



Artificial Intelligence and Teaching effectiveness in Accounting Education as a Component of Business Education In Tertiary Institutions in Anambra State, Nigeria

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Abstract

The study investigates artificial intelligence and teaching effectiveness in accounting education as a component of business education in tertiary institutions in Anambra State, Nigeria. The study was guided by two objectives, two research questions, and two null hypotheses. A descriptive survey research design was adopted. The population comprised 148 accounting education lecturers within the business education programme in public tertiary institutions in Anambra State, while a sample of 108 lecturers was selected using proportionate stratified random sampling. Data were collected using a structured questionnaire titled Artificial Intelligence and Teaching Effectiveness Questionnaire (AITESQ). The instrument was validated by experts in Accounting Education, Educational Technology, and Measurement and Evaluation, while reliability was established using Cronbach's Alpha (0.82). Data were analysed using mean and standard deviation, while t-test was used to test hypotheses at 0.05 level of significance. Findings revealed that artificial intelligence significantly enhances teaching effectiveness in accounting education within the business education programme by improving instructional delivery, learner engagement, and lecturers' efficiency. The study concluded that AI positively influences teaching and learning outcomes. It was recommended that tertiary institutions should integrate AI into business education programmes and provide continuous training for educators.

Keywords: Accounting Education, Artificial Intelligence, Business Education, Teaching Effectiveness, Tertiary Institution

Introduction

Artificial intelligence (AI) is increasingly transforming teaching and learning across disciplines, including business education, which encompasses specialized areas such as accounting education, office management, and marketing education and the rest within business education department. Business education and Accounting education plays a vital role in equipping students with financial, analytical, and decision-making skills, making teaching effective. The rapid advancement of technology has significantly transformed educational practices worldwide, with artificial intelligence (AI) emerging as one of the most influential innovations in contemporary teaching and learning environments. Artificial intelligence refers to computer based systems capable of performing tasks that normally require human intelligence, such as reasoning, decision making, and adaptive learning (Garzón, Patiño & Marulanda, 2025). In the education sector, AI has introduced new possibilities for improving instructional delivery, enhancing learner engagement, and supporting educators in achieving effective teaching outcomes (Garzón et al., 2025; Azare & Garba, 2026).



Teaching effectiveness remains a critical concern in accounting education, particularly in tertiary institutions where the demand for competent, skilled, and industry ready graduates continues to rise. Accounting education requires not only theoretical understanding but also practical competence, analytical skills, and the ability to apply accounting principles to real life situations. Traditional teaching methods often limit active participation, individualized learning, and timely feedback, potentially affecting the effectiveness of teaching and learning processes (Azare & Garba, 2026).

Accounting education is a core component of business education that focuses on developing competencies in financial reporting, auditing, taxation, and financial analysis. Artificial Intelligence (AI) applications are increasingly relevant in business education, where they support simulation-based learning, automated assessment, and data-driven decision-making. Its primary goal is to prepare students to become competent accounting professionals capable of applying theoretical concepts in practical, real-world scenarios (Ugwoke & Chukwu, 2023). Accounting education encompasses both theoretical instruction covering fundamental principles, regulations, and frameworks and practical application, which includes exercises in bookkeeping, financial reporting, and problem-solving (Nwokoye & Okechukwu, 2022).

In education, AI systems use algorithms, data analytics, and machine learning to simulate cognitive functions in order to support instructional processes (Garzón et al., 2025; Adamakis & Rachiotis, 2025). AI tools include adaptive learning platforms, intelligent tutoring systems, automated assessment tools, and generative models such as large language models (LLMs) that can assist educators and learners alike. Research indicates that AI technologies are increasingly integrated into higher education and instructional contexts to support personalized learning, automate routine tasks, enhance instructional design, and provide real time insights into student performance (Garzón et al., 2025; Adil, 2024; Long & Magerko, 2025). AI applications such as adaptive content delivery, intelligent tutoring systems, and data analytics have begun to reshape how teaching and learning occur in classrooms and online platforms.

Business education is a programme of study designed to equip learners with knowledge, skills, attitudes, and competencies required for effective participation in the business world either as employees or entrepreneurs (Ugwoke & Chukwu, 2023). It encompasses various specializations including accounting education, office management, marketing, and entrepreneurship education.

Within tertiary institutions, business education serves as a platform for developing competent manpower capable of adapting to technological innovations such as artificial intelligence. The integration of AI into business education enhances instructional delivery, promotes digital competencies, and prepares students for modern workplace demands.

Teaching effectiveness within business education and accounting education refers to the lecturer's ability to facilitate meaningful learning, skill acquisition, and professional competence that meaningful to learning, understanding, and skill development among students, effective teaching is characterized by clarity, engagement, accurate assessment, timely feedback, and adaptive instructional strategies. Artificial

intelligence enhances teaching effectiveness by improving instructional interpretation, increasing the probability of positive learning outcomes, and supporting data-driven pedagogical decisions. Nevertheless, safety and ethical issues such as data misuse and over-dependence on technology must be carefully managed. The literature consistently shows that teaching effectiveness improves when AI is used responsibly as a supportive tool under the guidance of competent lecturers in tertiary institutions.

Artificial Intelligence (AI) tools have become central to enhancing teaching effectiveness among accounting education lecturers in tertiary institutions. Intelligent Tutoring Systems (ITS) are AI powered instructional tools designed to simulate one on one tutoring by providing tailored guidance and feedback according to individual learner needs. These systems analyze students' responses, adjust the sequence and complexity of instructional content, and offer real time feedback that helps students grasp accounting concepts more thoroughly and efficiently than traditional methods (Garzón et al., 2025). ITS not only personalizes instruction but also models student knowledge states over time, enabling educators to identify areas where learners struggle and to adjust their teaching strategies accordingly.

Adaptive learning platforms use AI algorithms and data analytics to continuously tailor educational content to students' abilities and learning progress. In accounting education, adaptive systems assess student performance on key topics such as financial reporting or cost accounting and adjust pacing and resources to match individual learning needs. This real time personalization supports lecturers by highlighting learner strengths and weaknesses, enabling targeted instructional adjustments that can improve retention and engagement (Xiao et al., 2023). The adaptive nature of these platforms ensures that students receive appropriate challenges and supports, which contributes to more effective teaching outcomes.

AI based automated assessment tools further enhance instructional effectiveness by swiftly grading student work and providing immediate, detailed feedback. Unlike traditional manual grading, these tools can evaluate quizzes, problem sets, and even structured written responses promptly, offering students timely insights into their performance.

Statement of the Problem

Despite the importance of accounting education within the broader business education programme, graduates continue to exhibit deficiencies in practical skills, critical thinking, and application of knowledge e.t.c. This raises concerns about whether emerging technologies such as artificial intelligence are being effectively utilized to improve teaching effectiveness in business education, particularly accounting education. Teaching effectiveness is a critical determinant of quality learning outcomes in accounting education. In tertiary institutions, effective teaching is expected to equip students with both theoretical knowledge and practical competencies required for professional success. However, evidence from tertiary institutions in Anambra State, Nigeria, suggests that many accounting education graduates continue to demonstrate weaknesses in applying accounting principles, critical thinking, and problem-solving skills,

raising concerns about the effectiveness of current teaching practices.

Traditional teaching methods, including lecture-dominated approaches and limited use of instructional technologies, have been identified as major constraints affecting teaching effectiveness in accounting education. These methods often fail to provide personalized learning experiences, timely feedback, and sufficient engagement for students, which are necessary components for effective instruction (Agbarakwe & Ogbonna, 2024; Azare & Garba, 2026).

Purpose of the Study

The main purpose of this study is to investigate artificial intelligence and teaching effectiveness in accounting education as a component of business education in tertiary institutions in Anambra State, Nigeria. Specifically, the study aims to:

- 1) Determine the extent to which artificial intelligence enhances teaching effectiveness among accounting education lecturers in tertiary institutions in Anambra State.
- 2) Examine the influence of artificial intelligence on the instructional practices and learning outcomes of accounting education students in tertiary institutions in Anambra State.

Research Questions

The following research questions guided the study:

- 1) To what extent does artificial intelligence enhance teaching effectiveness among accounting education lecturers in tertiary institutions in Anambra State, Nigeria?
- 2) How does the use of artificial intelligence influence the instructional practices and learning outcomes of accounting education students in tertiary institutions in Anambra State, Nigeria?

Null Hypotheses

The following null hypotheses were tested at 0.05 level of significance

- 1.) H01: Artificial intelligence has no significant effect on teaching effectiveness among accounting education lecturers in tertiary institutions in Anambra State, Nigeria.
- 2.) H02: Artificial intelligence has no significant influence on the instructional practices and learning outcomes of accounting education students in tertiary institutions in Anambra State, Nigeria.

Methodology

The study adopted a descriptive survey research design. The study was guided by two objective, two research questions and two null hypotheses. The total population of the study consisted of 148 Accounting Education lecturers in public tertiary institutions; while a sample size of 108 lecturers was selected using proportionate stratified random sampling techniques to ensure adequate representation. Data were collected using a structured questionnaire titled Artificial Intelligence and Teaching Effectiveness Questionnaire (AITESQ) developed by the researcher. The instrument was validated by three experts in Accounting Education, Educational Technology, and Measurement and Evaluation, and its reliability was established

using Cronbach's Alpha, which yielded a coefficient of 0.82. The questionnaire was administered directly to the respondents. Data collected were analyzed using mean and standard deviation to answer the research questions, while t-test statistics were used to test the null hypotheses at 0.05 level of significance

Results

Table 1 Determine the extent to which artificial intelligence enhances teaching effectiveness among accounting education lecturers in tertiary institutions in Anambra State

(N=108)

S/N	Items	SA	A	D	SD	Mean	St.dev	Decision
1	Using AI chart bots improve teaching effectiveness by providing students with quick explanations and support during accounting lessons	45	45	10	8	3.32	0.79	Agree
2.	Using Intelligence tutoring systems improves teaching effectiveness by guiding students through difficult topics step by step	44	46	10	8	3.31	0.79	Agree
3.	Using Automated grading system improves teaching effectiveness by providing fast and accurate feedback on students assignments	48	44	10	6	3.37	0.78	Agree
4.	Using AI learning analytics tools improves teaching effectiveness by tracking students' performance and adjust lessons accordingly	46	45	10	7	3.35	0.78	Agree
5	Using AI content generation tools improves by preparing accurate and interactive accounting teaching material	47	44	10	7	3.37	0.78	Agree
Total		230	224	50	36	3.34	0.02	Agree

Source: Researcher's field survey (2026)

Data in Table 1 indicating that from 108 respondents, artificial intelligence strongly enhances teaching effectiveness among accounting education lecturers. All five items recorded mean scores above 3.3 with grand total of standard deviation of 0.02, showing highly consistent agreement. Lecturers confirmed that AI improves the use of chart bots, Intelligence tutoring systems, automated grading system, AI learning analytics tools, and AI content generation tools and Decision for all items is Agree.

Table 2 How does the use of artificial intelligence influence the instructional practices and learning outcomes of accounting education students in tertiary institutions in Anambra State, Nigeria?

(N=108)

S/N	Items	SA	A	D	SD	Mean	STV-DEV	Decision
1	AI chat bots influences students' understanding of accounting principles and problem solving skills	28	50	20	10	2.89	0.92	Agree
2.	Intelligent monitoring systems influence lecturers' ability to track student progress and identify learning gaps in accounting courses	26	52	18	12	2.85	0.90	Agree
3.	Automated grading systems influence timely feedback on students' accounting assignments and tests	30	48	20	10	2.91	0.93	Agree
4.	AI learning analytic tools influence students' engagement in learning accounting concepts and class participation	32	46	20	10	2.93	0.95	Agree
5.	AI content generation tools influence the quality and relevance of accounting learning materials used by students	29	49	20	10	2.90	0.93	Agree
Total		145	245	98	52	2.896	0.926	Agree

Source: Researchers field survey (2026)

Data in Table 2: shows that all respondents agreed on the influence of AI tools Chat bots, Intelligent Monitoring, Automated Grading, Learning Analytics, and Content Generation on accounting students' understanding, engagement, assignment feedback, and the quality of learning materials. The mean scores for all items range is between 2.5 and 3.2, which indicate consistent agreement, while the Grand Mean is 2.896 and the Grand Standard Deviation is approximately 0.926. This confirms a clear and positive influence of AI across all measured outcomes.

Table 3: Summary of t-test analysis of lecturers in using Artificial intelligence has no significant effect on teaching effectiveness among accounting education lecturers in tertiary institutions in Anambra State, Nigeria.

t of í	N	Mea n	SD	df	t -cal	t -crit	lev.sig	Remark
lecturer	108	3.34	0.02	107	176.8	1.98	0	.05 Rejected

Table 3: shows that the mean score of 3.34 indicates that the respondents agreed with the statement. The cal t-value of 176.8 is greater than the crit t-value of 1.98. Therefore, the null hypothesis is rejected, indicating that

respondents' agreement on teaching effectiveness is statistically significant.

Table 4: Summary of t-test analysis of lecturer's in using Artificial intelligence has no significant influence on the instructional practices and learning outcomes of accounting education students in tertiary institutions in Anambra State, Nigeria

t-cal	N	Mean	SD	df	t	-cal	t -crit	lev.sig	Remark
lecturer	108	2.896	0.926	107	32.48	1.98	0.05		Rejected

Table 4: indicates that the mean score of 2.896 shows agreement among lecturer since the cal t-cal. Value of 32.48 is greater than t-crit. value of 1.98, at 0.05 level of significance, the null hypothesis is rejected, this implies that artificial intelligence has a statistically significant influence on instructional practices and learning outcomes in tertiary institutions.

Discussion of Findings

The findings indicate that AI tools significantly enhance teaching effectiveness among lecturers in accounting education within the business education programme, as evidenced by a total mean score of 3.34 and a standard deviation of 0.02, indicating highly consistent agreement across all items. The lecturers confirmed that AI tools such as chat bots, intelligent tutoring systems, automated grading systems, AI learning analytics, and AI content generation applications support and improve their instructional practices. This implies that AI integration improves instructional quality across business education disciplines, particularly in skill-based areas like accounting

These findings are consistent with recent empirical research showing that the integration of AI technologies can significantly enhance teaching performance and instructional quality in higher education. For example, studies have shown that generative AI improves teaching performance by enhancing ease of use and usefulness in educational contexts, enabling lecturers to integrate AI tools into lesson preparation and delivery more effectively.

The results in Table 2: shows that lecturers agree that artificial intelligence (AI) tools positively influence accounting students' learning outcomes, including understanding, assignments, feedback, and quality of learning materials. The grand mean score of 2.896 and standard deviation of 0.926 indicate consistent agreement across all items. AI tools such as chat bots, intelligent monitoring systems, automated grading, learning analytics, and AI content-generation technologies were reported to enhance students' engagement and performance.

This finding is supported by recent studies indicating that AI improves instructional practices and learning outcomes. AI-driven feedback systems enhance students' understanding through timely, personalized responses (Holmes, Bialik & Fadel, 2024). AI learning analytics provide lecturers with insights into student

performance, enabling targeted interventions (Woolf, Lane & Chaudhri, 2025). Automated grading and generative AI tools also improve the quality of learning materials and reduce teacher workload, enhancing student engagement (Luckin et al., 2024; ZawackiRichter et al., 2025).

The result in Table 3 shows data on the influence of artificial intelligence (AI) on teaching effectiveness among accounting education lecturers in tertiary institutions. The results show a mean score of 3.34, a standard deviation of 0.02, and a calculated t-value of 176.8, which is far greater than the critical t-value of 1.98 at the 0.05 level of significance, with a degree of freedom of 107. Consequently, the null hypothesis is rejected, indicating that respondents' agreement on the effect of AI on teaching effectiveness is statistically significant.

This finding demonstrates that lecturers perceive AI tools such as chat bots, intelligent tutoring systems, automated grading, learning analytics, and AI content-generation platforms as significantly enhancing their teaching effectiveness. These tools allow lecturers to deliver lessons more efficiently, provide timely feedback, and improve students' comprehension and engagement.

The result is consistent with recent research showing that AI integration in higher education improves teaching performance and instructional quality. For instance, generative AI tools enhance lesson preparation, personalized instruction, and pedagogical practices, leading to more effective teaching outcomes (Simorangkir, Manalu & Siregar, 2025; Zhao & Li, 2024). These studies confirm that AI adoption is associated with measurable improvements in teaching effectiveness and lecturers' professional efficiency. The result in Table 4 shows data on the influence of artificial intelligence (AI) on instructional practices and student learning outcomes in tertiary institutions in Anambra State. The results show a mean score of 2.896 with a standard deviation of 0.926, and a calculated t-value of 32.48, which is far greater than the critical t-value of 1.98 at the 0.05 level of significance, with a degree of freedom of 107. The null hypothesis is therefore rejected, indicating that AI has a statistically significant influence on teaching and learning processes.

The findings reveal that lecturers agree that AI tools including chat bots, intelligent monitoring systems, automated grading, learning analytics, and AI content-generation platforms positively affect students' understanding, engagement, assignment performance, feedback, and the quality of learning materials. This aligns with recent research demonstrating that AI enhances instructional practices by providing personalized feedback, enabling timely intervention, and improving the quality of instructional content (Holmes, Bialik & Fadel, 2024; Luckin et al., 2024; Woolf, Lane & Chaudhri, 2025; ZawackiRichter et al., 2025).

Conclusion

The study concludes that artificial intelligence significantly enhances teaching effectiveness in accounting education as a component of business education in tertiary institutions in Anambra State, Nigeria. AI improves instructional delivery, supports personalized learning, enhances student engagement, and

increases lecturers' efficiency. Therefore, integrating AI into business education programmes is essential for producing competent and technologically skilled graduates.

Recommendations

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

1. Tertiary institutions should integrate AI tools across business education programmes, particularly in accounting education.
2. Continuous professional development should be provided for business educators on AI utilization.
3. Government and institutions should invest in digital infrastructure to support AI adoption in business education.
4. Curriculum planners should embed AI competencies into business education curriculum.

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