

IMPACT OF ARTIFICIAL INTELLIGENCE IN TEACHING AND LEARNING OF BUSINESS EDUCATION IN UNIVERSITIES IN EDO AND DELTA STATES, NIGERIA

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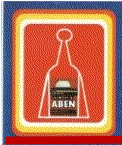
Abstract

The study sought to examine the impact of Artificial Intelligence in teaching and learning of Business Education in universities in Edo and Delta State, Nigeria. Survey research design was adopted. Two research questions and two null hypotheses were tested at 0.05 level of significant. Population comprised of 365 Business Education lecturers and students from Universities in Edo and Delta States. The sample size was 180 Business Education lecturers and students and the sampling techniques adopted were census sampling and simple random sampling techniques. A 25-item questionnaire validated by three experts was used and the reliability of the instrument was ascertained using Pearsons Product Moment Correlation (PPMC) and a reliability of 0.81 was obtained. In answering the research questions mean and standard deviation were used while t-test statistics was used in testing the null hypotheses at 0.05 level of significant. The findings revealed that Artificial Intelligence (AI) is applied to teaching and learning of Business Education in universities in Edo and Delta States to a high extent. The findings also revealed that there was no significant variation in the mean rating of Business Education lecturers and students on extent to which Artificial Intelligence have Impact in teaching and learning of Business Education in universities in Edo and Delta States hence the null hypothesis was retained. It was concluded that AI has high impact in teaching and learning of Business Education as it can arrange learning experience to specific individual abilities and needs, lessen lecturers' workload and enhance grading accuracy. Hence, it was recommended among others that Business Education students should be encouraged to make adequate use of AI in learning of Business Education courses as AI can help to personalize content to individual students' needs and abilities.

Keywords: Impact, Artificial Intelligence, Teaching and Learning, Business Education, Universities

Introduction

Artificial intelligence (AI) has rapidly grown around us, so it is very essential to glimpse how it functions. AI can process enormous volumes of data using algorithms, and after iterations

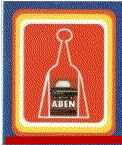


and training loops, it begins to discover patterns, deduce relationships, and make predictions. With the growing use of smartphones and other technologies, artificial intelligence has become a part of our daily life. It is well known, that AI is undergoing a revolution. It is gradually taking over the academic landscape as the technological world expands and changes. Organizations, notably educational institutions, have adopted AI globally and used it in a range of contexts and scenarios (Alam, 2021). It is a matter of fact that artificial intelligence provides enormous opportunities for automating and accelerating administrative work for educational institutions and instructors (Timms, 2016).

Apparently, artificial intelligence is a fascinating topic that is seen as the next significant technological enhancement. Intelligence is the capacity to integrate computers, artificial intelligence (AI), and embedded systems, such robotics, that exhibit advanced cognitive functions, intelligence, learning, flexibility, and decision-making skills (Devedic, 2004). Apparently, AI's abilities and accuracy improve with access to data sources and feedback. Subsequently, the act of adjusting and refining allows AI to learn. AI's adaptive techniques provide a few basic enhancements in executing difficult tasks effectively and teaching concepts in ways that are tailored to the learners' comprehension levels. When used intelligently, correctly, and ethically, it has enormous potential.

According to Sharma et al. (2019) the use of artificial intelligence in education has the potential to fundamentally alter a wide range of educational fields. In this regard, AI has lessened the paperwork and workload for teachers, especially when it comes to carrying out different teaching and instructing activities. This has freed up more time for instructors to focus on other important responsibilities in addition to their primary duty of teaching (Chassignol, 2018). According to Rowe, (2011) there is evidence of a better and enhanced learning experience for students as a result of the usage of AI in education. It is clear that artificial intelligence (AI) has the potential to drastically alter how academics collaborate, publish papers, do research, and think, teach, and learn. As a result, scientists everywhere are becoming increasingly interested in AI due to its immersive benefits. Furthermore, according to Pokrivcakova (2019), artificial intelligence facilitates the creation and use of intelligent training systems and adaptive content that is tailored to each student's particular learning requirements and skills. Examples of this include intelligent virtual reality and its use in simulation-based teaching and learning. By adopting artificial intelligence (AI) to automate hard tasks, academics can also focus on more challenging issues.

Furthermore, by utilizing AI-powered technology, academics can review data, find patterns in large datasets, and generate facts. AI is also capable of producing forecasts and insights that would be difficult for humans to produce. For instance, AI-based predictive analytics can be used to predict students' performance and identify areas that can benefit from further assistance. Pokrivcakova (2019) claims that in recent years, artificial intelligence has been widely utilized by academics and that AI helped scholars at universities write more productively and successfully. Recent innovations in AI and AI-powered writing aides assisted researchers in detecting and correcting grammar and spelling problems, as well as providing appropriate citations. By employing AI to summarize lengthy materials, academics can swiftly scan through them and get to the important parts of research papers or articles. AI has the potential to enhance scholarly collaboration as well. Since lecturers and students can work together in real time on projects utilizing AI-powered tools, sharing ideas, keeping track of project progress, and offering feedback is made simpler. AI has the potential to improve academic teaching and learning as well since it allows lecturers to tailor their instruction to the needs of their students by utilizing AI-powered educational tools to help with individualized training. Furthermore, AI has attracted



significant attention from academics in the last few years as they begin to use it to automate grading, providing students with more accurate and timely feedback (Pokrivcakova, 2019).

Another benefit of AI for researchers is that it can make collaboration easier. AI applications can help with communication within teams as well as task and project coordination. Additionally, AI can be used to automate document review and exchange, which facilitates academic collaboration on projects. AI may additionally be utilized to link academics with the resources they require to finish their work, making it simpler for them to locate and access the information they require to complete their research work. Furthermore, using AI to generate new ideas and insights can help academic research. Additionally, new theories and concepts can be generated with AI, as well as novel patterns in data. This can give academics fresh perspectives and enable them to conduct their studies with more knowledge (Alam, 2021).

However, Kimondo et al. (2023) conducted a study on impact of AI on teaching and learning and found that AI and machine learning intensify the learning interactions of all students world-wide. While Adiguzel, et al. (2023) stated that the introduction of adaptive teaching strategies and the creation of automated and intelligent systems by teachers through AI-powered Chatbots enable teachers to analyze and assess a student's learning ability. Also, the same vein, Vincent-Lancrin et al. (2020) reported the effectiveness of AI in assisting those students with special needs to gain from education.

In addition, Muresan (2023) carried out a study on impact of artificial intelligence on education and found in the study that AI can lead to personalize learning and that it can also allow content pace and teaching style to be custom-made to specific students' needs and preferences. The author also stated that AI expedite personalized learning and make available instant feedback and enhance efficacy in the assessment process.

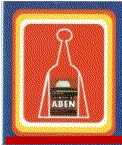
Again, Surugiu et al. (2024) found in their studies that AI assist teachers in administrative tasks, personalize learning plans and save time. Equally, numerous researchers such as Zhang and Aslan (2021); Southworth et al. (2023); Hopcan et al., (2022) affirmed in their studies that AI improve learners' participation and performance and that AI help in proficiency based task assignment. While Hopcan et al., (2022) further agreed that customized learning materials are tailored based on students' assessment focusing on their strengths and weaknesses.

Despite the obvious advantages of AI for academics, applying it to research and cooperation may have drawbacks. According to Chassignol (2018), the potential for data manipulation or inaccurate results due to AI is one potential drawback. The possibility for AI to be utilized to avoid ethical problems when doing research is another possible drawback. Also, there is a chance that AI will be utilized to automate tasks that should be completed by humans, including peer review and proofreading.

Statement of the Problem

Knowledge has to do with the amount of information possessed by an individual and an individual can only possess a limited amount of knowledge at any given time. Hence, advancement in computing power, data storage, machine learning algorithms and the deep learning technique emergence such as convolutional neural networks (CNNs) and recurrent neural networks (RNNs) and their applications in computer vision, natural language processing, robotics and more in modern times has led to the continuous advancement in AI research and application.

Modern teaching and learning seems to depend much on use of AI as AI-power Chatbots which are mostly use in modern times by different professionals, researchers and students. The traditional method of using textbooks, magazines periodic and journal to acquire knowledge seems to be outdated as these modern technologies of AI seems to have taken over the world of



power of knowledge of which universities is seen as the citadel of knowledge a place for teaching and learning having lecturers and students.

However, several problems led to the development and application of AI in teaching and learning. The researchers in a quest to identify these problems observed that many real-world problems are complex, making it difficult for human beings to solve them efficiently. It was also observed that as data and tasks increase, human capabilities become limited. Consequently, AI has been reported to help analyze large amount of data sets, provide insight into decision making and used to enhance academic teaching and learning, as academics adapt their teaching to the needs of their students by using AI-powered educational tools to aid personalized training.

The need to find out whether AI is being applied to teaching and learning of Business Education and to determine the impact of the application of AI to teaching and learning of Business Education becomes paramount. Hence, the researchers decided to carry out this study which is impact of Artificial intelligence in teaching and learning of Business Education in universities in Edo and Delta States - Nigeria.

Purpose of the study

The main purpose of the study is to examine the impact of artificial intelligence in teaching and learning of Business Education in universities in Edo and Delta States. Specifically, the study sought to determine the extent to which:

1. Artificial intelligence is applied to teaching and learning of Business Education in universities in Edo and Delta States.
2. Artificial intelligence have impact in teaching and learning of Business Education in universities in Edo and Delta States.

Research Questions

The following research questions guided the study.

1. To what extent is artificial intelligence applied to teaching and learning of Business Education in universities in Edo and Delta States?
2. To what extent does artificial intelligence have impact in teaching and learning of Business Education in universities in Edo and Delta States?

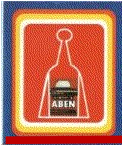
Research Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance to guide the study.

1. There is no significant variation in the mean rating of Business Education lecturers and students on extent of application of artificial intelligence in teaching and learning of Business Education in universities in Edo and Delta States.
2. There is no significant variation in the mean rating of Business Education lecturers and students on extent to which artificial intelligence have impact in teaching and learning of Business Education in universities in Edo and Delta States.

Methodology

The study adopted the survey research design. This was considered most appropriate since it was to collect and describe data without manipulation. The population of the study is three hundred and sixty-five Business Education lecturers and students (sixty Business Education lecturers and three hundred and five 300 level Business Education students) from four public universities in Edo and Delta States – University of Benin, Benin City (120 students and 13 lecturers), Ambrose Alli University, Ekpoma (90 and 8 lecturers), Delta State University, Abraka (87 and nineteen lecturers) and University of Delta, Agbor (8 and 20 lecturers) (Source: Office of Heads of Department). While the sample size is one hundred and



eighty respondents made up of sixty Business Education lecturers and one hundred and twenty 300 level students.

The census sampling technique was used for the lecturers while the simple random technique was utilized in sampling for the students. A 25-item structured questionnaire was used for data collection. The questionnaire was divided into two parts. Part A and B. Part A contained the bio-data of the respondents. While part B have two sections that dealt with the various variables of the study. A 4-point modified Likert Type rating scale of Very High Extent (VHE) = 4, High Extent (HE) = 3, Low Extent (LE) = 2, and Very Low Extent (VLE) = 1 was utilized. The instrument was validated by 3 experts. Two from Department of Vocational and Technical Education (Business Education Unit), University of Benin and one from Measurement and Evaluation Unit of Guidance and Counseling Department, Delta State University, Abraka.

A pilot study was conducted on 25 respondents from Niger Delta University, Amasomma, Bayelsa State. The researcher with the help of two research assistants administered the instrument twice with two weeks interval on the respondents. Pearson's Product Moment Correlation Coefficient was employed to analyze the data collected in order to determine the reliability of the instrument. The reliability obtained was 0.81. The Mean and Standard Deviation was used to answer the research questions while the t-test statistics was used to test the null hypotheses at 0.05 level of significant. Any calculated Mean value of 2.49 and below was regarded as Low extent while any calculated Mean value of 2.50 and above was regarded as High extent. For the hypotheses, any calculated p-value that was less than 0.05 was rejected while any calculated p-value that is greater than 0.05 was retained.

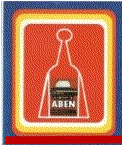
Presentation of Results

Research Question One

To what extent is artificial intelligence applied to teaching and learning of Business Education in universities in Edo and Delta States?

Table 1: Mean responses of Business Education lecturers and students on extent to which artificial intelligence is applied to teaching and learning of Business Education in universities (N=180)

S/N	ITEM STATEMENT	X _L	SD _L	X _s	SD _s	X _G	SD _G	Remark
	Extent to which:							
1.	AI is use to customize learning experiences to individual students' needs and abilities.	3.58	0.56	3.52	0.60	3.55	0.58	VHE
2.	AI accurately grades assignments, freeing lecturers to focus on teaching students.	3.14	0.65	3.08	0.57	3.11	0.61	HE
3.	AI-powered virtual instructors and enable students to learn by provide one-on-one support and feedback.	3.10	0.46	3.30	0.36	3.20	0.41	HE
4.	The use of AI assist academic researchers and students in writing more successfully and effectively. When it comes to academic teaching and learning,	3.45	0.78	3.24	0.76	3.35	0.77	HE
5.	The use of AI-powered writing tools help scholars and students find and fix grammatical and spelling errors as	3.47	0.54	3.38	0.48	3.43	0.51	HE

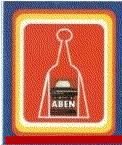


	well as provide proper citations.							
6.	By employing AI to summarize lengthy documents, educators and learners can swiftly scan through them and get to the important parts of a research paper or article.	3.73	0.62	3.78	0.88	3.76	0.75	VHE
7.	AI is used to enhance collaboration among academics.	3.19	0.85	2.80	0.89	3.00	0.87	HE
8.	Academics and students can rapidly skim through extensive materials by using AI to summarize them, allowing them to quickly get to the core of an article or a research paper.	3.16	0.78	3.14	0.93	3.15	0.86	HE
9.	AI is being used to improve education in academic settings as lecturers are able to more effectively customize their instruction to the needs of their students by utilizing AI-powered instructional resources.	3.15	0.86	2.96	0.78	3.06	0.82	HE
10.	AI is used to automate document review and exchange, which facilitates academic collaboration on projects.	3.32	0.87	3.10	0.46	3.21	0.67	HE
11.	AI is used to find novel patterns in data and provide fresh theories and concepts	2.73	0.98	2.56	0.92	2.65	0.95	HE
12.	AI is applied to adapt content that are personalized to each student's unique learning needs and abilities, such as intelligent virtual reality and its application in simulation teaching and learning.	3.20	0.84	3.45	0.88	3.33	0.86	HE
WEIGHTED AVERAGE		3.24	0.73	3.16	0.71	3.23	0.72	HE

Source:Fieldwork 2024

Note: X_L = Mean of Lecturers; X_S = Mean of Students; SD_L = Standard Deviation of Lecturers; SD_S = Standard Deviation of Students; X_G = Mean Grand; VHE = Very High Extent; HE = High Extent, N=No. of respondents

The data on Table 1 showed the grand mean score for items 1 and 6 are 3.55 and 3.76. These two AI applications were applied to a very high extent in teaching and learning of Business Education in universities in Edo and Delta States. Also, from the Table 1, items 2, 3, 4, 5, 7, 8, 9, 10, 11, and 12 have mean score ranging from 2.65 to 3.43. These mean are all above the criterion mean of 2.50. Hence these 10-items are applied to a High extent in teaching and learning of Business Education in universities in Edo and Delta States. Therefore, the extent of application of AI in teaching and learning of Business Education in universities in Edo and Delta States is high. While the standard deviation of the 12-items in the scale vary from 0.41 to 0.95. This indicated that the respondents were not far apart in their responses.



The weighted average of 3.23 indicated that Business Education lecturers and students of universities in Edo and Delta States agree to a high extent that AI are applied to teaching and learning of Business Education in universities in Edo and Delta States.

Hypothesis One

There is no significant variation in the mean rating of Business Education lecturers and students on extent of application of artificial intelligence in teaching and learning of Business Education in universities in Edo and Delta States.

Table 2: *t*-test Analysis of mean rating of Business Education lecturers and students on extent of application of artificial intelligence in teaching and learning of Business Education in universities

Variable	N	Mean	SD	df	α	t	p-value	Decision
Lecturers	60	3.24	0.73					
Students	120	3.16	0.71	178	0.05	0.86	0.46	Not Significant

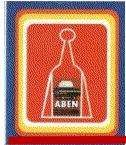
Data presented in Table 2 revealed that the t-value of 0.86 at 178 degree of freedom on extent of application of artificial intelligence in teaching and learning of Business Education in universities with a p-value of 0.46 is greater than the criterion value of 0.05 (p-value 0.46>0.05). Since p-value is greater than the significant value, the null hypothesis was retained. This signifies that there is no significant variation in the mean rating of Business Education lecturers and students on extent of application of artificial intelligence in teaching and learning of Business Education in universities in Edo and Delta States.

Research Question Two

To what extent does artificial intelligence have impact in teaching and learning of Business Education in universities in Edo and Delta States?

Table 3: Mean responses of Business Education lecturers and students on extent to which artificial intelligence have impact in teaching and learning of Business Education in universities (N=180)

S/N	ITEM STATEMENT	X_L	SD_L	X_S	SD_S	X_G	SD_G	REMARK
Extent to which:								
1.	AI can arrange learning experience to specific individual abilities and needs	3.12	0.88	3.34	0.64	3.23	0.76	HE
2.	AI-driven simulations, games and interactive content can enhance students engagement	3.36	0.52	3.39	0.34	3.23	0.43	HE
3.	AI lessen lecturers' workload and enhance grading accuracy	3.57	0.76	3.76	0.83	3.67	0.80	VHE
4.	AI can offer one on one assistance and response to students and lecturers.	3.28	0.91	3.45	0.67	3.37	0.79	HE
5.	AI can make available real-world examples and case studies to illustrate business concepts during teaching and learning process.	3.68	0.75	3.72	0.78	3.70	0.77	VHE
6.	AI can create immersive, interactive learning spaces	3.47	0.94	3.34	0.92	3.41	0.93	HE
7.	AI can assist students to develop	3.15	0.48	3.20	0.56	3.18	0.52	HE



	skills and abilities required for the modern labour force								
8.	AI can help scrutinize large datasets to update instruction and improve student outcomes.	2.93	0.98	3.05	0.83	2.99	0.91	HE	
9.	AI can expedite ongoing skill development and upskilling.	3.36	0.57	3.48	0.50	3.42	0.54	HE	
10.	AI can ensure the significance of curriculum to industry demands and trends.	2.64	0.76	2.88	0.68	2.76	0.72	HE	
11.	AI can support large students' population and provide equal access to quality education.	3.58	0.86	3.70	0.93	3.64	0.90	VHE	
12.	AI can aid in research and data analysis for Business Education.	3.52	0.43	3.63	0.54	3.58	0.49	VHE	
13.	AI tailors learning experiences to individual students' needs, abilities and learning styles.	2.77	0.91	2.63	0.84	2.70	0.88	HE	
	WEIGHTED AVERAGE	3.27	0.75	3.35	0.70	3.30	0.73	HE	

Source: Fieldwork 2024

Note: X_L = Mean of Lecturers; X_S = Mean of Students; SD_L = Standard Deviation of Lecturers; SD_S = Standard Deviation of Students; X_G = Mean Grand; VHE = Very High Extent; HE = High Extent, N=No. of respondents

The data on Table 2 showed that the grand mean score for items 3, 5, 11 and 12 are 3.7, 3.70, 3.64 and 3.58 respectively. These four items on the scale revealed a very high impact of application of AI in teaching and learning of Business Education in universities in Edo and Delta States. While items 1, 2, 4, 6, 7, 8, 9, 10, and 13 have mean score ranging from 2.70 to 3.42. These mean are all above the criterion mean of 2.50. Hence these 9-items of AI have a High impact in teaching and learning of Business Education in universities in Edo and Delta States. Therefore, the extent to which AI have impact in teaching and learning of Business Education in universities in Edo and Delta States is high. While the standard deviation of the 13-items in the scale vary from 0.43 to 0.93. This indicated that the respondents were close in their responses to the criterion mean.

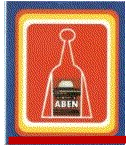
The weighted average of Mean Grand of 3.30 indicated that Business Education lecturers and students of universities in Edo and Delta States agree to a high extent that AI have impact in teaching and learning of Business Education in universities in Edo and Delta States to a high extent.

Hypothesis Two

There is no significant variation in the mean rating of Business Education lecturers and Business Education students on extent to which artificial intelligence have Impact in teaching and learning of Business Education in universities in Edo and Delta States.

Table 4: t-test Analysis of mean rating of Business Education lecturers and students on extent of application of artificial intelligence in teaching and learning of Business Education in universities

Variable	N	Mean	SD	df	α	t	p-value	Decision
Lecturers	60	3.27	0.75					
Students	120	3.35	0.70	178	0.05	1.03	0.62	Not Significant



Data presented in Table 4 showed that the t-value of 1.03 at 178 degree of freedom on extent to which artificial intelligence have Impact in teaching and learning of Business Education in universities with a p-value of 0.62 is greater than the criterion value of 0.05 ($p\text{-value } 0.62 > 0.05$). Since p-value is greater than the significant value, the null hypothesis was retained. This signifies that there is no significant variation in the mean rating of Business Education lecturers and students on extent to which artificial intelligence have Impact in teaching and learning of Business Education in universities in Edo and Delta States.

Discussion of Findings

The finding of the study on research question one and hypothesis one showed that the extent of application of AI in teaching and learning of Business Education in universities in Edo and Delta States is high. The finding is in agreement with Adiguzel, et al. (2023) that the introduction of adaptive teaching strategies and the creation of automated and intelligent systems by teachers through AI-powered Chatbots enable teachers to analyze and assess a student's learning ability. This implied that the extent of application of AI will assist teachers to analyze and assess students learning abilities. Furthermore, the finding corroborate the findings of Pokrivcakova (2019) who found that academics use AI to automate grading, providing students with more accurate and timely feedback. Again, the finding is in harmony with Sharma et al. (2019) who found that the use of artificial intelligence in education has the potential to fundamentally alter a wide range of educational fields.

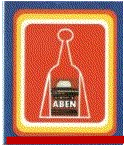
The finding of hypothesis one showed that there was no significant variation in the mean rating of Business Education lecturers and students on extent of artificial intelligence in teaching and learning of Business Education in universities in Edo and Delta States.

The finding of research question two indicated that the extent to which AI have impact in teaching and learning of Business Education in universities in Edo and Delta States is high. This finding is in agreement with the finding of Kimondo et al. (2023) who found that AI and machine learning intensify the learning interactions of all students world-wide. The finding is in consonant with that of Vincent-Lancrin et al. (2020) who found the effectiveness of AI in assisting those students with special needs to gain from education. Also in agreement with the study of Muresan (2023) who found that AI can lead to personalize learning and that it can also allow content pace and teaching style to be custom-made to specific students' needs and preferences. The author also stated that AI expedite personalized learning and make available instant feedback and enhance efficacy in the assessment process. Also, the study support that of Surugiu et al. (2024) who found in their studies that AI assist teachers in administrative tasks, personalize learning plans and save time.

The finding of hypothesis two revealed that there was no significant variation in the mean rating of Business Education lecturers and Business Education students on extent to which artificial intelligence have Impact in teaching and learning of Business Education in universities in Edo and Delta States.

Conclusion

Based on the outcomes of the study, it was concluded that AI is applied to teaching and learning of Business Education in universities in Edo and Delta States to a high extent. Also, that AI has high impact in teaching and learning of Business Education as it can arrange learning experience to specific individual abilities and needs, lessen lecturers' workload and enhance grading accuracy. Also, that AI aid in research and data analysis for Business Education. While it was also concluded that there was no significant variation in the mean rating of Business Education lecturers and students on extent to which AI have impact in teaching and learning of Business Education in universities in Edo and Delta States.



Recommendations

1. Business Education lecturers should continue to make use of AI-power Chatbots in teaching and learning of Business Education as its application has high positive impact on the students.
2. Business Education students should be encouraged to make adequate use of AI in learning of Business Education courses as AI can help to personalize content to individual students' needs and abilities.
3. Both Business Education lecturers and students should make use of AI in their research as it will help them to properly structure their work, correct their grammar and spellings

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