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EXTENT OF UTILIZATION OF ARTIFICIAL INTELLIGENCE TOOLS FOR TEACHING BUSINESS EDUCATION COURSES AMONG BUSINESS EDUCATORS IN TERTIARY INSTITUTIONS IN DELTA STATE, NIGERIA

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Abstract
This study focused on the extent of utilization of artificial intelligence (AI) tools for teaching business education courses among business educators in tertiary institutions in Delta State, Nigeria. Three research questions guided the study and two null hypotheses were tested at the 0.05 level of significance. The study adopted a descriptive survey design. The population comprised 140 business educators in government-owned tertiary institutions offering Business Education programmes, and no sampling was conducted due to the manageable population size. Data were collected using a 30-item structured questionnaire validated by three experts, with reliability established through Cronbach's Alpha, yielding coefficients of 0.90, 0.92, and 0.89 for the three clusters, and an overall reliability of 0.90. Frequency counts, percentages, mean and standard deviation were used to answer the research questions, while chi-square and t-test analyses tested the hypotheses. Findings indicated a mixed level of awareness of AI tools among business educators, with higher familiarity for widely used applications such as ChatGPT, Siri, and Google Assistant. Despite this awareness, AI tools were largely unavailable and not utilized for teaching business education courses. Additionally, no significant difference was found in the mean ratings of AI utilization based on institutional ownership. The study concluded that while educators demonstrate varying levels of awareness, actual integration of AI tools into teaching remains limited. It was recommended that tertiary institutions implement structured awareness and training programmes for educators and students to improve understanding and effective use of AI in business education instruction.

Keywords: *Artificial Intelligence (AI), Business Education, AI Utilization, Tertiary Institutions, Educational Technology Integration.*

Introduction

Historically, teaching was predominantly teacher-centered, relying heavily on textbooks, notebooks, journals, and physical libraries. Teachers were regarded as the principal authority in the classroom, delivering knowledge through lectures, while students often remained passive observers who memorized information rather than actively engaging with learning materials (Chen, 2025). In this traditional model, lecturers depended largely on printed resources to structure and develop students' knowledge and skills, emphasizing rote learning over critical thinking. As a result, the educator's role focused primarily on knowledge transmission rather than fostering interaction, creativity, or learner autonomy.

However, advancements in technology have significantly transformed educational practices in the 21st century. Educators increasingly utilize digital tools, including search engines and artificial intelligence (AI), rather than relying solely on physical library resources. AI enhances human intelligence by answering questions, generating content, writing code, providing information, and improving communication. These capabilities enable educators to focus more effectively on individualized student learning and instructional improvement (Eze and Nnamani, 2022). AI is now widely accessible through affordable smart devices, positioning it as a transformative tool capable of redefining teaching methods, reshaping educators' roles, and influencing the content and structure of education.

Globally, the integration of AI in education is expanding, augmenting human skills and serving as a partner in content delivery and competency development (Onwuagboke, Eze and Okeke, 2024).

Despite its potential, several challenges hinder effective adoption. Some educators fear that AI could replace human roles (Oluwafemi and Adetunmbi, 2022), while others continue to rely heavily on textbooks and standardized curricula (Valverde, Smith and Lopez, 2017). Additionally, inadequate AI training and limited knowledge of its applications restrict effective utilization (Olaniyi and Ogungboyeg, 2025; Akar and Uwitteye, 2019). Nonetheless, AI holds substantial promise for transforming higher education and improving learning outcomes, particularly in skill-oriented disciplines such as business education (Schroeder, 2019).

Business education is designed to equip students with occupational knowledge and practical skills necessary for employment, career advancement, and entrepreneurship. It encompasses business studies, clerical and managerial skills development, and understanding of business policies and operations. Business education prepares individuals to function effectively as employees, entrepreneurs, and responsible participants in a competitive economy. Core components include marketing, typing, shorthand, service delivery, account clerking, secretarial studies, office information systems, management, and increasingly, computer literacy and digital competencies (Sira, Adeyemi and Chukwu, 2024). To remain relevant in a rapidly evolving global economy, business education programs must integrate emerging technologies such as AI into teaching and learning processes.

In Nigerian tertiary institutions, AI is gradually gaining prominence as a supportive tool in business education. Its integration offers opportunities to enhance student engagement, personalize learning experiences, and improve academic outcomes. AI tools applicable to business education include Intelligent Tutoring Systems (ITS), AI-powered grading systems, machine learning algorithms, AI-driven research platforms, data analysis tools (such as SPSS and Python), chatbots, automated assessment systems, document converters, and interactive learning platforms. Applications such as ChatGPT, Google Bard, DALL·E, Mendeley, and ClassPoint further support research, content creation, and instructional delivery (Alonta, Eze and Nnamani, 2024). These technologies allow adaptive learning by tailoring content to students' individual learning styles and paces.

Although these tools offer numerous benefits, their availability and utilization in Nigerian tertiary institutions remain limited (Olaniyi and Ogungboyeg, 2025). AI applications can facilitate content development, immersive learning experiences through virtual and augmented reality, data analytics, intelligent tutoring, automated grading, and immediate feedback mechanisms. By analyzing student performance data, AI systems can generate personalized learning pathways, enabling students to understand complex concepts more effectively and at their own pace (Ajuwon, Bello and Ojo, 2019). Furthermore, automation of routine tasks such as grading and quiz generation allows educators to devote more time to higher-order instructional responsibilities, including critical thinking development and problem-solving activities.

Despite these advantages, effective AI utilization in business education requires adequate infrastructure, technical support, funding, and professional development. Educators must acquire the knowledge and skills necessary to integrate AI meaningfully into curricula, interpret analytics, and design engaging learning experiences. Ethical considerations such as data privacy, algorithmic bias, and transparency must also be addressed to ensure responsible implementation (Ejimabo, Okeke and Onuoha, 2020).

Institutional factors further influence AI adoption. Ownership structures, resource availability, governance systems and institutional priorities may determine the extent of AI integration. Federal institutions may face funding limitations, whereas private institutions may pursue technological innovation to remain competitive (Oluwafemi and Adetunmbi, 2022). Faculty training, access to digital infrastructure, and institutional vision significantly affect adoption rates. Previous studies have reported disparities in AI awareness and availability among business educators in Nigerian tertiary institutions (Wogu, Onah and Okafor, 2018; Ade-Ibijola and Okonkwo, 2023). Moreover, educators' technological self-efficacy influences their willingness to adopt AI tools; limited training or inadequate support may result in continued reliance on traditional teaching approaches (Onyesom, 2024).

While these studies provide valuable insights, empirical evidence regarding the extent of AI utilization in business education programs within tertiary institutions in Delta State remains limited. Therefore, this study seeks to fill this gap by examining the awareness, availability, and utilization of AI tools among business education lecturers in tertiary institutions in Delta State, Nigeria.

Statement of the Problem

The integration of artificial intelligence into business education programs presents a promising avenue for enhancing teaching effectiveness and improving student learning outcomes. However, despite its potential benefits, several obstacles hinder its proper implementation in Nigerian tertiary institutions. Many institutions appear to lack sufficient AI infrastructure, technical expertise, and financial resources necessary to align business education with global technological standards.

Given that business education focuses on practical skill acquisition and workforce preparedness, the absence of adequate AI tools and digital competencies may limit the program's effectiveness in equipping students with relevant modern skills. Without systematic integration of technology into instructional delivery, learning outcomes may remain suboptimal. Furthermore, limited data exists on educators' and students' perceptions of AI, their level of preparedness to utilize such tools, and the degree to which AI has been incorporated into existing curricula.

Observations suggest that many business educators continue to rely predominantly on traditional lecture-based methods. Overcrowded classrooms, minimal interaction, and content-heavy instruction can restrict student engagement and hinder comprehension of key concepts. These challenges raise concerns about whether current teaching approaches sufficiently prepare students for technology-driven business environments.

In light of these issues, this study investigates whether the deployment of artificial intelligence tools can enhance teaching and learning in business education programs. Specifically, it examines the level of awareness, availability, and utilization of AI tools among business education lecturers in tertiary institutions in Delta State, Nigeria. By addressing these concerns, the study aims to provide empirical evidence that can inform policy decisions, institutional planning, and professional development initiatives related to AI integration in business education.

Research Questions

The following research questions guided the study:

1. What is the level of awareness of Artificial Intelligence tools for teaching business education courses among business educators in tertiary institutions in Delta State, Nigeria?
2. What is the availability of Artificial Intelligence tools for teaching business education courses among business educators in tertiary institutions in Delta State, Nigeria?
3. What is the extent of business educators' utilization of Artificial Intelligence tools for teaching business education courses in tertiary institutions in Delta State, Nigeria?

Hypotheses

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

1. There is no significant difference in the percentage ratings of business educators from federal and state-owned tertiary institutions in Delta State, Nigeria on the available Artificial Intelligence tools for teaching business education courses.
2. Business educators do not differ significantly in their mean ratings on the extent of utilization of available Artificial Intelligence tools for teaching business education courses in tertiary institutions in Delta State, Nigeria based on ownership of institutions.

Method

Descriptive survey research design was adopted for the study. In line with the research design, the researcher sought information from Business Educators in Delta State tertiary institutions that are offering business education. The population for the study comprised 140 business educators in the five government tertiary institutions in Delta State that run Business Education programme. The tertiary institutions are the University of Delta, Agbor (20), Delta State University, Abraka (22); Federal College of Education (Technical), Asaba (62); College of Education, Warri (19) and College of Education, Mosogar (17). The whole population was studied with no sampling because of its manageable size. Data for the study were gathered using a structured questionnaire designed by the researcher, titled "Questionnaire on Utilization of Artificial Intelligence Tools for Teaching Business

Education Courses (QUAITTBEC)." The questionnaire instrument was validated by three experts, two experts in Business Education Department, Delta State University, Abraka. To establish the instrument's reliability, pilot testing was utilized. The internal consistency of the items instrument was established using Cronbach Alpha and yielded reliability co-efficient values of 0.90, 0.92 and 0.89 respectively for the three clusters with an overall co-efficient value of 0.90. Data collected were analyzed using frequency count and percentages for research question 2 that any item with 50 percent and above is considering available and below 50 percent is considered not available while mean and standard deviation were used to answer the research questions 1 and 3that any item with 2.50 mean cut off points and above is considering aware and utilize and below 2.50 mean cut off points is considered not aware and not utilize. In data collection, out of the 140 copies of the questionnaire distributed to the respondents, 134 copies were actually retrieved from the respondents which represented about 96 percent. Six copies were not properly filled and discarded representing 4 percent. In testing the null hypotheses, chi-square was used to test hypothesis 1 on availability, while t-test was used to test the null hypothesis 2 at 0.05 level of significance. A null hypothesis was rejected where the calculated p-value is less than the stipulated level of significance (0.05), it meant that there was a significant difference and the hypothesis is rejected. Conversely, where the calculated p-value is equal to or greater than the stipulated level of significance (0.05), it meant that there was no significant difference and the hypothesis was not rejected.

Results

Research Question 1: What is the level of awareness of Artificial Intelligence tools for teaching business education courses among business educators in tertiary institutions in Delta State, Nigeria?

Table 1: *Respondents' mean ratings on the level of awareness of Artificial Intelligence tools for teaching business education courses among business educators in tertiary institutions in Delta State, Nigeria (N = 134).*

S/N	Items on level of Awareness of Artificial Intelligence Tools	Mean	SD	Decision
1	Chatbot/ChatGPT	3.45	0.70	Aware
2	Canva Magic White	2.40	0.84	Not Aware
3	Siri	3.75	0.63	Aware
4	Alexa	2.20	0.85	Not Aware
5	Google Assistants	3.57	0.66	Aware
6	Finger print recognition	2.87	0.74	Aware
7	Voice assistant	2.55	0.80	Aware
8	Intelligent tutor system	2.56	0.79	Aware
9	Virtual assistants	2.62	0.77	Aware
10	Khanmigo	2.45	0.83	Not Aware

Data in Table 1 show the level of awareness of artificial intelligence tools for the teaching of business education courses in tertiary institutions in Delta State, Nigeria using the criterion mean score of 2.50 as cut-off point. It was revealed that respondents are aware of Chatbot/ChatGPT, Siri, Google Assistants, Finger print recognition, Voice assistant, Virtual assistants and Intelligent tutor system. However, respondents are not aware of Canva Magic White, Alexa and Khanmigo.

Research Questions 2: What is the availability of Artificial Intelligence tools for teaching business education courses among business educators in tertiary institutions in Delta State, Nigeria?

Table 2: *Percentage scores on availability of Artificial Intelligence tools for teaching business education courses among business educators in tertiary institutions in Delta State, Nigeria (N = 134).*

Items on Availability of Artificial Intelligence Tools	Available	Not Available	Decision

S/N		No	(%)	No	(%)	
1	Chatbot/ChatGPT	12	8.96	122	91.04	Not Available
2	Canva Magic White	18	13.43	116	86.57	Not Available
3	Siri	24	17.91	110	82.09	Not Available
4	Alexa	10	7.46	124	92.54	Not Available
5	Google Assistants	20	14.93	114	85.07	Not Available
6	Finger print recognition	15	11.19	119	88.81	Not Available
7	Voice assistant	13	9.70	121	90.29	Not Available
8	Intelligent tutor system	9	6.72	125	93.28	Not Available
9	Virtual assistants	16	11.94	118	88.06	Not Available
10	Khanmigo	18	13.43	116	86.57	Not Available
	Cluster %	15 5	115.67	118 5	888.33	**Not Available**

Data in Table 2 shows that all the 10 Artificial Intelligence tools listed are not available for teaching business education courses among business educators in tertiary institutions in Delta State, Nigeria. The cluster percentage shows that Artificial Intelligence tools were not available with percentage score of 888.33 against the available with percentage score of 115.67.

Research Questions 3: What is the extent of business educators' utilization of Artificial Intelligence tools for teaching business education courses in tertiary institutions in Delta State, Nigeria?

Table 3*: Respondents' mean ratings on the extent of business educators' utilization of Artificial Intelligence tools for teaching business education courses in tertiary institutions in Delta State, Nigeria (N = 134).*

S/N	Items on extent of utilization of Artificial Intelligence Tools	Mean	SD	Decision
1	Chatbot/ChatGPT	1.46	0.67	Not utilize
2	Canva Magic White	1.49	0.64	Not utilize
3	Siri	2.17	0.53	Not utilize
4	Alexa	1.28	0.72	Not utilize
5	Google Assistants	2.47	0.51	Not utilize
6	Finger print recognition	1.78	0.54	Not utilize
7	Voice assistant	1.58	0.58	Not utilize
8	Intelligent tutor system	1.51	0.62	Not utilize
9	Virtual assistants	1.68	0.55	Not utilize
10	Khanmigo	1.55	0.60	Not utilize

Data in Table 3 show the extent of business educators' utilization of Artificial Intelligence tools for teaching business education courses in tertiary institutions in Delta State, Nigeria, using the criterion mean score of 2.50 as cut-off point. It was revealed that respondents do not utilize Artificial Intelligence tools listed for teaching business education courses in tertiary institutions in Delta State, Nigeria.

Testing of Hypotheses

Null Hypothesis 1: There is no significant difference in the percentage ratings of business educators from federal and state-owned tertiary institutions in Delta State, Nigeria on the available Artificial Intelligence tools for teaching business education courses.

Table 4: *Summary of Chi-square Analysis on the Percentage Ratings of Business Educators from Federal and State-Owned Tertiary Institutions in Delta State, Nigeria on the Available Artificial Intelligence tools for Teaching Business Education Courses*

SN	**Available of Artificial Intelligence Tools**	Federal (n=74)		State (n=60)		X2	P-value	Remark
		A	NA	A	NA			
1	Chatbot/ChatGPT	7	67	5	55	0.73	0.32	Not Sig
2	Canva Magic White	12	62	8	52	3.99	0.04	Sig
3	Siri	20	54	4	56	7.97	0.00	Sig
4	Alexa	8	66	2	58	0.30	0.27	Not Sig
5	Google Assistants	14	60	6	54	20.60	0.00	Sig
6	Finger print recognition	12	62	3	57	0.62	0.15	Not Sig
7	Voice assistant	3	71	10	50	0.65	0.25	Not Sig
8	Intelligent tutor system	2	72	7	53	0.08	0.36	Not Sig
9	Virtual assistants	13	61	3	57	0.16	0.36	Not Sig
10	Khanmigo	7	67	11	49	7.34	0.01	Sig

The results of analysis in Table 4 shows that six out of the 10 listed items had p-value greater than the stipulated 0.05 level of significance. This indicates that there is no significant difference in the percentage ratings of business educators from federal and state-owned tertiary institutions in Delta State, Nigeria on the available Artificial Intelligence tools for teaching business education courses. Therefore, the null hypothesis was not rejected.

Null Hypothesis 2: Business educators do not differ significantly in their mean ratings on the extent of utilization of available Artificial Intelligence tools for teaching business education courses in tertiary institutions in Delta State, Nigeria based on ownership of institutions.

Table 5: *Summary of t-test result of Business Educators' Mean Ratings on the Extent of Utilization of Available Artificial Intelligence Tools for Teaching Business Education Courses in Tertiary Institutions in Delta State, Nigeria Based on Ownership of Institutions*

Ownership of Institutions	**N**	**Mean**	**SD**	**α**	**df**	**t-cal**	**P-val**	**Remark**
Federal	57	3.62	1.17	0.05	126	.93	.35	Not Significant
State	71	3.10	1.21					

Data in Table 5 shows that the calculated t-value is .93 at 126 degree of freedom and .35 p-value. Since the p-value is greater than the significant value (0.05), it means that business educators do not differ significantly in their mean ratings on the extent of utilization of available Artificial Intelligence tools for teaching business education courses in tertiary institutions in Delta State, Nigeria based on ownership of institutions. The null hypothesis was, therefore not rejected.

Discussion

The findings of this study provide important insights into the awareness, availability, and utilization of artificial intelligence (AI) tools for teaching business education courses in tertiary institutions in Delta State, Nigeria. First findings of the study revealed a moderate level of awareness of certain AI tools among business educators. Respondents indicated awareness of commonly used tools such as ChatGPT, Siri, Google Assistants, voice assistants, intelligent tutoring systems, and virtual assistants. However, awareness was relatively low for tools such as Canva Magic White, Alexa, and Khanmigo. This suggests that business educators are more familiar with widely popular and general-purpose AI applications than with specialized or education-focused AI tools. The finding

aligns with the studies of Onwuagboke, Eze and Okeke (2024) and Olaniyi and Ogungboyeg (2025) who reported growing global awareness of AI technologies in education but uneven familiarity across specific tools and applications. The implication is that awareness does not automatically translate into deep pedagogical understanding or effective classroom integration.

Despite this moderate awareness, the study found that AI tools were largely unavailable in the surveyed institutions. The findings of the study revealed that all ten listed AI tools were rated as not available based on the 50% benchmark. The cluster percentage further confirmed that AI resources are significantly lacking across the institutions studied. This finding supports earlier assertions that inadequate infrastructure, limited funding, and insufficient institutional support hinder the adoption of AI in Nigerian tertiary institutions (Akar and Uwitteye, 2019; Oluwafemi and Adetunmbi, 2022). Even where educators may be aware of AI technologies, structural limitations prevent their practical implementation.

Similarly, the findings showed a very low level of utilization of AI tools for teaching business education courses. The findings of the study revealed that all listed tools recorded mean scores below the 2.50 cut-off point, indicating that they are not being utilized in instructional delivery. This gap between awareness and actual use suggests that knowledge alone is insufficient; effective utilization requires access, training, institutional support, and confidence in using the tools. The continued reliance on traditional lecture-based methods may therefore be attributed to systemic constraints rather than mere resistance to innovation. The finding of the study agrees with Ade-Ibijola and Okonkwo (2023) who revealed that business education programme need to utilize Artificial Intelligence for teaching business education programme in tertiary institutions.

Regarding institutional ownership, the results indicated no significant difference between federal and state-owned institutions in terms of availability and utilization of AI tools. Although a few individual items showed significant differences in availability, the overall analysis revealed no statistically significant disparity. This suggests that the challenges associated with AI integration are systemic and cut across ownership structures. Both federal and state institutions appear to face similar constraints in funding, infrastructure, and professional development opportunities. The finding disagrees with the study conducted by Wogu et al. (2018), which reported a significant difference in the views of business educators in tertiary institutions regarding the awareness and availability of artificial intelligence tools for teaching business education programmes.

Conclusion

Based on the findings of the study, it is concluded that business educators demonstrate varying levels of awareness of artificial intelligence (AI) tools, with greater familiarity observed for widely used applications such as ChatGPT, Siri, and Google Assistant. Despite this awareness, the study revealed a significant deficiency in both the availability and actual utilization of AI tools for teaching business education courses. Furthermore, the results indicated no statistically significant difference in the mean ratings of business educators from federal and state-owned tertiary institutions in Delta State, Nigeria, regarding the availability of AI tools for instructional purposes.

Recommendations

Based on the findings of this study, the following recommendations were made.

1. Tertiary institutions should establish comprehensive awareness campaigns and structured training programmes for both educators and students to enhance their understanding and effective utilization of artificial intelligence (AI) tools in teaching business education courses.
2. Educational institutions should invest in adequate technological infrastructure, including reliable internet access, modern digital devices, and relevant AI software, to ensure the availability and smooth integration of AI tools into teaching and learning processes.

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