AWARENESS AND UTILIZATION OF ARTIFICIAL INTELLIGENCE FOR TEACHING BUSINESSEDUCATION COURSES IN TERTIARY INSTITUTIONS IN KANO STATE, NIGERIA

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Abstract

The need to adopt digital and innovative approach to the pedagogy of business education informed the decision of the researcher to assess the awareness and utilization of artificial intelligence for teaching business education courses in tertiary institutions in Kano state, Nigeria. Two research questions, and two null hypotheses guided the study. The researcher adopted descriptive survey research design, while the sample comprised 60 business education lecturers drawn from three tertiary institutions offering Business Education programme in Kano state. Census sampling technique was used to select the respondents. A structured questionnaire was used as instrument for data collection. The data collected were analyzed using frequency counts, simple percentage, mean, standard deviation and independent samples t-test statistics. Findings revealed that business education lecturers' awareness of artificial intelligence tools was at low level. It was also revealed that business education lecturers' utilization of artificial intelligence tools was at very low level. Finally, the study recommended that authorities of tertiary institutions should organize regular training and workshops for business education lecturers on the effective utilization of artificial intelligence tools for teaching and improving students' academic outcomes. It was also suggested that there should be provision of adequate resources for business education lecturers to effectively integrate artificial intelligence tools in the teaching and learning process.

Keywords: Artificial intelligence, awareness, Business education, Lecturers, Tertiary institutions, Teaching, Utilization.

Introduction

Tertiary institutions are established with three core mandates, which include: teaching, research, and community service. The mandate of teaching involves the inculcation of values and skills that help to boost the human capital development of any society or country. The tertiary institutions are expected to offer a wide range of programmes that will help fulfil their core mandates. In the

Nigerian context, tertiary institutions include, universities, polytechnics, monotechnics, and colleges of education.

One of the major programmes offered in tertiary institutions is business education which has been described in various ways by various experts. According to Iwerima and Bupo (2024), business education is a programme that instructs students in the fundamental concepts, theories and processes of business as well as the practical application, preparing them for various career paths, including business occupations, business related fields, and teaching careers. Moreover, the programme is geared towards helping individuals acquire skills to succeed in the business world, whether in employment or self-employment. Furthermore, business education aids in the development of important abilities in students, including critical thinking, communication, and problem solving. These abilities allow students to comprehend the business environment and how businesses operate. Business education teaches students the skills necessary to start their own businesses in the future. The skills acquired through business education enables students to become creative, innovative, and competent, fitting into the ever-changing and ever-dynamic world of work. Emeosoba and Mmuo (2018) viewed business education as a tripartite programme of instructions which prepares the recipients or learners with skills, competencies, knowledge, attitudes and values to be a business educator, an office worker or an entrepreneur. As a field of study, business education is highly dynamic and technology-driven. In the last decade, artificial intelligence (AI) has assumed crucial roles in all fields of human endeavor. Without mincing words, the emergence of artificial intelligence has engineered a wide range of changes in all professions. According to Ademiluyi (2024), artificial intelligence (AI) refers to the operations of computer systems that try to model and apply the intelligence of human mind. It is a domain of computer science which deals with the development of intelligent computer system.

In addition, artificial intelligence is a sophisticated technology designed to replicate human cognitive abilities through machine learning logarithms, neural networks, and natural language processing (Ugokwe, 2023). Similarly, IBM Cloud Education (2020) described artificial intelligence as a technology that uses computer programs to perform human intelligent tasks, such as image recognition, speech understanding, and decision making. In business education, artificial intelligence applications include intelligence tutoring systems, which provide personalized instruction and feedback to students through algorithms (Iwerima & Bupo; 2024). Undoubtedly, artificial intelligence is revolutionizing multiple sectors, including healthcare, finance and manufacturing.

A study by Ukeh and Anih (2024) on the use of artificial intelligence by university lecturers at the Federal University, Otuoke found that their usage of AI in teaching and conducting research was relatively low. Similarly, Amadi-Iwai et al (2024) conducted a study on business educator' level of awareness, competence, and utilization of artificial intelligence for job performance and improvement. The research findings indicate that business education lecturers possessed insufficient proficiency in utilizing AI for teaching.

Bede et al (2024) examined lecturers' awareness of artificial intelligence (AI) tools for teaching and research at Alvan Ikoku Federal University of Educatio, Owerri, Nigeria. The AI tools examined in the study included: ChatGPT, Power point speaker coach, Quiz bot, Perplexity, Scholarcy, Gradescope, Mendeley, Gemini, MATHia, ChatPDF, Consensus, Research Rabbit, Class Point, and scite. Three research questions and two research hypotheses guided the study.

The population of the study consisted of 750 lecturers in the university from 6 faculties, A sample size of 261 respondents was randomly selected from the population using stratified random sampling technique. Data were collected through a questionnaire tagged, Lecturers Awareness of Artificial Intelligence Tools for Teaching and Research Questionnaire (LAAITTRQ) on whatsApp. Mean and standard deviation were used to answer the research questions while independent samples t-test statistics and Analysis of Variance (ANOVA) test were used to test the formulated hypothesis at 0.05 level of significance. Findings revealed that lecturers are aware of AI tools for teaching and research. Furthermore, it was discovered that there was no significant difference in awareness according to gender. However, significant difference in awareness existed, according to teaching experience with the least experienced lecturers having awareness mean scores higher than mean scores of the most experienced and moderately experienced lecturers.

Agi et al (2024), evaluated the extent of awareness, utilization, and constraints of artificial intelligence (AI) for teaching and assessment in universities in Nigeria. The study was guided by one hypothesis and three research questions. The study adopted a mixed methods research design. The study population was infinite, consisting of all lecturers in all universities in Nigeria. 4193 respondents participated in the study. Two instruments were used for data collection: a Questionnaire on University Lecturers Awareness and Utilization of AI in Teaching and Assessment (QULAUAITA) and a Key Informant Interview (KII) guide titled: Constraints of Utilizing AI for Teaching and Assessment (CUAITA). The instruments were validated by three experts in Measurement and Evaluation. The reliability coefficient of 0.82 was established using the split-half method. Mean and Standard Deviation were used to answer the research questions, while Pearson product moment correlation was used in hypothesis testing. The data collected using KII were transcribed, coded and analysed thematically. Findings from the study revealed that while lecturers in Nigerian universities have moderate awareness of AI applications in teaching and assessment, their utilization of AI tools remains low.

Iwerima and Bupo (20240 examined the awareness and utilization of artificial intelligence (AI) technologies for learning among business education students in Rivers State University. The research was guided by two objectives, two research questions, and two hypotheses. Descriptive survey research design was adopted for the study. The population comprised 205 postgraduate students of business education in Rivers State University and Ignatius Ajuru University of Education. Purposive sampling technique was used to select a sample of 143 postgraduate students, representing 70% of the population. Data were collected through a structured questionnaire based on a four-point rating scale. The instrument's validity was ensured by two experts in Business Education and one expert in Measurement and Evaluation. Reliability was established using the test-retest method, yielding a reliability coefficient of 0.81, indicating suitability for the study. Data analysis was conducted using mean and standard deviation, while t-test statistics was used to test the hypothesis at 0.05 level of significance. The findings highly indicated that students are highly aware of AI tools especially ChatGPT and WhatsApp Pi. The results also showed that postgraduate business education students use Grammarly for learning to a high extent. No significant difference was found in the mean responses of students from Rivers State University and Ignatius Ajuru University of Education on the extent of awareness of AI for learning. Madu and Musa (2024) examined the level of awareness of AI in relation to

lecturers' digital competency at Federal University Wukari (FUW), Taraba state, Nigeria. The study showed that lecturers' awareness of the use of AI was moderate.

Theoretically, this study was anchored on the Diffusion of Innovation Theory (DIT). DIT was propounded by Everett Rogers in 1962. The theory describes the circulation of innovative concepts and technologies in education as a sector. The theory captures five phases of utilization, knowledge, persuasion, decision, implementation, and confirmation. DIT is relevant to this study because it describes how innovative concepts such as artificial intelligence circulate across the education sector and the relationship between the levels of awareness and utilization of artificial intelligence by business educators in tertiary institutions in Kano state, Nigeria.

It is obvious from the literature review that there exists a research gap in the awareness in the utilization of artificial intelligence by business educators in tertiary institutions in Kano state, Nigeria. The reviewed studies explored awareness and utilization of AI in various fields, among population of interest within the university system in various locations in Nigeria. However, the present study sought to provide empirical evidence on business educators' awareness and utilization of artificial intelligence in tertiary institutions in Kano state, Nigeria.

Statement of the Problem

A large number of sectors, including education, have been profoundly impacted by the emergence and prominence of artificial intelligence with benefits including individualized learning, effective grading, and improved instructional support, AI tools have the prospects to transform teaching methods. However, as the main implementers of the business education curriculum, business education lecturers' awareness and utilization are very essential to the successful integration of AI in business education programme in tertiary institutions in Kano state, Nigeria. It is quite worrisome that many business education lecturers are not adequately knowledgeable about AI tools and their uses, despite the tools' increasing popularity and potential benefits. In addition, business education lecturers' utilization of AI tools, might not align with their level of awareness. Since business education is technology-driven, it is imperative to empirically study the variables that determine the successful application of artificial intelligence in the teaching of business education courses in tertiary institutions in Kano state, Nigeria, hence the need for this study.

Research Questions

The following research questions guided the study:

1. What is the level of business education lecturer' awareness of artificial intelligence tools for teaching business education courses in tertiary institutions in Kano state, Nigeria?
2. What is the level of business education lecturers' utilization of artificial intelligence tools for teaching business education courses in tertiary institutions in Kano state, Nigeria?

Research Hypotheses

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

Ho1: There is no significant difference in the level of male and female business education lecturers' awareness of artificial intelligence tools for teaching business education courses.

Ho2: There is no significant difference in the level of business education lecturers' utilization of artificial intelligence for teaching business education courses in federal and state tertiary institutions in Kano state, Nigeria.

Method

The study adopted descriptive survey research design. This is considered appropriate because the design is suited for explaining or exploring the relationship between two or more variables at a given time, which is the concern of this study (Ebele & Olofu, 2017: Kyauta & Dachia, 2018). The population consisted of 65 business education lecturers drawn from three institutions offering business teacher education in Kano state, Nigeria. The institutions are, Federal College of Education (Technical), Bichi, Federal University of Education, Kano and Saadatu Rimi University of Education Kumbotso. Census sampling technique was used to select all members of the population. A questionnaire titled, "Awareness and Utilization of Artificial Intelligence for Teaching Business Education Courses Questionnaire (AUAITBECQ)" was used as instrument for data collection. The instrument was validated by experts in business education and one expert in measurement and evaluation from the Federal University of Education, Kano. A pilot study was conducted to familiarize the researcher with potential issues, and to assess the instrument's suitability, reliability and adequacy. The pilot study involved 20 business education lecturers from the Federal College of Education (Technical) Gombe. The test-retest method was used to determine the reliability of the instrument for the study by statistically analyzing the data collected from the pilot study, using pearson product moment correlation coefficient. The reliability coefficient computed for the instrument was 0.82. Copies of the questionnaire were administered to the respondents through google forms that were distributed electronically through a generated link, 60 respondents filled the google questionnaires implying a 92% return rate. The demographic data for the respondents were analyzed using frequency counts and simple percentage, the research questions were answered using frequency tables, mean hypotheses were tested at 0.05 level of significance using t-test statistics.

Decision rule

The decision rule of 2.50 was adopted based on the 4-point scale of the questionnaire thus: $\frac{4+3+2+1}{4} = \frac{10}{4}$ = 2.50 For the questionnaire items, the following class limits were applied

Response category	Points(s)	Boundary Limits	Remarks
Very High Level (VHL)	4	3.25-4.00	Very High Level
High Level (HL)	3	2.50-3.24	High Level
Low Level (LL)	2	1.75-2.49	Low Level
Very Low Level (VLL)	1	1.00-1.74	Very Low Level

For the test of hypotheses, the null hypotheses were not rejected when the p-value is greater than 0.05 level of significance, otherwise the null hypotheses were rejected. This rule was strictly adhered to.

Results

Research Question One: What is the level of business lecturers' awareness of artificial intelligence tools for teaching business education courses in tertiary institutions in kano state?

Table 1: Mean responses on business education lecturers' awareness of artificial intelligence tools for teaching business education courses.

S/N	Items	Mean	SD	Remarks
1	Awareness of Gradescope	2.18	0.79	Low Level
2	Awareness of Power point Speaker Coach	2.65	0.56	High Level
3	Awareness of Class Point	2.51	0.73	High Level
4	Awareness of MATHia	2.13	0.71	Low Level
5	Awareness of Audiopen	2.18	0.74	Low Level
6	Awareness of Educude	2.23	0.70	Low Level
7	Awareness of ChatGPT	2.54	0.57	High Level
8	Awareness of Moodle	2.11	0.63	Low Level
9	Awareness of Virtual Assistants	2.22	0.58	Low Level
10	Awareness of Khan Academy	2.39	0.76	Low Level
	N=60, Weighted mean/SD	**2.31**	**0.68**	**Low Level**

Source: Field Survey (2025)

Results in Table 1 revealed that respondents are aware of Power Point speaker (mean=2.65, SD=0.56), Class Point (mean=2.51, SD=0.73) and ChatGPT (mean=2.54, SD=0.57) to a high level. However, business education lecturer's awareness of other AI tools is at low level, with the awareness of moodle (Item 8) rated least with a mean of 2.11 and standard deviation of 0.63.

Research Question Two: what is the level of business education lecturers' utilization of artificial intelligence tools for teaching business education courses in tertiary institutions in Kano state, Nigeria?

Table 2: Mean responses on the level of business education lecturers' utilization of artificial intelligence tools for teaching business education courses.

S/N	Items	Mean	SD	Remarks
1	Utilization of Gradescope	1.17	0.56	Very Low Level
2	Utilization of Power point Speaker Coach	1.64	0.65	Very Low Level
3	Utilization of Class Point	1.50	0.60	Very Low Level
4	Utilization of MATHia	1.12	0.63	Very Low Level
5	Utilization of Audiopen	1.17	0.70	Very Low Level
6	Utilization of Educude	1.22	0.74	Very Low Level
7	Utilization of ChatGPT	2.12	0.72	Low Level
8	Utilization of Moodle	1.78	0.71	Very Low Level
9	Utilization of Virtual Assistants	1.18	0.58	Very Low Level
10	Utilization of Khan Academy	1.31	0.55	Very Low Level
	N=60, Weighted mean/SD	**1.42**	**0.64**	**Very Low Level**

Source: field survey (2025)

Results in Table 2 indicated that business education lecturers rated very low in their utilization of artificial intelligence tools for teaching business education courses in tertiary institutions in Kano state, Nigeria. Though the lecturers utilize ChatGPT at low level (mean=2.12, SD = 0.72).

Test of Hypotheses

Hypothesis One: There is no significant difference in the level of male and female business education lecturers' awareness of artificial intelligence tools for teaching business education courses.

Table 3: Summary of independent samples t-test analysis of the male and female business education lecturers' awareness of artificial intelligence tools for teaching business education courses

Gender	N	Mean	SD	Df	t-cal	p-value	Decision
Male	35	4.38	1.79	58	1.743	0.761	Accept
Female	25	4.28	1.76				

Source: Field survey, 2025.

Table 3 presents the results for the independent samples t-test analysis of male and female business educators; awareness of artificial intelligence tools for teaching business education courses in tertiary institutions. The mean for male business educators was 4.38 (SD=1.79) While the mean for female business educators was 4.28 (SD=1.76). The relativey low standard deviations for both groups suggest that the responses within each group are consistent. The independent samples of t-test results show no statistically significant difference between the mean responses of the two groups with T (58) =1.743, and p-value of 0.761. Since the p-value is greater than 0.05 level of significance, the null hypothesis (HO1), which states that there is no significant difference in the level of male and female business educators' awareness of artificial intelligence tools that was accepted. The results show that there was no significant difference in the level of male and female business education lecturers' awareness of artificial intelligence tools for teaching business education courses. The mean difference in the level of awareness between the two groups is 0.10 (4.38-4.28), indicating a slight difference that is not statistically significant.

Hypothesis Two: There is no significant difference in the level of business educators' utilization of artificial intelligence for teaching business education courses in federal and state tertiary institutions in Kano state, Nigeria.

Table 4: Summary of independent samples t-test analysis of the level of business educators' utilization of artificial intelligence for teaching business education courses in federal and state tertiary institutions.

Gender	N	Mean	SD	Df	t-cal	p-value	Decision
Federal	40	4.45	0.52	58	2.224	0.304	Accept
State	20	4.39	0.46				

Source: Field survey, 2025.

Table 4 presents the results of independent samples t-test analysis of the level of business educators' utilization of artificial intelligence for teaching business education courses in federal and state tertiary institutions. The analysis compared the level of utilization of artificial intelligence

tools by 4 business educators in federal institutions and 20 business education lecturers in state institutions. The mean for the lecturers in federal institutions was 4.45 (SD=0.52), while the mean for the business education lecturers in state institutions was 4.39 (SD=0.46), The relatively low standard deviations for both groups imply that responses within the groups are consistent. The independent samples t-test result shows no statistically significant difference between the mean responses of the two groups with t (58) =2.224 and a p-value of 0.304. Since the p-value is greater than the alpha level of 0.05, the null hypothesis (HO2), which states that there is no significant difference in the level of business education lecturers' utilization of artificial intelligence tools for teaching business education courses in federal and state tertiary institutions, was accepted. This implies that there was no significant difference in the level of business educators' utilization of artificial intelligence for teaching business education courses in federal and state tertiary institutions. The mean difference in the utilization levels of the two groups is 0.06 (4.45-4.39), indicating a slight difference that is not statistically significant.

Discussion of Findings

This study was conducted to assess the awareness and utilization of artificial intelligence for teaching business education courses in tertiary institutions in Kano state, Nigeria. The findings of the study are discussed based on the research purposes, research questions and research hypotheses.

The findings from the first research questions revealed that business education lecturers in tertiary institutions in Kano state have low level awareness of artificial intelligence tools for teaching business education courses. This finding indicates that majority of business education lecturers in Kano State are not familiar with AI tools such as ChatGPT, Grammarly AI, Canva AI, or adaptive learning platforms for instructional delivery. The low level of awareness may be attributed to limited exposure to professional development programs on emerging technologies, inadequate ICT infrastructure, and insufficient integration of AI in teacher training curricula in the state. This result aligns with CITAD (2025) which noted that fewer than 10% of universities in Northern Nigeria expose lecturers and students to AI and blockchain-related courses, suggesting a regional knowledge gap in emerging technologies. It also supports the view of Abdulbasid et al. (2025) that despite the potential of technology in education, many Colleges of Education in Nigeria still fall short in equipping lecturers with digital and entrepreneurial skills. However, this contradicts global trends where AI is increasingly being adopted in business education to enhance lesson planning, assessment, and student engagement. The implication of this finding is that without awareness, lecturers cannot effectively integrate AI into teaching business subjects such as Accounting, Marketing, and Office Technology. This may affect the quality of graduates produced and their competitiveness in a digital economy. This finding contradicts the findings of Agi et al (2024) that lecturers in Nigerian universities have moderate awareness of AI applications in teaching. The finding from the test hypothesis one revealed no significant difference in the level of male and female business education lecturers' awareness of artificial intelligence tools for teaching business education courses. This finding supports the findings of Bede et al (2024), that there was no significant difference in AI tools for teaching and research awareness mean scores between male and female lecturers in Alvan Ikoku Federal University of Education, Owerri.

Based on research question two and Table 2, the study found that business education lecturers rated very low in their utilization of artificial intelligence tools for teaching business education

courses in tertiary institutions in Kano state, Nigeria. This finding buttresses the findings of Agi et al (2024) that there was a low level of utilization of AI by lecturers for teaching and assessment in universities in Nigeria. Results of the test hypothesis two revealed no significant difference in the level of business education lecturers' utilization of artificial intelligence for teaching business education courses in federal and state institutions in Kano state, Nigeria. This finding shows that despite the growing relevance of artificial intelligence in education, business education lecturers in Kano State rarely integrate AI tools into their teaching process. Tools such as ChatGPT for content generation, Quillbot for paraphrasing, and AI-powered accounting and marketing software are largely underutilized in classrooms. The low utilization can be explained by the low level of awareness identified in RQ1. Lecturers cannot use what they do not know. In addition, challenges such as inadequate power supply, poor internet connectivity, lack of institutional policy on AI integration, and absence of training workshops may have contributed to this situation. This result is consistent with CITAD (2025) which reported that most tertiary institutions in Northern Nigeria, including FCE(T) Bichi, have not fully adopted AI and blockchain in teaching. It also agrees with studies that found low ICT adoption among lecturers in Colleges of Education due to limited digital skills and infrastructure. This finding corroborates the findings of Iwerima and Bupo (2024), that there was no significant difference in the utilization of Grammarly for learning in Rivers State Universities. On the other hand, this contradicts the global shift where AI is being used to personalize learning, automate assessments, and simulate business environments for students. The implication is that students of business education in Kano State may graduate without the digital competencies required by modern workplaces, thereby widening the skills gap between graduates and industry demands.

Conclusion

This study investigated the awareness and utilization of Artificial Intelligence tools for teaching Business Education courses in tertiary institutions in Kano State. The findings revealed that Business Education lecturers have a low level of awareness of AI tools and consequently rated very low in the utilization of these tools for instructional delivery.

The low awareness and utilization can be attributed to limited exposure to professional development programs, inadequate ICT infrastructure, poor internet connectivity, and absence of institutional policy to support AI integration in teaching.

The implication of these findings is that students of Business Education in Kano State may graduate without the requisite digital and technological competencies needed to thrive in the 21st century workplace. This poses a threat to the goal of producing globally competitive graduates as emphasized in the National Policy on Education.

Therefore, it is concluded that for Business Education to remain relevant in the digital era, tertiary institutions in Kano State must prioritize capacity building, provision of ICT facilities, and policy formulation to enhance lecturers' awareness and utilization of AI tools in teaching and learning.

Recommendations

Based on the findings and conclusion of this study, the following recommendations are made:

1. The management of tertiary institutions in Kano State, in collaboration with organizations such as CITAD, TETFUND, and NUC, should organize regular workshops, seminars, and

training programs to improve Business Education lecturers' awareness and competence in the use of Artificial Intelligence tools for instructional delivery.

2. Government and school management should provide adequate ICT facilities including stable internet connectivity, power supply, computer laboratories, and AI-powered software. This will create a conducive environment for lecturers to integrate AI tools into teaching Business Education courses.
3. The National Universities Commission [NUC] and National Commission for Colleges of Education [NCCE] should develop clear policies and curriculum guidelines that mandate the integration of AI tools in Business Education programs in tertiary institutions. This will encourage both lecturers and students to embrace digital teaching and learning.
4. AI literacy and digital pedagogy should be included as compulsory courses in Business Education programs in Colleges of Education and Universities. This will ensure that both pre-service and in-service lecturers acquire the necessary skills to use AI for teaching, assessment, and research.
5. School management should provide incentives such as grants, awards, and recognition to lecturers who effectively utilize AI tools in teaching. This will motivate lecturers to embrace technology and improve the quality of Business Education graduates in Kano State.

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