



Artificial Intelligence in Vocational and Accounting Education: Implications for Skill Acquisition in Tertiary Education in Anambra State, Nigeria

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Abstract

This study examined Artificial Intelligence in vocational and accounting education: implications for skill acquisition in Tertiary Education in Anambra State, Nigeria. The study was guided by two objectives, two research questions, and two null hypotheses were tested at a 0.05 level of significance. A descriptive survey research design was adopted for the study. The total population of the study was 240 respondents comprised all vocational and accounting education lecturers in Tertiary Education in Anambra State Nigeria. A sample of 120 lecturers and students was selected using simple random sampling technique. Data were collected using a structured questionnaire titled Artificial Intelligence in Vocational and Accounting Education Questionnaire (AIVAQ). The instrument was validated by experts in Accounting, Vocational, and educational measurement, and its reliability was established using Cronbach Alpha, yielding a coefficient of 0.82. Mean and standard deviation were used to answer the research questions, while t-test statistics were used to test the null hypotheses at 0.05 level of significance. The findings revealed that Artificial Intelligence significantly enhances instructional delivery and improves students' skill acquisition in both vocational and accounting education. Based on these findings, it was recommended that tertiary Education integrate AI tools into teaching and learning processes to strengthen practical skills and instructional effectiveness.

Keywords: Accounting Education, Artificial Intelligence, Skill Acquisition, Tertiary Education Vocational Education.

Introduction

The rapid proliferation of artificial intelligence (AI) has fundamentally reshaped the global educational landscape by introducing advanced tools and systems that augment teaching, learning, and skill development. AI refers to computational technologies capable of performing tasks that traditionally require human intelligence, such as reasoning, problem solving, and adaptive decision making Obasi, & Ubani, (2025) Within the context of higher education, AI has the potential to enhance instructional delivery, create personalized learning pathways, and improve practical skill acquisition especially where conventional teaching methods have struggled to meet 21st century demands. In Nigeria, tertiary education is pivotal for nation building, economic development, and the cultivation of a skilled workforce. Institutions such as universities, polytechnics, and colleges of education are charged with the task of equipping students with both theoretical knowledge and practical competencies Abubakar, Onasanya, & Ibrahim, (2024). Among academic programmes, vocational education is designed to produce graduates with technical and trade competencies suited for employment and innovation, while accounting education focuses on developing analytical, financial, and managerial skills essential for business sustainability. However, the traditional delivery of these programmes in Nigerian tertiary institutions has often been limited by resource constraints,

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outdated curricula, and insufficient technological engagement, leading to gaps in skill acquisition and employability outcomes.

The integration of AI into vocational and accounting education offers transformative opportunities to bridge these gaps. For example, AI enhanced tools such as intelligent tutoring systems, adaptive learning platforms, and simulation software can provide interactive and practice oriented experiences that extend beyond conventional classroom activities Iloba, (2025). Specifically, virtual environments and AI driven simulation tools enable students to practise complex tasks repeatedly, receive immediate feedback, and develop competencies at their own pace all of which are essential components of effective skill acquisition. Likewise, recent research in Nigerian tertiary contexts has demonstrated that AI can support individualized learning, improve student engagement, and enhance instructional quality (Ama, 2025)

In accounting education, the inclusion of AI related competencies is becoming increasingly important due to the evolving nature of accounting practice in the digital era. Studies have shown that accounting graduates require AI related skills such as data analysis, automation, and the use of intelligent software tools to remain competitive in the labour market (Uchenna, Nwaokokorom,& PaulMgbeafulike, (2025). AI based systems can also support accounting instruction by automating routine tasks, enhancing analytical learning experiences, and facilitating real world problem solving through intelligent simulation platforms, which in turn strengthens students' skill portfolios and professional readiness. Accounting education is the formal instructional processes that prepare learners to understand, interpret, and apply accounting principles and practices in real world contexts. Historically, accounting education concentrated on mastering traditional bookkeeping, financial reporting, auditing fundamentals, and standardized accounting theory skills necessary for conventional accounting roles. However, with rapid technological advancements and the emergence of digital tools, the expectations and outcomes of accounting education have evolved substantially in recent years. Today, accounting education integrates not just fundamental accounting knowledge but also competencies related to analytical reasoning, digital technologies, and problem solving that align with changing professional demands.

In the context of tertiary education, particularly in environments like Anambra State, Nigeria, accounting education is pivotal in equipping students with both theoretical understanding and applied skills that make them responsive to the dynamic labour market. This is especially relevant as employers increasingly require graduates who can interpret financial information, use advanced tools, and engage in complex judgment tasks rather than merely perform routine data entry or mechanical accounting tasks. Hence, accounting education has shifted from a purely knowledge based exercise to a comprehensive learning experience that fosters practical competencies and adaptive skills that graduates need in modern workplaces.

A key driver of transformation in accounting education is the integration of emerging technologies, especially Artificial Intelligence (AI), data analytics, and automation. These technologies are reshaping both the nature of accounting work and how students are prepared for it. Research has shown that AI is progressively being incorporated into accounting curricula to reflect its growing influence on accounting

processes and tasks. The incorporation of AI tools, for example, simulation platforms and intelligent systems, enhances learners' practical exposure and prepares them for the evolving demands of the accounting profession. Such technology based pedagogical innovations improve student engagement and alignment of academic outcomes with industry requirements (Wale Fadairo&Ige, 2025).

Artificial Intelligence (AI) is a transformative field of computer science focused on creating systems capable of performing tasks that typically require human cognitive abilities, such as learning, reasoning, decision making, perception, and problem solving. Although AI research began in the mid-20th century, it was during the 1990s that the field matured, gained global traction, and began transitioning from purely theoretical models toward practical applications that would later shape various sectors including education. This conceptual review explores AI's foundational definitions, early developments in the 1990s, and its relevance to vocational and accounting education, particularly in terms of skill acquisition in tertiary education.

At its core, AI seeks to simulate intelligent behaviour in machines by enabling them to process information, learn from data, and make decisions in ways that mirror human cognition. Russell and Norvig (1995) whose work is widely regarded as one of the earliest comprehensive academic treatments of the discipline describe AI as the study of “intelligent agents” that perceive their environment and take actions to maximize their chances of achieving specific goals. Their work helped establish a standard framework for understanding AI systems, including symbolic reasoning, search algorithms, and early machine learning techniques (Russell & Norvig, 1995).

Skill acquisition refers to the process through which individuals learn, refine, and apply specific competencies necessary to perform tasks efficiently and effectively in various settings, including education and the workplace. In the context of education, skill acquisition goes beyond mastery of theoretical knowledge to encompass the development of practical abilities such as problem solving, technical dexterity, communication, and analytical reasoning that make learners productive and adaptable in real world environments. It is widely described as a systematic and sequential development of skills that enhances performance quality and readiness for both employment and self employment following graduation from tertiary institutions (Umeh, 2025; Adedeji & Ibironke, 2022).

Tertiary education refers to the formal level of education following secondary schooling, which includes universities, polytechnics, colleges of education, and vocational training institutes. It is designed to provide students with advanced knowledge, specialized skills, and competencies necessary for professional careers, research, entrepreneurship, and societal development. Tertiary education is pivotal for the development of human capital, particularly in developing regions such as Anambra State. It equips students with both cognitive competencies including critical thinking, problem-solving, and decision-making and practical skills relevant to their professions. Scholars emphasize that tertiary education is no longer just a vehicle for knowledge transmission but a mechanism for skill development and employability enhancement, especially in disciplines like accounting and vocational studies where applied expertise is crucial (Okeke, 2020).

Institutions of tertiary education act as incubators for innovation, research, and professional readiness, bridging the gap between academic learning and labour market requirements.

Statement of the Problem

Despite the growing recognition of the importance of vocational and accounting education in fostering employable skills, tertiary institutions in Anambra State continue to face challenges in effectively equipping students with the practical competencies required in today's dynamic workforce. Traditional instructional methods, which are largely theory-driven, often fail to provide students with sufficient opportunities for hands-on skill acquisition, thereby limiting their ability to apply knowledge in real-world contexts (Obasi & Ubani, 2025).

In addition, the rapid technological evolution and the increasing demand for digital literacy in vocational and accounting professions underscore the need for innovative teaching approaches. Artificial intelligence (AI) has been identified as a tool capable of bridging this gap by offering personalized learning experiences, simulation-based practice, and automated feedback mechanisms (Iloba, 2025; Ama, 2025). However, in the context of tertiary education in Anambra State, the extent to which AI has been integrated to enhance skill acquisition remains unclear.

Objectives of the Study

The general objective of the study is to examine Artificial Intelligence in vocational and accounting education: implications for skill acquisition in Tertiary Education in Anambra State, Nigeria. The objectives of this study are sought to:

1. To examine the extent to which artificial intelligence enhances skill acquisition in vocational and accounting education in tertiary institutions in Anambra State, Nigeria.
2. To identify the challenges and limitations associated with the integration of artificial intelligence in vocational and accounting education for skill acquisition in tertiary education in Anambra State, Nigeria.

Research Questions

The following research questions guided the study:

1. To what extent does artificial intelligence enhance skill acquisition in vocational and accounting education in tertiary institutions in Anambra State, Nigeria?
2. What are the challenges and limitations associated with the integration of artificial intelligence in vocational and accounting education for skill acquisition in tertiary education in Anambra State, Nigeria?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance

1. Artificial intelligence has no significant effect on skill acquisition in vocational and accounting

education in tertiary institutions in Anambra State, Nigeria.

2. There is no significant challenge and limitations associated with the integration of artificial intelligence in vocational and accounting education for skill acquisition in tertiary education in Anambra State, Nigeria.

Methodology

A descriptive survey research design was adopted for the study. The study was guided by two objectives, two research questions and two null hypotheses were tested at 0.05 level of significance. The study was conducted in Anambra State, Nigeria. The total population of the study consisted 240 respondents which comprised 130 vocational education lecturers and 110 accounting education lecturers and students in tertiary institutions. A sample size of 120 respondents were selected using simple random sampling techniques. The sample comprised 70 respondent from vocational education students and 50 respondents from accounting education students. Data were collected using a researcher's structured instrument titled Artificial Intelligence in Vocational and Technical Education questionnaire (AIVTES), the instrument was validated by three experts one from vocational education department, in Nnamdi Azikiwe University Awka one from accounting education department in Odumegwu Ojukwu University Igbarim and one from measurement and evaluation department in Nwafor Orizu College of Education Nsugbe. A reliability coefficient of 0.82 were obtained from the cluster of the instrument using Cronbach's Alpha. The instrument was administered directly by the researcher. Data collated for the were analysed using mean and standard deviation were used to answer research questions, while t-test was used to test the hypotheses at 0.05 level of significance.

Results

Table 1: Examine the extent to which artificial intelligence enhances skill acquisition in vocational and accounting education in tertiary institutions in Anambra State, Nigeria (N=120)

S/N	Items	SA	A	D	SD	Mean	St.Dev	Decision
1.	Problem-solving skill acquisition by identifying and solving practical work challenges	41	42	22	15	2.91	1.01	Agree
2.	Critical thinking and analytical skill acquisition by evaluating information and making informed decisions	37	43	30	10	2.89	0.94	Agree
3.	Digital literacy and technologybased skill acquisition by using AI tools and technology effective	44	38	28	10	2.97	0.97	Agree
4.	Creativity and innovation skill acquisition by generating ideas and improving processes	38	45	25	15	2.83	0.99	Agree
5.	Communication and collaboration skill acquisition by working effectively in teams and sharing information	39	40	33	8	2.92	0.93	Agree
Total		197	216	113	74	2.90	0.97	Agree

Source: Researcher's field survey (2026)

Data in Table 1 indicate that respondents agreed that vocational and accounting students acquire skills effectively across all the five items. The total mean score of 2.90 indicates a strong general agreement, the total standard deviation of 0.97. It shows agreed in responses. Skills such as digital literacy, problem-solving, and communication are perceived as particularly well developed through AI and practical work. Decision for all items is Agree.

Table 2: Identify the challenges and limitations associated with the integration of artificial intelligence in vocational and accounting education for skill acquisition in tertiary education in Anambra State, Nigeria. (N=120)

S/N	Items	SA	A	D	SD	Mean	St.Dev	Decision
1.	Limited AI access and inadequate tools hinder student& lecturer from effectively applying problem -solving skills	36	42	28	14	.87	0.96	Agree
2.	Over- reliance on AI reduces independent critical thinking and analytical skill development	33	44	30	13	2.88	0.94	Agree
3.	Lack of training or familiarity with AI tools limits digital literacy and technology –based skill acquisition .	38	40	29	13	2.90	0.95	Agree
4.	Dependence on AI can restrict creativity and innovation, making it harder to generate original ideas or improve processes.	35	43	30	12	2.88	0.94	Agree
5.	AI-based learning may impede effective communication and collaboration due to limited interaction or poor integration	32	45	31	12	2.87	0.93	Agree
Total		174	214	148	64	2.88	0.944	Agree

Source: Researcher's field survey (2026)

Data in Table 2 Indicating that Respondent agreed that there are specific challenges and limitations in using AI for skill acquisition. The total mean score of 2.88 and grand total of standard deviation is 0.944 indicate agreed with main challenges including limited AI access, over-reliance on AI reducing critical thinking, lack of digital literacy, reduced creativity, and restricted collaboration. Decision for all items is Agree.

Table 3: Artificial intelligence has no significant effect on skill acquisition in vocational and accounting education in tertiary institutions in Anambra State, Nigeria

Post held	N	Mean	SD	Df	t-cal	t-crit.	lev.sig	Remark
Lecturers & students	120	2.90	0.97	119	4.52	1.98	0.05	Rejected

The summary analysis of Table 1 indicate that mean score of 0.90 shows that the respondents'(lecturers) agree that artificial intelligence enhances skill acquisition in vocational and accounting education, with a SD of 0.97. The t-test result of t-cal 4.52, df of 119, and 0.005 level of significant indicates that the effect of AI

on skill acquisition is statistically significant, leading to the rejection of hypothesis. This implies that AI positively influences skill acquisition across problem-solving, digital literacy, creativity, and communication skills.

Table 4: There is no significant influence between the challenges and limitations associated with the integration of artificial intelligence in vocational and accounting education for skill acquisition in tertiary education in Anambra State, Nigeria.

Post held	N	Mean	SD	Df	t-cal	t-crit	Lev.sig	Remark
Lecturer & student	120	2.88	0.944	119	9.48	1.98	0.05	Rejected

The result in Table 4: indicate that respondents agreed that there are significant challenges and limitations associated with the integration of artificial intelligence in vocational and accounting education for skill acquisition. With a mean score of 2.88 and SD of 0.944. The t-cal. value of 9.48 is greater than the critical value of 1.98 at 0.05 significance level df of 119. Therefore, the null hypothesis is rejected, indicating that the challenges and limitations of AI integration significantly influence skill acquisition in tertiary institutions

Discussion of Findings

The findings from Table 1 show that respondents agreed that artificial intelligence enhances skill acquisition among vocational and accounting education students. The grand mean of 2.90 indicates a high level of agreement that students develop important skills such as problem-solving, critical thinking, digital literacy, creativity, and communication through the use of artificial intelligence in learning. The standard deviation of 0.97 also shows that the respondents' opinions are relatively consistent. This implies that the integration of artificial intelligence in vocational and accounting education improves students' ability to solve practical problems, use digital technologies effectively, think critically, and collaborate with others during learning activities.

This finding agrees with the study of Ifenthaler and Schumacher (2020), who reported that artificial intelligence in higher education, enhances students' digital competence, problem-solving ability, and collaborative learning skills. Similarly, These results align with Cukurova (2020), who reported that AI tools can strengthen learning outcomes by facilitating active engagement and skill application, and Luckin (2019), who emphasized that AI enhances instructional effectiveness when properly integrated into teaching.

The findings from Table 2 revealed that respondents agreed that there are significant challenges and limitations in the use of artificial intelligence for skill acquisition in vocational and accounting education. The grand mean of 2.88 indicates agreement among respondents that challenges such as limited access to AI tools, over-reliance on AI which may reduce critical thinking, lack of digital literacy, reduced creativity, and

limited collaboration affect the effective use of AI in teaching learning. The standard deviation of 0.94 shows that respondents had relatively similar opinions regarding these challenges, this finding indicates that the study of Yongqiang and Hyunwoo (2023), who found that excessive dependence on AI tools, can weaken students' critical thinking and independent problem-solving abilities when not properly guided.

The findings from Table 3 revealed that Artificial Intelligence significantly enhances skill acquisition in vocational and accounting education. The mean score of 2.90 indicates that both lecturers and students agreed that AI contributes positively to the development of important skills. The t-test result ($t = 4.52$, $df = 119$, $p < 0.05$) shows that the influence of AI on skill acquisition is statistically significant, which led to the rejection of the null hypothesis. This implies that the integration of AI in teaching and learning improves students' problem-solving ability, digital literacy, creativity, and communication skills.

This finding agrees with the study of Holmes et al. (2021) who reported that the integration of artificial intelligence in education enhances learners' cognitive development, problem-solving abilities, and digital competencies, thereby improving overall learning outcomes.

The findings from Table 4 indicate that respondents agreed that significant challenges and limitations exist in the integration of artificial intelligence for skill acquisition in vocational and accounting education. The mean score of 2.88 with a standard deviation of 0.944 shows general agreement among lecturers and students that several barriers affect the effective use of AI. Furthermore, the calculated t-value (9.48) is greater than the critical value (1.98) at 0.05 level of significance with 119 degree of freedom, leading to the rejection of the null hypothesis. This implies that the challenges and limitations associated with AI integration significantly influence skill acquisition in tertiary institutions. This finding is consistent with the study of Cukurova (2020) who observed that despite the benefits of artificial intelligence in education, its adoption is often limited by factors such as limited technological infrastructure, lack of digital competence among users, and

Conclusion

The study concludes that artificial intelligence positively enhances instructional delivery and skill acquisition in vocational and accounting education. Students effectively develop problem-solving, critical thinking, digital literacy, creativity, and communication skills when AI tools are integrated into teaching and practical work. However, challenges such as limited access, inadequate digital literacy, and over-reliance on AI must be addressed for maximum impact. Overall, AI is a valuable tool for improving teaching effectiveness and student skill development in tertiary institutions in Anambra State.

Recommendation

1. Integrate AI into teaching and learning: Tertiary institutions in Anambra State should integrate artificial intelligence tools into instructional processes to strengthen practical skills acquisition and improve teaching effectiveness in vocational and accounting education.

2. Provide adequate facilities and infrastructure: Institutions should ensure sufficient AI resources, digital infrastructure, and learning technologies are available to support effective teaching and learning.
3. Continuous training and capacity-building: Lecturers and students should receive ongoing training and development programs on the effective and responsible use of AI tools to enhance digital competence.
4. Balanced and responsible AI use: Educational institutions should encourage the balanced use of AI, ensuring it enhances learning without reducing critical thinking, creativity, or independent problem-solving skills.
5. Policy and stakeholder support: Government and relevant stakeholders should develop and implement supportive policies and funding initiatives to promote responsible and effective integration of AI in vocational and accounting education.

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