



ADVANCING BUSINESS EDUCATION THROUGH THE INTEGRATION OF ARTIFICIAL INTELLIGENCE IN KOGI STATE

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Abstract

This paper focuses on advancing business education through the integration of Artificial Intelligence (AI) in Kogi State as a means of fostering innovation, improving teaching and learning outcomes, and aligning the programme with the needs of the modern place. Two purposes of the study, two research questions and two hypotheses were formulated to guide the study. The study was based on the Roger's theory of diffusion of innovation. A 4-point scale questionnaire titled: Questionnaire on the Advancing Business Education through the Integration of Artificial Intelligence (QABEIAI) was used for data collection. The instrument was tested for reliability using Cronbach Alpha and it yielded a reliability coefficient of 0.8. Two institutions in Kogi State were purposively sampled for the study which are; the Federal University Lokoja and Kogi State Polytechnic, Lokoja. The population comprised of the entire 16 business educators in the Departments of Business Education and of Office Technology and Management respectively. Mean and standard deviation were used to analyse the data and find answers to the research questions, while t-test was used to test the research hypotheses. The results of the research questions revealed amongst others the opportunities and challenges of integrating AI in business education curriculum; AI integration can personalize learning experiences in business education, AI technologies can enhance the accuracy of student assessments in business education while Lack of adequate infrastructure is a significant challenge to integrating AI in business education more so, AI's potential to replace traditional teaching roles creates uncertainty among educators. On the other hand, the hypotheses suggested that there is no significant difference in the mean ratings of business educators in polytechnic and university on the opportunities of integrating AI into business education curricula. Based on the findings, it was recommended amongst othersthat the Tertiary Education Trust Fund (TETFUND) should consider addressing the issue of technological infrastructure, including reliable internet access, modern computers, and AI software, in educational institutions and that Institutions should provide professional development programmes for educators focused on the effective use of AI in teaching and curriculum development.

(Keywords: Integrating Artificial Intelligence Business Education)

Introduction

The integration of Artificial Intelligence (AI) in various sectors has become a transformative force, fundamentally altering traditional approaches and practices. In recent years, Artificial Intelligence (AI) has emerged as both a revolutionary and transformative force in education, offering new possibilities for enhancing teaching, learning and research experiences, improving educational outcomes, and preparing students for the demands of a digitally-driven economy (Alam, 2021). Coursera (2024) defines Artificial intelligence as the theory and development of computer systems capable of performing tasks that historically required human intelligence, such as recognizing speech, making decisions and identifying patterns.



Business education is a programme of study that specializes in the acquisition and development of skills and competencies, attitudes, and attributes which are necessary for efficiency (Ojechi, 2015). It is a programme that plays a pivotal role in preparing individuals for the challenges and opportunities of the modern business world. In Nigeria, the business education curriculum has traditionally focused on providing students with knowledge in areas such as accounting, marketing, office technology and entrepreneurship. Effective business education must equip graduates with the skills and knowledge necessary to navigate a complex, technology-driven environment. However, the rapid pace of technological change and the increasing importance of digital literacy in the global economy have highlighted the need for a more innovative and forward-looking approach to curriculum development. Leveraging AI in business education could help address some of the systemic challenges in the education sector. For instance, AI-powered tools can enhance access to quality education by providing personalized learning experiences to students in remote or underserved areas. Additionally, AI can be used to develop more efficient educational management systems, improving resource allocation and reducing administrative burdens on educators. The rapid advancements in Artificial Intelligence (AI) are reshaping various programmes in education, creating a critical need for business education to adapt to these technological changes. However, many current business education curricula, particularly in developing countries, remain anchored in traditional methodologies that fail to incorporate AI-driven tools and knowledge. This disconnect between educational content and the skills demanded by the modern business environment would leave graduates underprepared for the challenges and opportunities presented by AI in the workplace.

In Nigeria, the gap is particularly pronounced as the integration of AI in education is still in its nascent stages. Inspite of this, business education program is expected to take the lead on this technology driven terrain. The lack of a strategic framework for embedding AI into business education curricula exacerbates the issue, resulting in a misalignment between educational outcomes and industry needs. Consequently, business graduates in Nigeria may struggle to compete in the increasingly AI-driven global economy, limiting their employability and the country's overall economic growth. This study highlights the potential opportunities and challenges inherent in integrating AI in business education and proffers a strategic framework that should guide the process.

In Nigeria, the integration of AI into business education is both a challenge and an opportunity. However, Nigeria also presents significant opportunities for innovation in business education. The country's large and youthful population, coupled with a growing interest in entrepreneurship and digital innovation, creates a fertile ground for the development and implementation of AI-driven educational initiatives.

In business education, AI can enhance the learning process by providing students with interactive simulations, virtual business environments, and intelligent tutoring systems that adapt to individual learning styles and paces (Seldon & Abidoye, 2018). Integrating AI into business education curricula involves developing new content, pedagogical approaches, and assessment methods that reflect AI's impact on the business environment. Research indicates that AI can transform curriculum design by incorporating contemporary skills and knowledge areas (Murray, 2019). The role of Artificial Intelligence (AI) in business education in advanced countries has expanded rapidly, offering new opportunities for personalized learning, efficient resource management, and enhanced decision-making. AI technologies, such as machine learning, natural language processing, and predictive analytics, are being used to create adaptive learning environments that cater to individual student needs, predict learning outcomes, and provide real-time feedback (Kaplan & Haenlein, 2020; Rane, Chouudhany & Rane, 2023).



AI tools such as intelligent tutoring systems, automated grading, and adaptive learning platforms have shown promise in improving learning outcomes by tailoring educational content to individual student needs (Luckin, Holmes, Griffiths, & Forcier, 2016). These technologies can provide real-time feedback, enabling students to learn at their own pace and allowing educators to focus on more complex instructional tasks.

Moreover, AI can help bridge the gap between education and industry by providing students with up-to-date knowledge and skills relevant to the current job market (West, 2018). For instance, AI can be used to analyze labor market trends and adjust curricula accordingly, ensuring that students are learning the most relevant and in-demand skills.

Lastly, AI introduces virtual tutors, which provide students with instant feedback and support. These AI-powered systems can adapt to individual learning needs, offering targeted assistance to help students to master complex concepts. Virtual tutors can analyze student responses and provide real-time feedback, ensuring that learners receive the support they need when they need it. This constant availability of personalized support helps students overcome challenges more effectively, fostering a more productive learning experience (OpenLearn, 2024). Despite the potential benefits of Integrating AI into business education curricula in Nigeria, there are a number of potential challenges. Generally, the country's education system faces numerous challenges, including inadequate infrastructure, limited access to digital resources, and a shortage of qualified educators. These challenges would no doubt hinder the adoption of AI and other advanced technologies in business education. One of the primary obstacles is the lack of infrastructure and resources. Many educational institutions in Nigeria struggle with basic issues such as inadequate funding, poor internet connectivity, and insufficient access to modern technology (Okebukola, 2015). These challenges make it difficult to implement AI-driven tools and platforms effectively.

Another significant challenge is the lack of trained educators who can effectively integrate AI into their teaching practices (Adedoyin & Soykan, 2020). Educators need to be not only familiar with AI technologies but also capable of designing and delivering AI-enhanced curricula. However, the current professional development opportunities for educators in Nigeria are limited, with few programs focusing on the use of AI in education (Omodan, 2020). Additionally, there are concerns about the ethical implications of AI in education, such as data privacy, bias in AI algorithms, and the potential for AI to exacerbate existing inequalities (Williamson & Eynon, 2020). These concerns need to be carefully considered when developing and implementing AI-driven educational initiatives. More so, potential barrier to effectively utilizing AI tools in business education is the lack of technical expertise among educators. Many teachers may struggle to adapt AI tools to their specific needs due to unfamiliarity with the technology. For instance, crafting effective prompts for generative AI tools often requires a deeper understanding of how to formulate questions in a way that elicits the desired responses. This process can necessitate knowledge of AI's underlying mechanisms, which may be outside the skill set of many educators. As a result, the potential benefits of AI could be underutilized without adequate support and training.

Cost is another challenge that educational institutions face when implementing AI solutions. The financial burden can be considerable, especially for institutions with limited budgets or funding sources. Although some AI providers have introduced credit systems to help manage usage and distribute costs among team members, the expenses associated with AI adoption remain a significant hurdle for many schools and universities. These financial constraints may prevent some institutions from fully embracing AI technology, limiting access to its potential benefits for both educators and students. The adoption of AI also raises a number



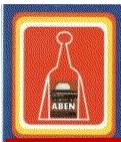
ofethical concerns that must be carefully considered. Privacy and data security are major issues, as AI often requires the collection and analysis of sensitive student information. Ensuring that this data is protected and used responsibly is critical to maintaining trust in AI systems. Additionally, the use of AI in education raises questions about academic integrity, as tools like generative AI can facilitate plagiarism or academic dishonesty. Another major challenge is the lack of expertise among educators. Many instructors may not have the necessary skills or knowledge to effectively teach AI-related content (Hsu, 2018). This gap necessitates professional development and training programs to equip educators with the required competencies (Wang, Wang, & Liu, 2019).

Finally, there is the challenge of fostering effective human-AI collaboration. The introduction of AI in business education may face resistance from educators who fear that AI could replace their roles, leading to job displacement. However, AI should not be viewed as a replacement for human creativity and expertise. Educators and learners bring unique perspectives, critical thinking, and innovative approaches that AI cannot replicate. AI should be seen as a tool to augment and enhance human capabilities, allowing educators to focus on higher-order teaching tasks while AI handles repetitive or administrative functions. By fostering a collaborative relationship between humans and AI, the educational process can be enriched rather than diminished (Nguyen, 2023).Given the potential challenges and opportunities of integrating AI into business education, there is a need for a strategic framework that should guide this process. Such a framework should address the specific needs and constraints of the Nigerian educational context while ensuring that the integration of AI enhances the quality and relevance of business education (Onyema, 2020).

As artificial intelligence (AI) becomes increasingly integrated into modern society, its role in transforming education is becoming evident. However, the successful integration of AI into business education programmesrequire careful attention to several key factors. These include the development of technological infrastructure, professional training for educators, the design of AI-enhanced curricula, addressing ethical considerations, and engaging stakeholders in the process. Each of these components plays a vital role in ensuring that AI is effectively and ethically used to improve education and better prepare students for the demands of the modern business environment.

One of the fundamental challenges facing educational institutions in the implementation of AI technologies is the lack of adequate technological infrastructure. For AI to be utilized effectively, institutions must have access to reliable internet, modern computing equipment, and the appropriate software tools that support AI applications. Many educational institutions, particularly in developing regions, face infrastructure gaps that hinder their ability to fully leverage AI.

The need for high-speed internet is essential, as many AI tools rely on cloud-based platforms that require constant connectivity. Additionally, outdated computer systems may not have the processing power necessary to run AI software efficiently. Investments in modern hardware and software are critical to ensuring that both educators and students can access and use AI technology to enhance learning.By addressing these ethical issues, institutions can create a framework that fosters trust in AI technologies while ensuring that their use in education aligns with broader societal values of fairness, equity, and inclusivity.Successfully integrating AI into business education requires the collaboration and input of all relevant stakeholders. These stakeholders include educators, students, policymakers, industry representatives, and technology developers. Engaging these groups in the development and implementation of AI-driven curricula ensures that the educational system is responsive to the needs of both learners and the broader economy.



Educators, as the primary implementers of AI technologies, must be involved in the design and decision-making process to ensure that the tools developed are practical and beneficial for teaching and learning. Students, as the end users, should also have a voice in how AI is used, as their feedback can help tailor AI tools to better meet their learning needs. Rogers Diffusion of Innovations Theory 2003 is relevant in the integration of AI in business education curriculum. Medlin (2001) asserted that Rogers' Diffusion of Innovations Theory is the most appropriate for investigating the integration of technology in higher education and educational environments. Rogers (2003) usually used the word "technology" and "innovation" as synonyms. He opined that, integration result from a decision of full use of an innovation as the best course of action available and rejection is a decision not to integrate a technology. According to Rogers (2003), uncertainty is an important obstacle to the adoption and integration of innovations. An innovation's consequences may create uncertainty. To reduce the uncertainty of adopting and integrating the innovation, individuals should be informed about its advantages (opportunities) and disadvantages (challenges) to make them aware of all its consequences.

The theory goes further to highlight uncertainty as an important obstacle to the adoption of an innovation, and suggests that for uncertainty to be reduced, individuals should be well informed about its advantages and disadvantages to make them aware of all its consequences. On the whole, the Rogers theory of diffusion of innovation helps to understand the desires and main behavior in the uptake and integration of technology at the higher institution.

Purpose of the Study

The following research questions guided the study

1. To identify the opportunities of integrating AI into business education curricula.
2. To identify the challenges of integrating AI into business education curricula.

Research Questions

1. What are the opportunities of integrating AI into business education curricula?
2. What are the challenges of integrating AI into business education curricula?

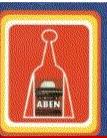
Hypotheses

Based on the purposes of the study and the research questions the following hypotheses were formulated and tested at 0.05 level of significance

1. There is no significant difference in the mean ratings of business educators in polytechnic and university on the opportunities of integrating AI into business education curricula
2. There is no significant difference in the mean ratings of business educators in polytechnic and university on the challenges of integrating AI into business education curricula

Methodology

Descriptive research design was adopted for the study. Two institutions in Kogi State were purposively sampled for the study and they are; the Federal University Lokoja (FUL) and Kogi State Polytechnic (KSP), Lokoja. The population comprised the entire 16 business educators in the Departments of Business Education and Office Technology and Management respectively. No sampling was carried out because the researcher found the population of the study to be manageable. The instrument of data collection was a structured questionnaire titled: Questionnaire on the Advancing Business Education through the Integration of Artificial Intelligence (QABEI). The instrument was structured on a four-point rating scale where 1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Agree (A), and 4 = Strongly Agree (SA). The instrument has two sections: Section A focused on the bio-data questions while Section B focused on the research questions.



The instrument was validated by two experts in business education and one in measurement and evaluation from the Federal University Lokoja. The application of Cronbach Alpha reliability test on the returned data yielded coefficient values of 0.81 and 0.78 for clusters B1 and B2 respectively with an overall reliability co-efficient value of 0.8 for the two clusters. The researcher administered 16 copies of questionnaire to the respondents and all were completed and returned. Data collected from respondents were analyzed using mean, standard deviation and t-test. The mean value was used to answer the research question while the standard deviation was used to ascertain the homogeneity or otherwise of the respondents' ratings. In analyzing the mean, any item with mean score between 2.50 and 4.00 was deemed to be agreed while any item with mean score between 2.49 and 1.00 was deemed disagreed. For the hypotheses, t-test was used to test all the null hypotheses at 0.05 level of significance. Where the calculated t-value was less than the critical value of t, it meant that the variable had no significance. Where the calculated t-value was equal to or greater than the critical t-value, it meant that the variable had a significant effect on the respondents' mean rating and the hypotheses was rejected.

Results

Research Question 1

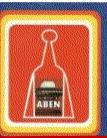
What are the opportunities of integrating AI into business education curricula?

Table 1: mean ratings of business educators on the opportunities of integrating AI into Business Education curricula (N=16)

S/NO	ITEMS	X	SD	REMARKS
1	AI integration can personalize learning experiences in business education	3.86	0.87	Agree
2	AI can help in identifying individual student learning needs in business education	2.52	0.76	Agree
3	AI can facilitate the development of critical thinking skills in business education students	3.68	0.72	Agree
4	AI technologies can enhance the accuracy of student assessments in business education	3.84	0.81	Agree
5	The use of AI in business education can lead to more innovative teaching methods	3.88	0.76	Agree
6	AI can support the development of more relevant and up-to-date business education curricula	3.64	0.84	Agree
7	AI can contribute to more effective online learning experiences in business education	3.68	0.77	Agree
8	AI integration can help to better prepare business students for the workforce	3.88	0.80	Agree
9	AI can enable more flexible and adaptive learning pathways in business education	2.58	0.76	Agree
10	AI can assist in the continuous improvement of business education programs	3.87	0.72	Agree
11	AI can provide affordable access to high-quality educational content	3.76	0.74	Agree

Grand Mean **3.56** **Agree**

The result of research question 1 presented in table 1 showed that the grand mean of 3.56 was greater than the midpoint value of 2.50. This suggest that respondents agreed to the opportunities of integrating AI into Business Education curricula.



Research Question 2

What are the challenges of integrating AI into Business Education curricula?

Table 2: mean ratings of business educators on the challenges of integrating AI into Business Education curricula (N=16)

S/NO	ITEMS	X	SD	REMARKS
1	Lack of adequate infrastructure is a significant challenge to integrating AI in business education	3.48	0.74	Agree
2	There is a shortage of skilled educators proficient in AI within business education	3.21	0.72	Agree
3	Resistance to change among educators poses a challenge to AI integration in business education	3.45	0.81	Agree
4	AI's potential to replace traditional teaching roles creates uncertainty among educators	3.02	0.70	Agree
5	Ethical concerns regarding AI use are a challenge in business education	3.78	0.82	Agree
6	Students' lack of familiarity with AI technology is a barrier to its successful integration in business education	3.08	0.82	Agree
7	AI integration in business education requires significant curriculum redesign, which is challenging	3.22	0.79	Agree
8	The lack of relevant AI-related educational resources is a challenge for business education	3.54	0.80	Agree
9	The need for continuous AI-related training for educators is a challenge	3.35	0.77	Agree

Grand Mean

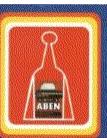
3.35 Agree

The result of research question 2 presented in table 2 showed that the grand mean of 3.35 was greater than the midpoint value of 2.50. This suggest that respondents agreed to the challenges of integrating AI into business education curricula.

Table 3: t-test analysis of respondents mean ratings of business educators on the opportunities of integrating AI into business education curricula.

Variable	N	SD	df	α	t-cal.	t-crit.	Decision	
FUL Bus. Educ.	6	3.01	0.76					
KSP Bus. Educ.	10	2.98	0.86	14	0.05	0.21	1.96	Not Significant

Data in Table 3 shows that the calculated t-value of 0.21 at 14 degree of freedom at 0.05 level of significance is less than the critical value of 1.96. This indicates that there is no significant difference in the mean rating of Business Educators in the Polytechnic and Universities on the opportunities of integrating AI into business education curricula, hence the hypotheses is accepted.

**Table 4:** t-test analysis of respondents mean ratings of business educators on the challenges of integrating AI into business education curricula

Variable	N	SD	Df	A	t-cal.	t-crit.	Decision		
FUL Bus. Educ.	6	3.00	0.76		14	0.05	0.43	1.96	Not Significant
KSP Bus. Educ.	10	3.18	0.79						

Data in Table 4 shows that the calculated t-value of 0.43 at 14 degree of freedom at 0.05 level of significance is less than the critical value of 1.96. This implies that there is no significant difference in the mean ratings of Business Educators in the Polytechnic and Universities on the challenges of integrating AI into business education curricula, hence the hypotheses is accepted.

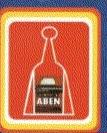
Discussion of Findings

The findings on Table 1; research question 1 revealed that the integration of artificial intelligence (AI) in business education can provide opportunities for personalize learning experiences, help in identifying individual student learning needs, facilitate the development of critical thinking skills, enhance the accuracy of student assessments, lead to more innovative teaching methods. The table also showed that integrating AI into the business education curriculum can support the development of more relevant and up-to-date business education curricula, contribute to more effective online learning experiences, help to better prepare business students for the workplace, enable more flexible and adaptive learning pathways, assist in the continuous improvement and provide affordable access to high-quality educational content.

These finding are in agreement with the views of Seldon and Abidoye (2018) who held that AI can significantly enhance the learning experience by providing personalized learning paths for students, automating routine tasks, and enabling more interactive and engaging educational content. Also the study is in agreement with Luckin, Holmes, Griffiths, & Forcier, (2016) who stated that the AI tools such as intelligent tutoring systems, automated grading, and adaptive learning platforms have shown the possibility in improving learning outcomes by tailoring educational contents to individual student needs. More so, Murray (2019) affirmed that AI can transform curriculum design by incorporating contemporary skills and knowledge areas. In line with the findings, West (2018) posited that AI can help bridge the gap between education and industry by providing students with up-to-date knowledge and skills relevant to the current job market.

Findings on Table 2;research question 2 showed that the following constitute challenges to the integration of AI in business education; Lack of adequate infrastructure, shortage of skilled educators proficient in AI within business education, resistance to change among educators fear of AI's potential to replace traditional teaching roles, ethical concerns regarding AI use, students' lack of familiarity with AI, requirement of significant curriculum redesign and the lack of relevant AI-related educational resources.

These findings are in consonance with Okebukola (2015) who revealed that many educational institutions in Nigeria struggle with basic issues such as inadequate funding, poor internet connectivity, and insufficient access to modern technology. Also Adedoyin &Soykan, (2020)



disclosed that another significant challenge is the lack of trained educators who can effectively integrate AI into their teaching practices.

Further findings reveal no significant difference in the mean ratings of business educators in the Polytechnic and University on the opportunities of integrating AI into business education curricula, hence the hypotheses is accepted. This shows that business educators in both Polytechnic and University are in agreement that the integration of AI in business education offers all the opportunities presented in Table 1. Further findings reveal no significant difference in the mean ratings of business educators in the Polytechnic and University on the challenges of integrating AI into business education curricula, hence the hypotheses is accepted. This shows that business educators in both Polytechnic and University are in agreement that the integration of AI in business education has all the challenges presented in Table 2.

Conclusion

Based on the findings of the study, the researcher concludes that the integration of AI into business education in Nigeria presents both challenges and opportunities. While there are significant obstacles to overcome, including inadequate infrastructure, lack of trained educators, and ethical concerns, the potential benefits of AI in enhancing the quality and relevance of business education are substantial. A strategic framework that addresses these challenges and leverages the strengths of AI can help transform business education in Nigeria, equipping students with the skills and knowledge they need to succeed in a rapidly evolving global economy.

Recommendations

The following recommendations are made based on the findings of the study:

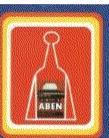
1. That the Tertiary Education Trust Fund (TETFUND) should consider addressing the issue of technological infrastructure, including reliable internet access, modern computers, and AI software, in educational institutions.
2. That Institutions should provide professional development programs for educators focused on the effective use of AI in teaching and curriculum development.
3. That the Nigerian Universities Commission (NUC), National Board for Technical Education (NBTE) and the National Commission for Colleges of Education (NCCE) in collaboration with the Association of Business Education (ABEN) should develop AI-enhanced curricula that are aligned with industry needs and provide students with the skills required in the modern business environment.
4. That all the concerned stakeholders should come together to address the issues surrounding ethical considerations by establishing guidelines to ensure the ethical use of AI in business education, including considerations of data privacy, bias, and accessibility.

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