



LEVEL OF AWARENESS AND APPLICATION OF ARTIFICIAL INTELLIGENCE AMONG BUSINESS EDUCATORS IN FEDERAL COLLEGES OF EDUCATION IN SOUTH-WEST, NIGERIA

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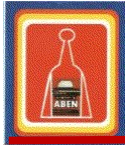
Abstract

The study examined the level of awareness and application of Artificial Intelligence among Business Educators in Federal Colleges of Education in South-West, Nigeria. Two research questions guided the study and one hypothesis was formulated and tested at 0.05 level of significance. Descriptive survey research design was adopted for the study. The population comprised 85 lecturers from the four Federal Colleges of Education offering Business Education programme in South-West, Nigeria. The entire population was studied hence there was no sampling. A self structured questionnaire was the instrument used for data collection. The instrument was validated by three experts in business education and the reliability test conducted showed a reliability coefficient of 0.86 which was deemed to be reliable. Mean and standard deviation were used to answer the research questions. Findings of the study revealed that there is high level of awareness of artificial intelligence among business educators in tertiary Federal Colleges of Education in South-West, Nigeria. Findings of the study also revealed that there is low level of application of artificial intelligence among business educators in Federal Colleges of Education in South-West, Nigeria. The result of the hypothesis shows a significant relationship between the current level of awareness and the current level of application of artificial intelligence technologies among business educators in Federal Colleges of Education in South-West, Nigeria. Consequent upon the findings of the study, it was recommended among others that tertiary institution administrators and the government should collaborative with AI experts and sponsor business educators to attend seminars/workshops to create more awareness of artificial intelligence.

Keywords: Awareness, Application, Artificial Intelligence, Business Educators

Introduction

Artificial intelligence (AI) is one of the technologies of the 21st century that has emerged with its awareness and application cutting across different fields of human endeavour. AI seems to be currently the most prominent technique in the world of technology, and it is based on enabling computer systems to perform tasks that usually require human intelligence. It is a branch of science which deals with helping machines find solutions to complex problems in a more human-like fashion. This generally involves borrowing characteristics from human intelligence, and applying them as algorithms in a computer friendly way. Artificial intelligence (AI) refers to computer systems capable of performing complex tasks that historically only a human could do, such as reasoning, making decisions, or solving problems. Gaber (2023) opines that artificial intelligence (AI) is a field of science seeking to develop computer systems with a level of efficiency similar to that of an expert human. In the field of education, artificial intelligence is defined as a means to improve education in an individualized, flexible, inclusive and interesting way by processing real-time data (UNESCO, 2017). The integration of artificial intelligence (AI) in



education has garnered significant attention in recent years. This interest is driven by the transformative potential of AI technologies to enhance teaching methodologies, streamline administrative processes, and improve student learning outcomes. The purpose of artificial intelligence in education is to improve classroom education and enhance the capacity of teachers to augment such a process.

Artificial intelligence is likely to change education in the coming decades, both in the classroom and at the system level (Organization for Economic Co-operation and Development [OECD], 2020). For example, when it comes to personal learning, AI can provide learning based on the individual needs of the learner and identify educational resources and methods within the framework of the student's learning pace. Holmes et al. (2022) state that the use of AI in education consists of four levels: (a) learning with AI, in which AI provides supportive resources for the learner, teacher, and educational administration; (b) using AI to learn how to learn through data analysis, identify students' academic level and effective learning methods, and make decisions about the learning process and educational plans; (c) learning about AI, which concerns learners' knowledge of AI techniques; and (d) preparing for AI, in which all citizens are prepared for the possible effects of AI on their lives and are made aware of some of the issues associated with it, such as ethics of AI, databases, monitoring, and the potential impact on jobs in the future.

Awareness plays a vital role in the adoption of AI technology in higher education (Kour & Karim, 2020). Awareness means to have knowledge of the existence and usefulness of artificial intelligence (Amadi-Iwai et al., 2024). Educators cannot utilize or apply AI in their teaching practices except they are aware of the different applications in education. Its applications range from student learning and evaluation to teacher development, highlighting the multifaceted role AI can play in enhancing educational outcomes. The integration of AI into educational management systems can facilitate more personalized learning experiences, allowing educators to tailor their teaching strategies to meet the diverse needs of students. The research findings of Rahiman&Kodikal (2023) indicate that the awareness of faculty members regarding the application of AI-based technology in their regular academic activities significantly influenced their work engagement which, in turn, contributed to the integration of AI into higher education. Lecturers need to be aware, well-prepared and confident in their ability to use AI-based applications to support their teaching methods (Amadi-Iwai et al., 2024).

As tertiary institutions across the globe are increasingly adopting AI tools, it is crucial to assess the level of awareness and application of these technologies among business education lecturers. Business education lecturers or business educators are professionally trained teachers of business courses who are engaged and are teaching business related subjects in universities, polytechnic and colleges of education. They teach business education courses with options in accounting, entrepreneurship, marketing and office technology management. Some of the objectives of teaching business education courses in colleges of education, according to the National Commission for Colleges of Education (2012) include production of well qualified and competent Nigeria Certificate in Education (NCE) graduates who will be able to teach business subjects in secondary schools and other related educational institutions, and equip students with the right skills that will enable them to engage in a life of work in the office as well as for self-employment.

The awareness of AI among business educators is critical, as it will directly influence the adoption and effective integration of AI tools in the business education curriculum. The level of awareness and application of AI among business education lecturers becomes increasingly critical because it is not merely a trend but a necessary evolution in teaching and learning

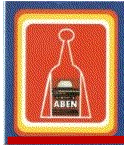


methodologies that can enhance educational outcomes and prepare students for a technology-driven workforce. The potential of AI to personalize learning experiences, automate administrative tasks, and provide real-time feedback is reshaping the educational landscape, making it imperative for educators and students alike to understand and leverage these technologies effectively (Fahimirad&Kotamjani, 2018; Chouhan, 2023; Lin, 2022). Research indicates that AI applications can significantly enhance the teaching and learning process by facilitating adaptive learning environments tailored to individual student needs (Huang et al., 2021). Moreover, the use of AI in educational settings can streamline administrative functions, allowing educators to focus more on pedagogical strategies rather than bureaucratic tasks (Barakina et al., 2021). These benefits underscore the importance of fostering a culture of AI literacy among business education lecturers and students, ensuring they are equipped to navigate and utilize these technologies effectively (Pham, 2023). Therefore, as AI technologies continue to evolve, it is imperative for business educators to stay informed and adept at utilizing these tools to enhance teaching and learning.

Molnar (2019) revealed that majority of teachers lack knowledge on the use of artificial intelligence in classroom delivery and emphasized on the need for teachers to be ready and competent in utilizing artificial intelligence tools effectively. Similarly, Amadi-Iwai et al., (2024) found out that Business Education Lecturers have low level awareness that artificial intelligence can be used to design course module, develop and implement new methods of teaching, set continuous assessments, and programme customized lesson plan. They also found out that business education lecturers have low level of awareness that artificial intelligence can be used to programme personalized tutorial, and automated assessment, for improved learning, and to prepare and develop teaching materials for improved job performance. Gaber et al. (2023) revealed that faculty members had a medium level of awareness of AI technologies and that there was no statistically significant relationship between AI awareness and technology adoption among faculty members. In contrast, the study found a direct and statistically significant positive relationship between AI awareness and digital competences among faculty members. A study by Jabali and Al-Qahtani (2022) indicated a high level of awareness of AI skills among faculty members while Gaber et al. (2023); Ukeh and Anih (2024) findings showed a relatively low adoption of AI tools among lecturers for teaching and research. In summary, available literature suggests that while AI applications in higher education are expanding there is a gap in both awareness and application that needs to be addressed to fully harness the potential of AI in education and business education in particular.

Statement of the Problem

The advancement of artificial intelligence (AI) technologies has transformed various sectors, including education. In tertiary institutions (Universities, Polytechnic and Colleges of Education) in Nigeria, the integration of AI presents both opportunities and challenges for lecturers. Despite the potential benefits of AI in enhancing teaching and learning experiences, there remains a notable gap in the awareness and application of these technologies among educators of which business educators are not exempted. Firstly, the awareness of AI technologies among lecturers is crucial for their effective implementation in educational practices. Research indicates that many business educators in tertiary institutions have low level awareness of AI and its potential applications in their teaching (Amadi-Iwai, 2023). This lack of awareness can lead to missed opportunities for enhancing student engagement and improving learning outcomes through AI-driven tools. For instance, AI can facilitate personalized learning experiences, automate administrative tasks, and provide data-driven insights into student performance (Barakina et al., 2021). However, the researchers observed that without adequate



awareness, lecturers may be hesitant to adopt these technologies, resulting in a disconnect between the potential of AI and its actual use in educational settings. As educational institutions continue to evolve in response to technological advancements, it is imperative to assess and address the current levels of awareness and application of AI technologies among lecturers to determine whether they are equipped to meet the demands of modern education, coupled with perceived gap in awareness and application of AI. Hence this study.

Research Questions

The following research questions guided the study:

1. What is the current level of awareness of artificial intelligence technologies among business educators in Federal Colleges of Education in South-West, Nigeria?
2. What is the current level of application of artificial intelligence technologies in the teaching practices of business educators in Federal Colleges of Education in South- West, Nigeria?
3. What challenges do business educators face in adopting and applying artificial intelligence technologies for teaching in Federal Colleges of Education in South-West, Nigeria?

Hypothesis

Ho: There is no significant relationship between the current level of awareness and the current level application of artificial intelligence technologies among business educators in Federal Colleges of Education in South-West, Nigeria.

Method

Descriptive survey research design was adopted for the study. The population of the study comprised 85 lecturers from four Federal Colleges of Education offering Business Education in South-west, Nigeria. The entire population was studied because it was manageable, hence there was no sampling. Questionnaire was the instrument used for data collection. The questionnaire was developed by the researchers using a modified four-point rating scale to measure level of awareness and application. The questionnaire was structured in the following rating scale Very High Level (VHL) – 4 points, High Level (HL) – 3 points, Low Level (LL) – 2 points and Very Low Level (VLL) – 1 point; Rating for challenges: Strongly Agree (SA) – 4 points, Agree (A) – 3 points, Disagree (D) – 2 points and Strongly Disagree (SD) – 1 point. The instrument was validated by three experts in business education and the reliability test was conducted using Cronbach alpha which showed a reliability coefficient of 0.86 which was deemed to be reliable. Data Analysis was through descriptive statistics of Mean and standard deviation to answer the research questions while Pearson Product Moment Correlation (PPMC) statistical method was used to test the hypothesis at 0.05 level of significance.

Results

Research Question 1

What is the current level of awareness of artificial intelligence technologies among business educators in Federal Colleges of Education in South-West, Nigeria?

Table 1: Respondents' Ratings on the current level of awareness of artificial intelligence technologies among business educators.

S/N	Level of Awareness of Artificial Intelligence Technologies Among Business Educators	Mean	SD	Remarks
1	I am aware of what artificial intelligence (AI) is and its	2.52	0.65	High level



	applications in education			
2	I am aware of various AI tools and software that can enhance teaching and learning in business education	2.46	0.61	Low Level
3	I am aware that artificial intelligence can be used to design and plan a course	2.38	0.59	Low Level
4	I am aware that artificial intelligence can be used to prepare and develop teaching materials	3.22	0.87	High level
5	I believe that AI can enhance the teaching effectiveness of business education lecturers	3.10	0.83	High level
6	I am aware of ethical considerations related to the use of AI in education	2.24	0.69	Low Level
7	I am aware that artificial intelligence is used to set continuous assessments	2.50	0.77	High level
8	I am aware that artificial intelligence can be used to mark and moderate examinations questions	2.12	0.63	Low Level
9	I am aware of the impact of AI on future job prospects for business education graduates.	3.48	0.76	High level
10	AI-based technology like a chatbot quickly provides information and answers queries about academic affairs	3.06	0.85	High level
	Grand Mean	2.71		High level

Source: Researchers' Computation, 2024

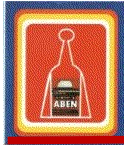
The results from Table 1 showed the current level of awareness of artificial intelligence technologies among business educators in Federal Colleges of Education in South-West, Nigeria. The results revealed that mean scores of all the items range from 3.48 - 2.12 with a grand mean of 2.71. This implies that Business Educators in Federal Colleges of Education possess a high level of awareness of Artificial Intelligence Technologies for teaching.

Research Question 2

What is the current level of application of artificial intelligence technologies in the teaching practices of business educators in Federal Colleges of Education in South-West, Nigeria?

Table 2: Respondents' rating of the Current Level of Application of Artificial Intelligence in the teaching practices of Business Educators.

S/N	Level of Application of Artificial Intelligence Technologies Among Business Educators	Mean	SD	Remarks
1	I apply AI technology to create teaching material and content development	3.10	0.82	High Level
2	I apply AI tools to review homework, tests, and other written assignments, monitor student achievement, and provide feedback	2.36	1.08	Low Level
3	I apply AI tools to detect plagiarism in student papers and courses works	1.78	1.02	Low Level
4	The application of AI in my higher education academic journey is cost-effective	1.96	0.94	Low level
5	I am using AI technologies and tools in my teaching and learning activities	2.44	0.85	Low Level



6	I utilize AI to create personalized learning experiences for my students.	2.46	1.10	Low Level
7	I integrate AI into the design of my courses to enhance curriculum delivery	2.43	0.86	Low Level
8	I implement AI technologies to enhance student engagement during lectures and discussions	2.52	0.98	High level
9	I collaborate with AI systems in developing course materials and resources	2.48	0.87	Low Level
10	I encourage students to interact with AI-based platforms as part of their learning experience	2.45	1.04	Low Level
Grand Mean		2.40		Low Level

Source: Researchers' Computation, 2024

The results from Table 2 showed the current level of application of artificial intelligence technologies in the teaching practices of business educators in Federal Colleges of Education in South-West, Nigeria. The results reveal that mean scores of all the items range from 3.10 - 1.78 with a grand mean of 2.40. This implies that Business Educators in Federal Colleges of Education in South-West, Nigeria apply Artificial Intelligence Technologies in their teaching practices at a low level.

Research Question 3

What challenges do business educators face in adopting and applying artificial intelligence technologies for teaching in Federal Colleges of Education in South-West, Nigeria?

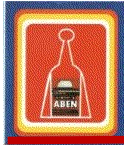
Table 2: Respondents' Ratings of Challenges Business Educators Face in Adopting and Applying Artificial Intelligence Technologies For Teaching.

S/N	Challenges Business Educators Face in Adopting and Applying Artificial Intelligence	Mean	SD	Remarks
1	High Cost of AI Implementation in teaching	3.46	0.69	Agreed
2	Insufficient AI skills and expertise	3.54	0.67	Agreed
3	Lack of technical infrastructure in Colleges	3.10	0.46	Agreed
4	AI-based scoring or assessment may sometimes improperly evaluate performance	2.84	0.53	Agreed
5	AI systems sometimes fall short of meeting the needs of lecturers for effective feedback	2.56	0.80	Agreed
6	AI facilitates technology addiction among teachers and students.	3.68	1.08	Agreed
Grand Mean		3.19		Agreed

Source: Researchers' Computation, 2024

The results from Table 3 showed the challenges business educators face in adopting and applying artificial intelligence technologies for teaching in Federal Colleges of Education in South-West, Nigeria. The results revealed that mean scores of all the items range from 3.68 - 2.56 with a grand mean of 3.19. This implies that Business Educators agreed that all the items are challenges business educators in Federal Colleges of Education in South-West, Nigeria face in adopting and applying artificial intelligence technologies for teaching.

Test of Hypothesis



Ho: There is no significant relationship between the current level of awareness and the current level application of artificial intelligence technologies among business educators in Federal Colleges of Education in South-West, Nigeria.

Table.4: Relationship between lecturers' level of awareness and level of application of artificial intelligence

Variables	N	Mean	SD	Df	α -level	r-cal	P-value	Decision
Awareness	85	2.71	0.64					
				83	0.05	1.933	0.000	Reject Null Ho
Application	85	2.40	0.71					

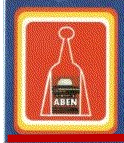
Researchers' Computation, 2024.

Table 4 shows the number of participants (n) = 85, and a correlation value (r) = 1.933 and P-value of 0.000. Testing the hypothesis at alpha level = 0.05 the p value is less than the alpha value, 0.000 < 0.05. Therefore, the null hypothesis is rejected. This indicates that there is significant relationship between the current level of awareness and the current level of application of artificial intelligence technologies among business educators in Federal Colleges of Education in South-West, Nigeria. This implies that awareness drives adoption. Business educators who are more aware of AI technologies are more likely to apply them in their teaching practices. However, awareness may not guarantee adoption because lecturers may be aware of AI technologies, but factors such as lack of resources, technical support, availability of infrastructure, motivation and others might influence their decision to apply them.

Discussion of Findings

Findings of the study showed the current level of awareness of artificial intelligence technologies among business educators in Federal Colleges of Education in South-West, Nigeria. The results reveal that mean scores of the items range from 3.48 - 2.12 with a grand mean of 2.71. This implies that Business Educators possess a high level of awareness of Artificial Intelligence Technologies for teaching. The findings of this study align with Jabali and Al- Qahtani's (2022) findings, which indicated a high level of awareness of AI skills among faculty members. However, this finding contradicts Gaber et al. (2023) who revealed that lecturers possess a medium degree of awareness of AI, and Amadi-Iwai et al. (2024) who found out that business education lecturers have a low level of awareness that artificial intelligence can be used to design course module, develop and implement new methods of teaching, set continuous assessments, and programme customized lesson plan. They also found out that business education lecturers have a low level of awareness that artificial intelligence can be used to programme personalized tutorial, and automated assessment, for improved learning, and to prepare and develop teaching materials for improved job performance

Findings of the study revealed the current level of application of artificial intelligence technologies in the teaching practices of business educators in Federal Colleges of Education in South-West, Nigeria. The results reveal that mean scores of all the items range from 3.10 - 1.78 with a grand mean of 2.40. This showed that Business Educators in Federal Colleges of Education in South-West, Nigeria apply Artificial Intelligence Technologies in their teaching



practices at a low level. This finding agrees with Amadi-Iwai (2024) that business education lecturers to a low extent integrate artificial intelligence to mark and moderate examinations questions, update students' admissions and induction programmes, and to programme automated assessment for improved job performance. The findings slightly agree with Gaber et al. (2023) and Ukeh and Anih (2024) who found out that the use of AI by lecturers is at a relatively low level. Also, Molnar (2019) findings revealed that majority of teachers lack knowledge on the use of artificial intelligence in classroom delivery and emphasized on the need for teachers to be ready and competent in utilizing artificial intelligence tools effectively.

The results from the analysis showed the challenges business educators face in adopting and applying artificial intelligence technologies for teaching in Federal Colleges of Education in South-West, Nigeria. The results revealed that mean scores of all the items range from 3.68 - 2.56 with a grand mean of 3.19. This implies that Business Educators agreed that all the items are challenges business educators in Federal Colleges of Education in South-West, Nigeria face in adopting and applying artificial intelligence technologies for teaching. The results of this study align with the results obtained by Al-Subhy (2020), Jantakun et al. (2021) and Badawi (2022) who found that there are several challenges to the use of AI in teaching and concluded that there are a set of challenges facing the application of AI on university campuses, including the need to train faculty and develop their skills to be compatible with AI.

Findings of the study revealed that there is a significant relationship between the current level of awareness and the current level of application of artificial intelligence technologies among business educators in Federal Colleges of Education in South-West, Nigeria. The results showed the number of participants (n) = 85, and a correlation value (r) = 1.933 and P-value of 0.000. Testing the hypothesis at alpha level = 0.05 the p value is less than the alpha value, $0.000 < 0.05$. Therefore, the null hypothesis is rejected. This finding aligns with the research by Musa and Madu (2024) and Gaber et al. (2023) who also found that there was positive relationship between AI awareness and digital competencies (DCs). This implies that awareness drives adoption. Business educators who are more aware of AI technologies are more likely to apply them in their teaching practices. However, awareness may not guarantee adoption because lecturers may be aware of AI technologies, but factors such as lack of resources, technical support, availability of infrastructure, motivation and others might influence their decision to apply them.

Conclusion

Based on the results of the current study, business educators in Federal Colleges of Education in South-West Nigeria possess a high level of awareness of AI technologies and a low level of application of AI technologies for teaching. The study concluded that there are several challenges to the application of AI in teaching which is revealed in the gap between awareness and application or utilization.

Recommendations

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

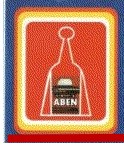
1. Tertiary institution administrators and the government should collaborative with AI experts and sponsor business educators to attend seminars/workshops to create more awareness of artificial intelligence.
2. Business educators should attend training and professional development programmes needed for the application of artificial intelligence tools into their teaching practices.



3. Government should provide business educators with adequate digital infrastructure and resources for effective adoption and application of artificial intelligence technologies into the classroom to enhance the teaching and learning process.

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