in the era of disruption in Delta State.

Table 6: *t-test Analysis of Male and Female Business Education Lecturers on the Extent to which Blockchain Technologies Enhance the Quality of Business Education.*

Gender	N	Mean ($\bar{x}$)	SD	df	t-cal	t-crit (0.05)	Decision
Male	52	3.42	0.80	109	0.95	1.96	Not Significant
Female	59	3.48	0.77				

Source: Author's field survey, 2025.

Table 6 reveals that male lecturers had a mean score of 3.42 and a standard deviation of 0.80, while female lecturers recorded a mean of 3.48 and a standard deviation of 0.77. The computed *t*-value of 0.95 is less than the critical *t*-value of 1.96 at 0.05 level of significance, thereby leading to the acceptance of the null hypothesis. This indicates that there was no significant difference in the opinions of male and female lecturers regarding the integration of blockchain technologies in Business Education. The implication of this result is that both male and female lecturers share similar perspectives on blockchain's capacity to improve academic record security, enhance transparency in grading and certification, and promote institutional trust. The absence of gender disparity suggests that awareness of blockchain's potential benefits is widely distributed among lecturers. However, the generally moderate mean scores imply that blockchain application in Business Education remains in its early stage and requires policy-driven adoption to optimize its transformative potential in Nigerian tertiary institutions.

Discussion of Findings

Findings revealed that the integration of social media technologies such as WhatsApp, Facebook, YouTube, and LinkedIn greatly enhanced the quality of Business Education in

the era of disruption in Delta State. Respondents agreed that these platforms have improved communication, fostered collaboration, and expanded access to instructional materials. This finding implies that social media now serves as a central pedagogical tool in Business Education, providing flexible, interactive, and student-centered learning environments. It further suggests that both lecturers and students use these platforms to facilitate blended learning, information sharing, and research support. This outcome is in agreement with Chen and Bryer (2022) that the integration of social media enhances learning engagement and provides opportunities for peer-to-peer knowledge construction. Similarly, Okoro (2023) affirmed that social media platforms serve as innovative extensions of the classroom, fostering continuous learning even beyond school hours. The finding underscores that Business Education lecturers in Delta State have developed adaptive competencies in digital pedagogy, effectively leveraging social media to maintain academic continuity and quality in an era marked by technological disruptions.

The study found that artificial intelligence (AI) technologies significantly enhanced the quality of Business Education in Delta State. Respondents agreed that AI-driven tools such as ChatGPT, automated grading systems, plagiarism detection software, and intelligent tutoring systems have improved curriculum delivery, academic productivity, and learner assessment. This finding indicates that AI has redefined the instructional landscape by facilitating personalized learning, reducing manual workload, and promoting data-driven decision-making in teaching and learning. It aligns with Gera and Chadha (2021), who emphasized that the integration of AI tools enhances critical thinking, creativity, and problem-solving among students, while also supporting lecturers in instructional design. Similarly, Lynch (2022) observed that AI helps in automating administrative tasks and generating analytics that enhance academic planning and evaluation. The finding reflects that Business Education lecturers in Delta State have begun embracing AI as a transformative educational resource, improving the depth, speed, and quality of instruction in response to the challenges posed by technological disruptions in education.

Findings revealed that the integration of blockchain technologies enhanced the quality of Business Education to a moderate extent. Respondents agreed that blockchain offers significant potential for academic record management, digital certification, and institutional transparency but observed that its implementation remains limited due to infrastructural and policy challenges. This suggests that although awareness of blockchain's educational potential exists among Business Education lecturers, its practical adoption is still constrained by inadequate resources and institutional readiness. The result aligns with Bhaskar, Tiwari and Joshi (2023), who maintained that blockchain integration in education can revolutionize academic data security, reduce fraud, and ensure authenticity of academic records. Similarly, Alsobhi, Alakhtar and Ubaid (2023) reported that blockchain adoption in Nigerian education is still in its infancy, requiring coordinated investments in technology and human capacity development. The finding therefore highlights that while blockchain is recognized as a future enabler of educational innovation, deliberate policies

and training programs are needed to accelerate its use in improving Business Education management and quality assurance in Delta State.

Conclusion

The study concluded that the integration of emerging technologies is crucial for improving the quality and relevance of Business Education in Delta State amid the ongoing digital disruption. Findings revealed that technologies such as social media platforms and artificial intelligence have significantly transformed teaching delivery, learner engagement, and administrative efficiency. However, challenges such as inadequate infrastructure, low digital competence among educators, and minimal adoption of advanced innovations like blockchain remain persistent barriers. The study established that effective integration of these technologies can bridge pedagogical gaps, promote innovation-driven learning, and align Business Education with the global shift toward digital economies. Therefore, strategic investment in technological infrastructure, sustained digital training for educators, and policy reinforcement are imperative to ensure that Business Education in Delta State evolves as a dynamic and competitive discipline capable of producing graduates equipped for the demands of the 21st-century workforce.

Recommendations

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

1. Institutions should formally integrate social media platforms such as LinkedIn and YouTube into instructional activities to promote collaboration, professional engagement, and digital competence among students and lecturers.
2. Tertiary institutions should adopt AI-driven tools and include AI literacy in the Business Education curriculum to strengthen students' analytical and problem-solving abilities.
3. Institutions should explore blockchain applications for secure academic record management and certificate verification to strengthen institutional trust and integrity.

Limitations of the Study

Despite the rigorous methodology employed, this study has some limitations that should be considered when interpreting the findings. First, the study was conducted solely among lecturers of Business Education in Delta State, which may limit the generalizability of the results to other regions or educational disciplines. Second, the sample size, though the entire population was surveyed, yielded 111 valid responses, representing 71.6% of the population; non-response may have introduced some bias. Third, the study relied on self-reported data through questionnaires, which may be influenced by social desirability or subjective judgment. Finally, while the study focused on selected emerging technologies, it did not explore all possible technological tools or platforms, which may affect the

comprehensiveness of the findings. These limitations notwithstanding, the study provides valuable insights into the integration of emerging technologies in Business Education and offers a foundation for future research in similar contexts.

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