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APPLICATION OF ARTIFICIAL INTELLIGENCE TECHNIQUES IN TEACHING AND LEARNING OF BUSINESS EDUCATION IN TERTIARY INSTITUTIONS IN ANAMBRA STATE

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ABSTRACT

This study determined the application of artificial intelligence techniques in teaching and learning of business education in tertiary institutions in Anambra State. Two research questions guided the study and two null hypotheses were tested. The study adopted a descriptive survey research design using a population of 119 business educators in all the public tertiary institutions. The entire population was studied without sampling because the size was manageable. A structured questionnaire developed by the researcher was used for data collection. Cronbach Alpha method was used to establish the reliability which yielded coefficient values of 0.81 and 0.83 for the two clusters. Out of the 119 copies of the questionnaire distributed, 103 (representing 86.55%) were duly completed, retrieved and used for data analysis. Mean, standard deviation and ANOVA were used to analyze the data. The results showed that AI-driven e-learning platforms and AI-based assessment tools were applied to a low extent by business educators in tertiary institutions. The results showed that experience do not significantly influence the mean ratings of the respondents on the extent they applied AI-driven e-learning platforms and AI-based assessments tools in teaching and learning. Therefore, it was recommended among others that there is a need for comprehensive professional development programmes aimed at equipping educators with the necessary skills and competencies to effectively leverage AI tools in teaching and learning. These programmes should focus on providing training in AI literacy, data analytics, and instructional design to enable educators to create AI-enhanced learning experiences that align with curriculum objectives.

Keywords: Artificial intelligence, business education, business educators and tertiary institutions

Introduction

Education is a major determinant that can bring about the development of any nation. Education plays a very important role in the social, political and economic development of a country as it is aimed at supplying the economy with human capital that can convert effectively and efficiently other resources into output of high

value. According to Naziev (2017), education is the socially organized and regulated process of continuous transfer of socially significant experience from previous to following generations. When people are educated, their mindset are developed towards positive thinking and help them acquire physical and psycho-spiritual capabilities demanded by socio-cultural environment within which one is groomed to live and function. Business Education is an aspect of learning that prepares individuals for roles in business and offers them knowledge about business (Nwazor, 2014). It is a programme of instruction that is meant to prepare people for jobs requiring specialized training and provides students with the needed knowledge, understanding, attitude, competencies and skills to perform as workers in industries, civil service and entrepreneurs. According to Auwal (2015), Business Education is a training system that encourages the beneficiary to acquire skills that fit into the world place of work.

Business Education is a field of study and training in business practices and specific skills such as accounting, information processing, keyboard/typewriting techniques, secretarial studies, business management, marketing and record keeping (Okoro, 2017). These skills are very useful for office workers, teachers and entrepreneurs. The programme facilitates development of attitudes, knowledge and skills needed by all citizens to effectively manage personal and public business in an economic system. It is, therefore, considered as one of the keys that open the door for sustainable development in any country where it is effectively implemented. The programme is handled by well-trained teachers called business educators. Business educators are well trained professional teachers of business education who are competent in teaching all the components that make up the programme in universities and colleges of education. Aliyu (2013) stated that one can be referred to as a business educator only when one has a basic knowledge of all the three options (programme areas) of the business teacher education programme. The objectives of the programme include to provide students with information about all aspects of business thereby including business ethics as part of the curriculum and to produce graduates that are equipped with skills and competencies required in modern offices and schools as well as entrepreneurship.

Association of Business Educators of Nigeria (ABEN) (2017) explained that the objectives include preparation of students for initial employment, upgrading existing skills and retraining in new related business and office occupations. Graduates of the programme are expected to possess an intelligent understanding of the various areas of work in which they can earn a living. It develops economic literacy in all citizens, promotes both the discriminating use of services and resources by consumers and corresponding understanding of the consumers' viewpoint and how best to serve them. Furthermore, it provides background preparation in business as well as skill and tools to cope more effectively with college demands. However, these objectives can only be achieved if the instructional strategies are modified to suit the technological demands of modern offices, schools and the business environment. The world is rapidly trending technologically and this has permeated every field of human endeavour including education. As a result of this revolution, information, ideas, lifestyles and innovations easily spread to every part of the world. The nature of instructional preparations and delivery in education has also revolutionized and Business Education programmes are affected

by these rapid changes in technology and automation. One of the new educational technologies in education is artificial intelligence.

Artificial intelligence is defined as technologies used to allow computers to perform tasks that would otherwise require human intelligence, such as virtual perception, speech recognition and language translation (Fanning, 2024). Artificial intelligence is a technology where machines can learn and understand logic like humans. This technology is said to be able to help simplify human life which is very complex (Fitria, 2021). AI itself works by combining the presence of several data, iterative processing, and intelligent algorithms. This allows the software to learn automatically from patterns or features in the data. Artificial intelligence education software development has revolutionized traditional learning methods, from mobile digital courses to online references and virtual classrooms. This advanced technology has become integral to modern educational environments, replacing traditional teaching methods. Artificial intelligence (AI) is poised to address some challenges that education deals with today, through innovation of teaching and learning processes. In its development, artificial intelligence has also penetrated the world of education. AI systems allow people to learn with the help of education assistants such as bots. The development of the times requires the world of education to adapt to technological developments to improve the quality of education, especially the adjustment of information and communication technology. By applying AI in education technologies, educators can determine student needs more precisely, keep students more engaged, improve learning, and adapt teaching accordingly to boost learning outcomes (Issayeva, 2023). Artificial intelligence in education offers personalized learning experiences, automates administrative tasks, and provides real-time data analysis.

The role of artificial intelligence in the field of education is numerous. It is included as part of curriculum, as an instructional delivery system and a tool to enhance the entire learning process (Raja and Nagasubramani, 2018). Technology has radically and positively impacted on education and training globally by transforming teaching and learning. In fact, there is no aspect of human existence and career generally and particularly Business Education that has not been impacted tremendously by technology. It is expected that the wide application of artificial intelligence for teaching and learning in Business Education programmes in Nigerian institutions will likely impact in improving the quality and learning patterns to be more practical and effective. One of the most significant impacts of AI in education is its ability to provide individualized learning paths for students based on their unique needs, learning styles, and abilities (Takyar, 2022). This helps to ensure that students receive the support and resources they need to succeed, regardless of their background or skill level. AI in education helps educators identify gaps in student knowledge and provide targeted feedback to improve learning outcomes.

One of the biggest challenges in education is that everyone learns differently. It is difficult for teachers to accurately grasp each student's real learning situation, leading to the teaching design and teaching process, difficult to focus on each student's real learning needs, resulting in a waste of energy, time and teaching resources. But the artificial intelligence system can provide each learner with a personalized learning style, so that each student can learn in the most suitable way, accurately record the learning status of each student, assist teachers to achieve

hierarchical teaching and precise teaching, and effectively solve the core problems of teaching and learning. The presence of AI-based applications provides opportunities to learn anytime and anywhere, not limited by space and time (Fitria, 2021). In addition, students also have the opportunity to find teachers other than the teachers at the school. With this online education platform and the availability of teachers to choose from, students have the opportunity to communicate with other teachers, even with teachers from other countries. The learning experience and abilities of students will certainly be able to develop better. At present, the application of artificial intelligence in the field of our education mainly includes image recognition, speech recognition, human-computer interaction and so on (Deng, Ang & Ning, 2019). Applications of artificial intelligence in this study mainly focused on AI-driven e-learning platforms and AI-based assessment tools in teaching and learning.

Artificial Intelligence (AI) is dramatically transforming the landscape of eLearning, bringing about a revolution that enhances the learning experience and operational efficiency of educational platforms (Tulsiani, 2023). By integrating AI, eLearning platforms are evolving into intelligent systems capable of delivering personalized, engaging, and adaptive learning experiences. One of the most significant contributions of AI to eLearning is the ability to provide personalized learning experiences. AI algorithms analyze vast amounts of data on individual learners' behaviours, preferences, and performance. This analysis enables the creation of customized learning paths tailored to each student's unique needs. Personalized learning is an educational approach that tailors instruction to individual students' needs, abilities, and interests. It involves adapting the content, pace, and style of teaching and learning based on each learner's unique profile. Personalized learning recognizes that one-size-fits-all instruction is often ineffective because learners have diverse backgrounds, prior knowledge, learning styles, and motivations (Katiyar, 2024). For instance, AI can identify areas where a learner is struggling and adjust the content accordingly, offering additional resources, exercises, or alternative explanations to help them grasp difficult concepts. The use of modern technology to mold students' expectations and "abilities to access, acquire, manipulate, construct, create, and communicate information" in these digital contexts has resulted in students prospering (Green & Donovan, 2018). Personalized learning platforms known as "adaptive learning systems" (ALSs) may be used to create lessons that are personalized to the learning styles and preferences of students as well as the order and level of task difficulty (Pliakos, et al., 2019).

Adaptive learning is another area where AI is making a significant impact. Traditional eLearning platforms often follow a one-size-fits-all approach, which can be inefficient for diverse learners with varying abilities and learning paces. AI-driven adaptive learning technologies dynamically adjust the difficulty and type of content presented to learners based on their ongoing performance and interaction patterns. AI's ability to analyze vast amounts of data is transforming how eLearning platforms gather and utilize insights. By tracking learners' interactions, progress, and performance, AI can generate detailed analytics that help educators and administrators understand the effectiveness of their courses and identify areas for improvement. These data-driven insights enable more informed decision-making and continuous optimization of the learning process. AI is also enhancing learner engagement and interaction

through the use of chatbots and virtual assistants. These AI-driven tools can facilitate communication between learners and the eLearning platform, answering queries, providing information, and guiding users through their learning journey. Chatbots can handle routine inquiries, such as course registration or technical issues, allowing human instructors to focus on more complex and value-added tasks. Bordia (2023) concluded that educational institutions can use AI-powered chatbots to provide uninterrupted learning to students. As chatbots are available, students can use them to resolve doubts in real time. Moreover, chatbots can also be used by school authorities to provide information to parents and students.

Artificial intelligence streamlines the assessment and grading system by analyzing student work and offering swift and consistent evaluations. It lightens educators' burdens, allowing them to concentrate on personalized guidance (Takyar, 2022). Patterns in student performance aid in identifying struggling individuals and directing focused assistance. Meanwhile, AI's efficiency ensures prompt feedback, enhancing the learning cycle. The automated grading and assessment systems optimize teaching quality, promote equitable assessment, and cultivate effective student-teacher collaboration. AI can automate grading processes for assignments, quizzes and exams. By using machine learning algorithms, AI systems can assess and provide feedback on student work, saving time for educators and offering immediate feedback to learners. This enables teachers to focus more on personalised instruction and supports timely feedback for student growth such as suggesting corrections and identifying learners' mistakes (Memarian, 2023).

AI-based systems for assessment include services such as intelligent tutoring systems (ITS), automated scoring tools, computerised adaptive tests, essay scoring systems, chatbots, AI robots, augmented and virtual reality systems, all of which have been developed over a number of years. Teachers can use artificial intelligence (AI) tools to personalise formative assessment, providing real-time individualised feedback that addresses individual learning needs. AI can reduce the subjectivity associated with human grading and reduce the time spent on grading tasks. However, AI-powered tools can automate the process of providing feedback on assignments, quizzes, and exams, saving teachers valuable time while ensuring that students receive timely feedback to improve their performance. Students receive instant feedback on their work, allowing them to identify errors and areas for improvement in real time. This feedback loop boosts learning efficiency and facilitates student progress (Muñoz, et al., 2022). Additionally, natural language processing (NLP) technology enables AI to evaluate written assignments, essays, and even speeches, providing detailed feedback on grammar, style, and content.

Artificial intelligence powered tools and applications improve educational measurement, including testing, assessment, and evaluation. These tools can provide educators with valuable insights into student performance, learning outcomes, and instructional effectiveness. For example, AI-powered assessment tools can analyze student responses to assignments and provide personalized feedback to help students identify areas of strengths and weaknesses (Nazaretsky et al., 2022). These tools can also provide teachers with insights into the effectiveness of their instruction and identify areas, where they may need to adjust their teaching strategies. In addition, AI-powered tools

can help automate many aspects of the assessment process, saving time and reducing the burden on teachers (Huang et al., 2023). AI-powered tools can also help identify students at risk of falling behind or benefit from additional assistance or remediation (Delgado et al., 2020). These tools can analyze students' data, such as test scores and attendance records, and identify patterns that may indicate a need for intervention. This can help teachers to provide targeted support to students who need it most. Therefore, the development of AI-powered tools and applications has revolutionized the field of education by providing educators with valuable insights into student performance, learning outcomes, and instructional effectiveness. Artificial intelligence application in tertiary institutions in Anambra State empowers business educators to use AI as a tool to enhance instruction (Singh & Jain 2022).

The business educators to be used in this study come from universities and colleges of education owned by federal and state government with different levels of educational attainment and years of experience which may influence their level of skills in applying artificial intelligence for instructional purposes. This provides one with respondent variable years of experience (0-5 years/6-10 years/above 10 years) which will enrich the study. Experience is the number of years or the period a worker has been performing assigned duties. The term experience is defined as professional growth that takes place in the educator as a result of continued stay, or study on the job and other related processes. The general notion according to Obasi (2016) is that employees with high level of experience perform better than those with lower experience. This conception is still a matter of great debate among researchers in education and management sciences. Teachers with more years of experience in new technologies tends to implement more innovative methodologies through emerging technologies than teachers with less years of experience (Oleksiuk and Olesiuk, 2020).

Artificial intelligence can be deployed to solve various problems hindering the effective implementation of teaching programmes in tertiary institutions across the country. The teaching programme is a core programme of tertiary institutions and is very critical to the attainment of tertiary institutions. Artificial intelligence is important for the academic development of communities of students and teachers, it is therefore relevant that every user of technologies be abreast to the benefits it offers especially to the education sector. Researchers in education Brown, Lewis and Harcleroad, in (Omariba, Gitau and Ayot, 2016) have shown that with present inadequate infrastructure and lack of technologically skilled teachers in education, it is difficult to intensively achieve the goals and objectives of quality education and training. It is against this background that this study on application of artificial intelligence techniques in teaching and learning of business education in tertiary institutions in Anambra State was conceived.

Statement of the Problem

The key objective of business education is to equip recipients with skills that will enable them to succeed in employment as teachers, workers in modern offices, or entrepreneurs in the current technology-driven business environments. With advancement in technology in the 21st century, artificial intelligence has become an invaluable technology for teaching, learning and research in education. AI has so many advantages on teaching and learning. However, despite these numerous advantages, some teachers still find it challenging in transiting

from the analogue to the digital in teaching and learning of business education. Business educators may have a limited understanding of how the technology works and may lack the technical expertise to fully comprehend the algorithms used in AI tools and how they affect assessment outcomes. Without adequate training, educators may be unable to use the tools effectively, leading to inaccurate assessments. AI-powered tools require a stable and reliable technology infrastructure. Technical difficulties, such as power outages, internet disruptions, or software malfunctions, can disrupt the assessment process, leading to inaccurate or incomplete assessments. This appears to have been seriously affecting the students' academic performance as regards to the acquisition of appropriate skills. As a result, the morale and interest of students in business education is low.

Research Questions

The following research questions guided the study:

1. To what extent do business educators apply AI-driven e-learning platforms in teaching and learning of business education in tertiary institutions?
2. To what extent do business educators apply AI-based assessment tools in teaching and learning of business education in tertiary institutions?

Hypotheses

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

1. There is no significant difference in the mean rating of business educators on the extent of application of AI-driven e-learning platforms in teaching and learning of business education in tertiary institutions in Anambra State based on years of experience.
2. There is no significant difference in the mean rating of business educators on the extent of application of AI-based assessment tools in teaching and learning of business education in tertiary institutions in Anambra State based on years of experience.

Research Method

Descriptive survey research design was adopted in this study. According to Nworgu (2015), descriptive survey research design is one which aims at collecting data and describing in a systematic manner the characteristics, features or facts about a given population using a questionnaire. The study was carried out in Anambra State. Anambra State is one of the five States that make up South-East, Nigeria. The population of the study comprised 119 business educators from four tertiary institutions offering business education programme. The entire population was studied without sampling because the size was manageable. Data for the study were collected using a structured questionnaire titled "Extent of Application of Artificial Intelligence Techniques Questionnaire (EAAITQ)". The respondents were requested to rate the items on a 5-point rating scale of very high extent (VHE), high extent (HE), moderate extent (ME), low extent (LE) and very low extent (VLE) with values 5, 4, 3, 2 and 1 respectively. The instrument was validated by three experts in business education. Cronbach Alpha method was used to establish the reliability of the instrument. The reliability test yielded coefficient values of 0.81 and 0.83 for the two clusters. Out of the 119 copies of the questionnaire distributed, 101 (representing 84.87 %) were duly completed, retrieved and used for data analysis. Data collected were analyzed using mean, standard deviation and ANOVA. The application of Statistical Package for Social Sciences (SPSS)

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version 23 was used for data analysis. For the hypotheses, p-value was used for decision making. Where the calculated p-value was less than the stipulated level of significance 0.05 (i.e. $p < 0.05$), it implies that there was a significant difference between respondents' mean scores and the null hypothesis was rejected. On the other hand, if the p-value was greater than or equal to the alpha level of 0.05 ($p \geq 0.05$), it meant that there was no significant difference in the respondents mean scores and was not rejected.

Results

Research Question: To what extent do business educators apply AI-driven e-learning platforms in teaching and learning of business education in tertiary institutions?

Table 1: Mean ratings of business educators on their extent of application of AI-driven e-learning platforms

S/No	AI-driven e-learning platforms	Mean	SD	Decision
1.	Identifying areas the students need additional support	2.08	0.65	Low extent
2.	Identifying patterns and trends in learner behaviour	1.92	0.66	Low extent
3.	Optimized learning paths and objects	1.70	0.72	Low extent
4.	Providing real-time assistance through chatbots	1.77	0.59	Low extent
5.	Developing innovative solutions to complex problems	2.00	0.74	Low extent
6.	Improves personalization through targeted learning material delivery	2.09	0.70	Low extent
7.	Identification of learning styles for improved academic predictions	1.99	0.70	Low extent
8.	Data-driven insights and analytics	1.86	0.74	Low extent
9.	Exposure to diverse perspectives and ideas	1.89	0.68	Low extent
10.	Content accessibility	1.90	0.75	Low extent
Cluster Mean		**1.92**		**Low extent**

Table 1 shows that the mean scores of all the 10 items on AI-driven e-learning platforms ranging between 1.70 and 2.09 which indicate that each of them is applied to a low extent. The cluster means score of 1.92 shows that, and whole AI-driven e-learning platforms are applied to a low extent by business educators in tertiary educational institutions in Anambra State Nigeria. The standard deviations for all items are within the same range showing that there is homogeneity amongst responses indicating a greater consensus of opinion.

Research Question 2: To what extent do business educators apply AI-based assessment tools in teaching and learning of business education in tertiary institutions?

Table 2: Mean ratings of business educators on their extent of application of AI-based assessment tools

S/No	AI-based assessment tools	Mean	SD	Decision
11.	Intelligent tutoring systems	2.09	0.73	Low extent
12.	Essay scoring systems in identifying struggling individual	2.14	0.69	Low extent
13.	Automated scoring tools in promoting equitable assessment	2.71	0.53	Moderate extent
14.	Virtual reality systems in predicting future learning trends	2.60	0.61	Moderate extent

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15.	AI robots in creating exercises and quizzes	3.03	0.49	Moderate extent
16.	Automated scoring tools in generating text	2.08	0.70	Low extent
17.	Computerized adaptive tests in identifying areas for intervention	1.84	0.75	Low extent
18.	Differentiating instruction effectively	2.88	0.33	Moderate extent
19.	Chat bots in accessing critical thinking skills	2.86	0.36	Moderate extent
20.	Facilitating data sharing across platforms	1.95	0.66	Low extent
Cluster Mean		**2.42**		**Low extent**

As displayed in Table 2, the cluster mean of 2.42 shows that business educators applied AI-based assessment tools to a moderate extent in teaching and learning of business education in tertiary institutions in Anambra State, The item-by-item analysis shows that items 11, 12, 16, 17 and 20 with mean scores of 1.84 to 2.14 are AI-based assessment tools applied to a low extent, while items 13, 14, 15, 18 and 19 with the mean scores of 2.71, 2.60, 3.03, 2.88 and 2.86 respectively are AI-based assessment tools applied to a moderate extent by business educators. The standard deviations of 0.33 to 0.75 are within the same range, showing homogeneity in responses.

Hypotheses Testing

Hypothesis 1: There is no significant difference in the mean rating of business educators on the extent of application of AI-driven e-learning platforms in teaching and learning of business education in tertiary institutions in Anambra State based on years of experience.

Table 3: Summary of ANOVA on the AI-driven e-learning platforms applied by business educators in teaching and learning

Source of Variance	Sum of Square	df	Mean Square	F	P-value	Decision
Between Groups	13.502	2	6.751	1.465	.234	Not Sig
Within Groups	875.617	100	4.609			
Total	889.119	102				

Table 3 shows that at 100 degree of freedom, experience does not significantly influence the mean ratings of respondents on the extent of their application of AI-driven e-learning platforms in teaching and learning of business education in tertiary institutions in Anambra State. F-ratio is 1.465 and P-value (.234) which is greater than the stipulated 0.05 level of significance (P-value > alpha level). Therefore, the null hypothesis is not rejected.

Hypothesis 2: There is no significant difference in the mean rating of business educators on the extent of application of AI-based assessment tools in teaching and learning of business education in tertiary institutions in Anambra State based on years of experience.

Table 4: Summary of ANOVA on AI-based assessment tools applied by business educators in teaching and learning

Source of Variance	Sum of Square	df	Mean Square	F	P-value	Decision
Between Groups	4.807	2	2.403	.878	.417	Not Sig
Within Groups	560.866	100	2.736			
Total	565.673	102				

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Table 4 shows that at 100 degree of freedom, experience do not significantly influenced the mean ratings of the respondents on the extent of their application of AI-based assessment tools in teaching and learning of business education in tertiary institutions in Anambra State. F-ratio is .878 and *P-value* (.417) is greater than the stipulated 0.05 level of significance (P-value > alpha level). Therefore, the null hypothesis is not rejected.

Discussion

Results of the study indicated that AI-driven e-learning platforms are applied to a low extent by business educators in teaching and learning of business education in tertiary institutions in Anambra State. This implies that one of the primary concerns relates to the digital divide and disparities in access to AI technologies among students and educators, particularly in resource constrained settings. This finding is in consonance with that of Surugiu et al. (2024) who revealed that there are limited educators' and learners' knowledge and practice regarding AI in business education. Khoalenyane and Ajani (2024) stated that AI adoption in tertiary institutions has garnered significant attention for its potential to transform various sectors, including education. Several studies highlighted the potential benefits of AI in enhancing teaching and learning experiences in higher education. For example, research by Smith and Jones (2020) demonstrated how AI-driven adaptive learning platforms can personalize educational content and provide targeted support to students, leading to improved learning outcomes. Similarly, a study by Patel et al. (2019) underscored the role of AI-powered virtual assistants in facilitating student engagement and academic support services, thereby contributing to a more inclusive and supportive learning environment. These findings align with global trends indicating the transformative potential of AI in higher education (Altbach et al., 2019). Testing of the first hypothesis revealed that there is no significant difference in the mean rating of business educators on the extent of application of AI-driven e-learning platforms in teaching and learning of business education in tertiary institutions in Anambra State based on years of experience. It followed, therefore, that the null hypothesis of no significant difference is not rejected.

Results of the study further revealed that AI-based assessment tools are applied to a low extent by business educators in teaching and learning of business education in tertiary institutions in Anambra State. In view of the findings, Gardner et al (2023) stated that technology has changed and improved access to data but some educators approach to classroom assessment has not changed. Memarian (2023) stated that, data analysis can provide valuable insights into student learning patterns, identify areas for intervention, and help educators make data-driven decisions to improve teaching strategies and curriculum design. In addition to that, it can also help in automated grading under assessment. Fatria (2021) found that AI tool is widely used by professors/lecturers to publish notes, homework, quizzes, and tests that allow students to ask questions and assignments for the assessment process. Applications are widely used by professors/lecturers to publish notes, homework, quizzes, and tests that allow students to ask questions and assignments. Applications can also be used for assessment. This application can identify the reasons behind students' misunderstanding and can offer solutions that have been released by the lecturer and programmed beforehand. Testing of the second hypothesis indicated that there is no significant

difference in the mean rating of business educators on the extent of application of AI-based assessment tools in teaching and learning of business education in tertiary institutions in Anambra State based on years of experience. Therefore, the null hypothesis of no significant difference is not rejected

Conclusion

It is clear from the study that AI-driven e-learning platforms and AI-based assessment tools have not been fully applied by business educators in teaching and learning of business education in tertiary institutions in Anambra State. Therefore, it is concluded that the management of tertiary educational institutions should design and develop artificial intelligence technology that could be used more in the education field in the future. This new technology assists lecturers and students to better utilize technology in teaching and learning environments, reduces lecturer's workload, makes learning easier as it happens anytime regardless of the time and place where both parties will be, and improves the lecturers' teaching methods.

Recommendations

The following recommendations are made:

1. There is a need for comprehensive professional development programmes aimed at equipping educators with the necessary skills and competencies to effectively leverage AI tools in teaching and learning. These programmes should focus on providing training in AI literacy, data analytics, and instructional design to enable educators to create AI-enhanced learning experiences that align with curriculum objectives.
2. Ongoing support and mentorship should be provided to educators to facilitate their continuous learning and adaptation to emerging AI technologies.
3. The educational institutions should prioritize investment in AI infrastructure and resources to create a conducive environment for innovation and experimentation. This includes establishing AI labs or centres of excellence where researchers and educators can collaborate on developing and testing AI-driven solutions for teaching, assessment, and student support.
4. Moreover, institutions should foster partnerships with industry and government agencies to access funding and expertise for AI initiatives and promote knowledge exchange and technology transfer.

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