



IMPACT OF ARTIFICIAL INTELLIGENCE ON BUSINESS EDUCATION CURRICULUM DEVELOPMENT AND MANAGEMENT IN UNIVERSITIES IN NORTH EASTERN, NIGERIA

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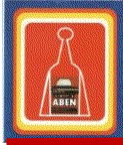
Abstract

This study determined the impact of Artificial Intelligence (AI) on Business Education curriculum development and management in universities within North-eastern, Nigeria. The study was conducted within North eastern Nigeria. The study employed a cross-sectional research design, the population of the study comprised 149 business educators. The study employed the use of census sampling technique; hence, total population was used. Structured questionnaire was used as the instrument for data collection which was validated by experts. The reliability of the instrument obtained was 0.82. Data was analyzed using simple linear regression. The findings revealed that AI personalized learning, improved efficiency and enhanced engagement influences Business education curriculum development and management in universities. The study concludes that AI can improve educational outcomes when it is integrated, implemented and managed with efficiency, transparency and ethical considerations into the business education curriculum. It therefore, recommended that Business educators should ensure maximization of AI personalized learning and minimize its drawbacks through the development of AI literacy, further harness AI improved efficiency and potential on fairness, trust, and integrity to enhance curriculum development and improve universities students' performance. Also, Business educators should enhance engagement on AI powered interactive content and simulations, and ensure it is designed to promote equity, inclusivity and accountability for AI-driven curriculum development and management in the university settings.

Keywords: Impact, Artificial Intelligence, Curriculum Development, Business Education

Introduction

The integration of artificial intelligence (AI) into business education has emerged as a transformative force, fundamentally reshaping how curricula are developed, managed, and delivered. AI technologies, such as machine learning, natural language processing, and data analytics, can personalize learning experiences, smoothen administrative work, and bring efficiency into the decision-making processes of institutions of learning (Oluyemisi, 2023). With the development of AI, its application in Business Education was no longer an option; it became a requirement for tertiary institutions interested in remaining competitive in an increasing digital world.



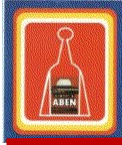
In curriculum development, AI analyzes educational needs and identifies gaps in the existing ones, aligning content with the trends of the industry and job market needs (Cantú-Ortiz, et al., 2020). This way, it ensures the relevance and responsiveness of the curricula of business education toward the dynamism of the global economy. AI-driven insights can inform making new courses or reviewing existing ones in the curriculum in order to make it more adaptive and forward-thinking. (Pedro, et al., 2019). It can also be involved in content creation and recommendation with suggestions for materials and resources based on explicit learning outcomes. The result is a better and quality curriculum that caters to the diversity of multiple student populations.

AI personalized learning in curriculum development involves tailoring the learning experience to individual students' needs, abilities, and learning styles. The following are some ways in which AI can support personalized learning in curriculum development; content recommendation, intelligent tutor system, emotional intelligent and support and continuous improvement among others. Using AI-powered tools will create personalized learning pathways so the curriculum content can be tailored according to a student's profile, promoting a student-centered approach to education (Abulibdeh, et al., 2024). According to Fullan (2016), improved efficiency toward business education curriculum development involve business educators focuses on high quality curriculum design, implementation, and continuous improvement, ultimately benefiting business educators and students in many ways among which are, efficient curriculum development processes that ensure consistency in curriculum development, reduce costs associated with the curriculum development and implementation and facilitate collaboration among business educators and other stakeholders.

Additionally, by involving students, teachers and stakeholders in the business education curriculum development process, engagement is enhanced, leading to more effective, relevant, and student-centered curriculum (Hargreaves & Shirley, 2009). However, at the speed by which AI is being infused into corporate and social sectors, it also opens a host of ethical concerns that have to be taken care of if people are going to have the responsible and fair use of AI technologies in curriculum development and management (Aithal & Maiya, 2023). The potential effect of AI on education generally and business education curriculum development and management are huge. On one hand, it can bring an overall improvement in the learning experience through the analysis of large amounts of data and provide recommendations that are tailored. On the other, there are also paramount ethical concerns that need to be heeded.

This naturally flows into a challenge of how tertiary institutions offering business education can adequately attend to these ethical considerations toward curriculum development, as according to Borenstein, and Howard (2021), there is a sparse problem of comprehensive frameworks guiding the ethical use of AI in educational settings more especially, curriculum development. Hence, by balancing benefits and challenges especially in the area of ethical considerations by business educators, there is the need to ascertain the impact of artificial intelligence on business education curriculum development and management among business educators in universities within North eastern, Nigeria.

The study was underpinned by the Diffusion of Innovation Theory developed by Everett Rogers (1962). The theory explains how new ideas, new technology such as the AI technologies, products, or practices spread and are adopted by individuals and groups. The theory is based on the following components; innovation, diffusion, adapter and adoption process, communication; that is how the information can be spread, and then, influence. The theory therefore, is very much related to the current study because the objective was to find out the impact of AI personalize learning, efficiency and engagement on business education curriculum development. It also offers insight, concerning the integration of AI technologies for the development and management of a

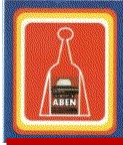


business education curriculum notably, to ensure that such technologies do enhance, not diminish, human-centric aspects of curriculum development and management within business education. Efficiency means effective and efficient use of resources that include time, energy, and capital resources to achieve the results desired. In any setup of an organization, efficiency would mean how best involve the input of labor, information, and other materials in the production of output concerning products, services, or information with no or minimal waste. (Zidane & Olsson, 2017). Arguably, Tariq et al., (2021) affirm that efficient firms can also cut costs hence gaining a competitive advantage. Efficiency improvements Since technology through automation and its furtherance in artificial intelligence have been huge enablers for efficiency-streamlining processes, cutting down the burdens of manual mode, and helping make optimal allocation of resources. Personalization is the process of making services, products, or the contents of given information suited to a particular individual's needs and preference. This creates more value for a specific experience, hence, gainful and rewarding to the receiver (Sunikka & Bragge, 2008). The attainment of personalized experiences is facilitated by data analytics, artificial intelligence, and machine learning technologies, which empower organizations to gain insights into the behaviors, preferences, and requirements of users at a detailed level (Kuleto, et al., 2021). Personalization of experiences enhances user satisfaction, but debate about privacy concerns and vulnerability regarding data exploitation also endures. Critics contend that the pursuit of greater personalization frequently exacts from the cost of largescale data collection, that is a contributing factor to enhancing concern regarding data security, and individual liberty (Grafanaki, 2016).

Engagement refers to the quantity of attention, activity, and emotional opinion a person holds regarding a product, service, or process. High levels of engagement are associated with positive outcomes, such as increased customer loyalty, better academic performance, and better adherence to treatment in patients. Research shows that highly engaged individuals exhibit long-lasting loyalty and more satisfaction (Hollebeek, 2011). student engagement is key to successful learning outcomes, and it has been found that interactive, engaging content helps students retain information better (Luan et al., 2020). Similarly, in marketing, engagement metrics such as click-through rates and social media interactions provide insights into how deeply customers are connected to a brand (Barreto & Ramalho, 2019).

One feature that makes the use of AI in education particularly unique is in the potential for the development of curricula tailor-made to individual students. Indeed, such a process requires personalization of content, pace, and mode to suit the uniqueness deriving from the students' learning style, preference, ability, and skill. AI-powered systems can analyze a large quantum of student data, including learning patterns, behavioral analytics, and even emotional cues to design curricula that would meet the requirements of each of their learning paths (Chen et al., 2020). AI-enabled platforms such as adaptive learning systems, can dynamically adjust the curriculum based on a student's performance to ensure that students receive the right level of challenge and support. For example, where a student is struggling with a particular concept, AI systems can adjust the curriculum to provide extra material, practice, or different explanation in order to achieve mastery (Pane et al., 2014). Such adaptive changes in the curriculum have shown positive influence on educational outcomes in terms of diverse educational needs of the learner (Kabudi, et al., 2021).

The question of artificial intelligence in personalization to develop curriculums, privacy, and equity. This could help in operationalizing AI systems, encompassing the area of questions within consent and security, which is in huge volumes of personal data. However, even then, it may be perpetuating inequalities that are already there unless the algorithms are well constructed to be sensitive to diversity in general (Tomás & Teixeira, 2020).



On curriculum development efficiency, the speed and how close to the target the educational content is developed, adapted, and delivered to the learners. Clearly, the AI technologies, found in machine learning technology, natural language processing, are believed to have played a very significant role in optimization to design the curriculum processes (Romiszowski, 2016). According to Zidane and Olsson (2017), artificial intelligence reduces the time needed to develop a curriculum by automating repetitive tasks, like revising syllabi, preparing lessons, and incorporating new sources of learning. AI in essence, assists to efficiently use resources in curriculum development. The automated systems will sift through the volumes of performance student data to recommend the most effective pedagogical approaches and teaching materials, which reduces the time that manual analysis by human educators takes (Romiszowski, 2016).

People find the reliance on AI for efficiency in education disconcerting because it hastens to eradicate original philosophy, which is an important approach in creating creativity and critical thinking in humankind. Some still call for more research to be conducted to strike a balance between efficiency realized by AI in such crucial settings and overshadowed human overview and creativity when formulating curricula (Aymen & Zakarya, 2024).

Engagement is also considered an important way of measurement in how a curriculum goes. Artificial Intelligence can engage students more due to the fact that it will be offering them much more interaction, adaptability, and immersive learning. This is when the intelligent tutoring systems are let loose. Its platforms allow adaptation to the student's responses to provide instant feedback that prompts deeper thinking, thus maintaining high engagement (Fisher & Baird, 2020). This may seem entirely cutting-edge, but part of the danger in the development of AI engagement-driven curriculum programs is that the process will center more on those engagement aspects that are novel rather than substantive. While AI-enhanced gamification can increase engagement in the short run, long-term effectiveness depends on their pedagogical implementation. Educators must ensure that AI-based engagement strategies align with learning objectives and prove to be functional rather than just a frolic of distraction (Bulathwela, et al., 2024).

The main aim of the study is to find out the impact of AI on business education curriculum development and management in universities within North-east, Nigeria. Specifically, the study sought to:

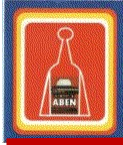
1. Determine the impact of AI personalized learning on business education curriculum development and management
2. Find out the impact of AI improved efficiency on business education curriculum development and management
3. Ascertain the impact of AI enhanced engagement on business education curriculum development and management

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

1. AI personalized learning has no significant impact on business education curriculum development and management
2. AI improved efficiency has no significant impact on business education curriculum development and management
3. AI enhanced engagement has no significant impact on business education curriculum development and management

Research Methodology

The study adopted cross-sectional survey design. The study was conducted in North eastern Nigeria with a target population of 149 business educators, this is informed by the fact that the university lecturers are responsible for the development and implementation of the curriculum. The



study employed the use of census sampling technique as suggested by Saunders, Lewis and Thornhill (2019). Specifically, the sample for the study comprised of the entire population of 149, this is because of their small number and manageable size. The instrument used for the collection of data was structured questionnaire which was validated by experts. The reliability coefficient of the instrument obtained was 0.82. Simple linear regression was used for data analysis using Statistical Package for Social Science (SPSS) version 23. In the test of the null hypotheses, if $p \geq 0.05$, the null hypothesis was accepted, and if $p \leq 0.05$, the null hypothesis was rejected.

Results

Null Hypothesis One

AI personalized learning has no significant impact on curriculum development and management in universities within North-east, Nigeria.

The statistical evidence documented in Table 1 revealed that the variable AI personalized learning had a standardized coefficient beta value of .743, $p = .000$. This indicated a significant impact of the variable in the study. The variable has a significant impact on business education curriculum development and management in universities within North-east, Nigeria. This result therefore, does not support the prediction of null hypothesis two.

Table 1: simple linear regression analysis on the impact of AI personalized learning on business education curriculum development and management in universities within North-east, Nigeria.

Variable	Standardized Coefficients Beta	t-value	p-value	Decision
AI Personalised Learning	.743	14.328	.000	Rejected

Source: field work (2024).

Null Hypothesis Two

AI improved efficiency has no significant impact on curriculum development and management in universities within North-east, Nigeria.

The statistical evidence documented in Table 2 revealed that the variable AI improved efficiency had a standardized coefficient beta value of .791, $p = .000$. This indicated a significant impact of the variable in the study. The variable has a significant impact on business education curriculum development and management in universities within North-east, Nigeria. This result therefore, does not support the prediction of null hypothesis two.

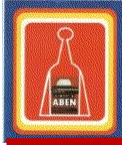
Table 2: simple linear regression analysis on the impact of AI improved efficiency on business education curriculum development and management in universities within North-east, Nigeria.

Variable	Standardized Coefficients Beta	t-value	p-value	Decision
AI Improved Efficiency	.791	16.732	.000	Rejected

Source: field work (2024).

Null Hypothesis Three

AI enhanced engagement has no significant impact on business education curriculum development and management in universities within North-east, Nigeria.



The statistical evidence documented in Table 3 revealed that the variable AI enhanced engagement had a standardized coefficient beta value of .803, $p = .000$. This indicated a significant impact of the variable in the study. The variable has a significant impact on business education curriculum development and management in universities within North-east, Nigeria. Null hypothesis three was therefore, rejected.

Table 3: simple linear regression analysis on the impact of AI enhanced engagement on business education curriculum development and management in universities within North-east, Nigeria.

Variable	Standardized Coefficients Beta	t-value	p-value	Decision
AI Enhance Engagement	.803	17.420	.000	Rejected

Source: field work (2024).

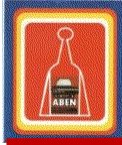
Findings of the Study

1. The result of null hypothesis one revealed that the variable AI personalized learning had a standardized coefficient beta value of .743, $p = .000$. The variable has a significant impact on business education curriculum development and management in universities within North-east, Nigeria.
2. Statistical evidence from null hypothesis two revealed that AI improved efficiency had a standardized coefficient beta value of .791, $p = .000$. This indicated that the variable has a significant impact on business education curriculum development and management in universities within North-east, Nigeria.
3. The result of null hypothesis three revealed that AI enhanced engagement had a standardized coefficient beta value of .803, $p = .000$. This indicated the variable has a significant impact on business education curriculum development and management in universities within North-east, Nigeria.

Discussion of the Findings

The study's findings present significant insights into the impact of AI on business education curriculum development and management. The finding of null hypothesis one posited that AI personalized learning has significant impact on business education curriculum development and management. the fairness of educational opportunities. This suggests that AI, when implemented thoughtfully, can enhance equitable access to educational resources, potentially reducing disparities across different student demographics. This aligns with the broader discourse on AI's potential to democratize education by providing personalized learning experiences that cater to individual needs (Bulathwela et al., 2024; Ayeni, et al., 2024).

The finding of null hypothesis two examined the impact of AI improved efficiency on business education curriculum development and management. The result showed that AI improved efficiency significantly impacted on business education curriculum development and management. This reflects concerns in the literature about AI's potential to erode trust due to perceived opacity and lack of human judgment in critical decisions (Grimmelikhuijsen, et al., 2023; Omrani, et al., 2022). The findings also concurred with Díaz-Rodríguez, et al., (2023) and Olateju, et al., (2024) who demonstrate the high stakes that efficiency plays in artificial intelligence applications for student privacy and ethical practice considerations and integrity, thereby influence business education curriculum development and management.



The finding of null hypothesis three determined the impact of AI enhanced engagement on business education curriculum development and management. The results demonstrated a very strong positive relationship, with AI engagement significantly enhancing efficiency in curriculum development and management. The finding revealed that enhanced engagement influence business education curriculum development that AI has the potential to streamline processes, enhanced engagement and bring about great improvements in operational outcomes effectively. This finding supports prior studies on the potential of AI to optimize administrative tasks and raise overall education performance, thereby improve curriculum development and management. (Vinichenko, et al., 2020; Igbokwe, 2023).

Conclusion

The findings of this suggest that the application of AI systems in the development and management of business education curriculum entails a number of critical impacts on educational outcome variables. Among other things, the research has shown the impact of AI personalized learning on the fairness of educational opportunities of providing equal chances for using resources and individualizing learning processes. It was further established by this study that efficiency and enhanced engagement within an AI-driven environment is one of the critical issues that will ensure integrity in business education program curriculum development and management if there is proper ethical use of data in the AI system. Besides, the infusion of AI into the institutions will increase efficiency and engagement in great magnitude in curriculum management, thus proving that AI can streamline operations and generally improve performance.

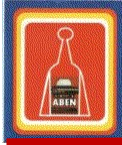
Recommendations

The study recommends that:

- i. Business educators should ensure maximization of AI personalized learning and minimize its drawbacks through the development of AI literacy, establishment and enforcement of comprehensive ethical guidelines with respect to how AI is used within the university settings.
- ii. Business educators can further harness AI improved efficiency and potential on fairness, trust, and integrity to enhance curriculum development and improve universities students' performance.
- iii. Business educators and curriculum planners can further harness and enhance engagement on AI powered interactive content and simulations, ensure it is designed to promote equity, inclusivity and accountability for AI-driven curriculum development and management in the university settings.

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