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ARTIFICIAL INTELLIGENCE (AI) AND AUDIT EFFECTIVENESS IN NIGERIA

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Abstract

The study identified two (2) imperative issues; first, the application of artificial intelligence; and second how the application of artificial intelligence has resulted to audit effectiveness. To address these issues, we examined the extent to which artificial intelligence influence audit effectiveness of companies in Nigeria. Quantitative method (cross-sectional survey design) was used and a cross-section of two hundred and four (204) professional auditors in Nigeria was used. Data obtained from the survey were analyzed by means of regression statistical tool. Findings indicated that application of artificial intelligence is faced with numerous challenges such as poor knowledge of artificial intelligence, lack of training on the use of artificial intelligence in audit practices, and unwillingness by audit professionals to embrace this innovation; thus, decreasing the level of audit effectiveness. On the other hand, it was found that artificial intelligence significantly affect audit effectiveness of companies in Nigeria. Impliedly, artificial intelligence technologies/tools, infrastructures and literacy levels of application/use of artificial intelligence by professional auditors may account for increased audit effectiveness of companies in Nigeria.

Keywords: *Artificial intelligence; Audit; Audit effectiveness; Audit quality; Internal auditing*
JEL Classification: *M41; M42*

Introduction

In recent years, the integration of artificial intelligence (AI) into internal auditing has garnered significant attention in Nigeria. AI technologies such as machine learning, data-mining and expert systems have the potential to enhance the quality of audit by improving accuracy, efficiency and real-time detection of anomalies. According to Ajayi and Akinrinola (2023) AI aids internal audits by enabling real-time fraud detections, expansion of audit coverage, and enhancing accuracy and efficiency of audit. Dagunduro (2023) believed that AI positively influences audit quality; however, due to poor and absence of incessant training of accountants and audit personnel on AI techniques as well as investments in machine learning tools by audit firms has further hindered the use of AI by companies.

Furthermore, Owonifari (2023) showed that AI and audit practices are closely inter-twined, hence when companies focus on data mining, machine learning, and image recognition are able to hence audit quality. One way via which companies can encourage use of AI and its application in audit can be by means of continuous training for accountants and personnel of audit, investments in machine learning tools, and increased use of image recognition among audit firms (Adeoye, et al, 2023). Regardless the challenges facing the AI in the auditing practices in Nigeria such as limited awareness, inadequate/incessant training and resistance to change by audit personnel, there are limited studies that had examined how AI has impacted on audit effectiveness in Nigeria.

Addressing these challenges via targeted training programs, investments in AI tools as well as fostering a culture-open to technological advancements is imperative for enhancing audit effectiveness (Abad-Segura, Infante-Moro, González-Zamar & López-Meneses, 2021; Abdullah, Sanusi & Savitri, 2022). According to Appelbaum, Kogan, Vasarhelyi and Yan (2017), integration of AI in auditing practices presents significant opportunities for enhancing audit quality and effectiveness. However, realizing these benefits demand addressing existing challenges via comprehensive strategies focused on education, investments and cultural change within audit practices which this study sought to address (Marcello, 2020; Petkov, 2020; Agbata, Uchegbu & Eze, 2022).

On the basis of the above, this current study identifies significant challenges impeding AI application, which is due

to lack of awareness and training on AI by companies, and how the application of AI has significantly affected audit in Nigeria. On the basis of the above, the following were specific objectives of the study:

(i) To identify the challenges impeding the application of artificial intelligence among professional auditors in Nigeria.

(ii) To determine whether the application of artificial intelligence has significant effect on audit effectiveness

2. LITERATURE REVIEW

2.1. Artificial Intelligence (AI)

Artificial intelligence (AI) refers to the use of computer system/software designed to simulate human intelligence processes like learning through machine learning algorithms, problem-solving, pattern recognition and decision-making in organization(Bose, Dey & Bhattacharjee, 2022; Arowoogun, Babawarun, Chidi, Adeniyi & Okolo, 2024). In the context of this study, AI encompasses technologies such as machine learning, natural language processing, expert system, and data mining tools employed to support and/or enhance auditing functions.

The AI tools or technologies are various software, applications and systems used by auditors to carry out their duties (Farooq, 2023). In this study, the focus was on AI-driven tools such as data analytics platforms, machine learning software and AI-enhanced auditing tools that can aid auditors in performing their duties and functions more effectively and efficiently (Leitner-Hanetseder & Lehner, 2022; Sivarajah, Kumar, Kumar, Chatterjee & Li, 2024). The literature suggests that lack of technical competences, poor knwoeldge of AI usage, lack of training for users of AI tecnologies, among others, consistently appear as the limiting factors to the use of AI technologies in developing countries, Nigeria inclusive.

2.2. Audit Effectiveness

Auditing is a function that provides independent and objective evaluation of the financial and operational processes of organizations (Ali, 2018; & Alnodel, 2018). It aims to ensure that internal controls are effective and efficient, risk management strategies are suitable and adequate and compliance with laws and regulations are maintained(Amaka, Callista & Maria, 2022). The ability of auditing to realize its goal of offering assurance on adequacy of internal controls, identifying financial mismanagements, detecting frauds, ensuring compliance with regulatory requirements, and supporting decision-making may be propelled by AI (OECD, 2021; Chu & Yong, 2021). Audit effectiveness in this study is evaluated on the basis of how AI tools and technologies can enhance accuracy, speed and comprehensiveness of audit outcomes for organizations.

Predominantly auditing is vital in order to ensure effectiveness, efficiency and accountability in organizations; however, traditional auditing methods are evermore becoming inadequate as information within organizations become more complex, faster, and more accurate results are required by these organizations (Al-Sammarraee & Alshareeda, 2021). Hence, AI offers the solutions in the form of automation, and real-time processing of information for the auditing professionals (Arnaboldi, Busco & Cuganesan, 2017; Austin, Carpenter, Christ & Nielson, 2021); however, there is limited application in the Nigerian context.

According to Okoro, Owamah and Obiekea (2025), the limited application of AI by auditing professional is partly due to low levels of awareness, poor investments, absence of technical skills and resistance to change by auditors, which may have impeded AI usage in auditing activities. Hence, majority of audits within Nigeria are manual and inefficient carried out, hence decreasing the quality of audit. As observed by Slezák (2023), AI offers reliable and valuable insights into organizations' financial and operational performance. The role of AI in ensuring quality of audit can be evaluated by how well it supports the detection of anomalies, fraud, efficiency of data analysis and overall audit comprehensiveness(Alina, Yan & Michail, 2021; & Srivatava & Muharam, 2022).

2.3. Theoretical Framework

This study was anchored on the Technology Acceptance Theory (TAT), developed by Davis in 1989. TATA posits that the perceived usefulness and perceived ease of use are the two (2) main dynamics influencing acceptance of new technologies. In recent application, Abdullah, Sanusi and Savitri (2022) emphasized that these perceptions are imeprative to AI adoption and impelementation in auditing practices, particularly in a developing nation like Nigeria. Adeoye, Akintoye, Aguguom and Olagunjo (2023) applied TAT to understand the digital adoption and implementation in the Nigerian financial systems.

In Nigeria, auditors are more likely to adopt and implement AI tools when they perceive that these technologies can enhance fraud detections and reporting efficiency, and when such AI tools do not demand multifacted training. Hence, TAT supports the hypothesis that auditors' perceptions significantly influence AI integration in auditing practices.

3. METHODOLOGY

This study employed quantitative method (cross-sectional research survey) in obtaining data on the extent to which artificial intelligence (AI) influence audit effectiveness of companies in Nigeria. Cross-sectional survey was employed because the study obtained data from a cross section of professional auditors in various companies in Nigeria. Given the above, questionnaire was the main instrument of data collection which was administered to a sample of 204 professional auditors in Nigeria.

Structured questionnaire contained challenges impeding application of AI(such as knowledge of AI, training on the use of AI in audit practices, and willingness by audit professionals to embrace AI), application of AI and audit effectiveness items. Questionnaire was divided into two (2) parts - respondents' demographics (gender, age, marital status, and

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qualification) and themes on challenges impeding application of AI, application of AI, and audit effectiveness. 4-point scale(strongly agree-strongly disagree) was used. The questionnaire was administered on a face-to-face basis by the researchers. The results obtained from the study were analyzed used Descriptive Statistics (Simple Percentage, Frequency Counts, Mean, and Standard Deviation) and Inferential Statistics (ordinary least square regression). The statistical test was carried out using via STATA 16.0.

4. ANALYSIS AND RESULTS

Table 1: Demographic Variables of Respondents

S/N	Parameters	Respondents	Frequency =204	Percent
1	Gender	Male	144	55.88%
		Female	90	44.12%
		Total	204	100%
2	Age	25-30 years	48	23.53%
		31-35 years	43	21.08%
		36-40 years	45	22.06%
		41-45 years	26	12.75%
		46-50 years	23	11.27%
		50 & above	19	9.31%
		Total	204	100%
3	Marital Status	Single	47	23.04%
		Married	136	66.67%
		Others	21	10.29%
		Total	204	100%
4	Qualifications	Bachelor of Science (B.Sc.)	103	50.49%
		Master of Science (M.Sc.)	34	16.67%
		Professional	67	32.84%
		Total	204	100%

Source: Authors' Compilation (2026)

Table 1 is the demographics of respondents of 204 respondents who are professional auditors in Nigeria. The results revealed that 144(55.88%) and 90(44.12%) were males and females respectively; this suggests that most of the professional auditors sampled were males. The age distribution revealed that most respondents' ages were clustered around 25 and 40years.

The marital status of respondents showed that 47(23.04%) and 136(66.67%) were single and married respectively while 21(10.29%) were divorced, separated and/or cohabitating; this suggests that most respondents were married. It was found that 103(50.49%) and 34(16.67%) of the respondents had obtained Bachelor of Science (B.Sc.) and Master of Science (M.Sc.) degrees in relevant fields while 67(32.84%) had obtained professional qualifications such as ANAN, ICAN, CITN among others.

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Table 2: Mean/Standard Deviation Reponses on Challenges faced by AI application

S/N	Items	Mean	Std. Dev	Obs.
1	Poor Knowledge of AI	3.992	0.781	204
2	Lack of Training on AI Use	3.254	0.707	204
3	Unwillingness by Audit Professionals to embrace AI	3.104	0.777	204
	Total Mean/Standard Deviation	**3.450**	**1.747**	**204**

Source: Authors' Compilation (2026)

Table 2 is the mean/standard deviation responses challenges faced by AI application items among the professional auditors in Nigeria. The results revealed that out of the three (3) items, all scored above 3.0 cut-off point of the mean. The total mean of 3.45 and standard deviation of 1.747 clearly suggest among others that professional auditors are faced with several challenges with the application of AI and however, the most significant challenges faced by them is poor knowledge of AI (which has the highest mean score of 3.992); hence, to a large extent, professional auditors are faced with several challenges with the application of AI in audit practices.

Table 3: Ordinary Least Square Results for AI and Audit Effectiveness

Estimator (s)	**Regressor (s)**	
Variable(s)	Coefficient	Probability
Artificial Intelligence	0.4580 (7.44)	0.000
Constant	1.739 (13.21)	0.000
F-value	23.51	
F-Probability	0.0000	
R-Squared	0.5710	

Source: Authors' Compilation (2026)

Table 3 is the regression result for AI and audit effectiveness and it was found that R-squared is (0.5710%); this indicates that the independent variable (AI) explained about 57.1% of the systematic variations in the dependent variable(audit effectiveness). R-squared value revealed among others that AI predicts audit effectiveness by 57.1% while the unexplained variation is 42.9%, indicating that there are other variables that may predict audit effectiveness which were not included in the study.

The F-statistics (F-ratio = 23.51) with a p-value of 0.000 indicates that the result is significant at 5 percent level. Also, the regression coefficients is carrying positive sign; an indication that an increase in application of AI by professional auditors, it would lead to 45.8% changes in audit effectiveness. The results of t-test was used to ascertain whether the application of artificial intelligence has no significant effect on audit effectiveness

The t-value is 7.44 with a probability value of 0.000 which is less than 0.05% significance level; this implies that application of artificial intelligence has significant influence on audit effectiveness of companies in Nigeria. Overall, findings indicated that application of AI is faced with numerous challenges such as poor knowledge of AI, lack of training on the use of AI in audit practices, and unwillingness by audit professionals to embrace AI; thus, this has decreased the level of audit effectiveness in Nigeria.

5. CONCLUSION AND RECOMMENDATIONS

This study identified two (2) vital issues such as the application of AI, and how application of AI has resulted to audit effectiveness of companies in Nigeria. To address these concerns, we investigated the extent to which AI affects audit effectiveness of companies in Nigeria. Cross-sectional survey design was employed and two hundred and four (204) professional auditors were sampled across several companies in Nigeria. Data obtained from the survey were analyzed using descriptive and inferential statistical tools.

Findings revealed among others that application of AI is faced with diverse challenges such as poor knowledge of AI, lack of training on the use of AI in audit practices and indisposition by audit professionals to embrace this innovation; thus, decreasing audit effectiveness. The results of the study

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implied that AI technologies/tools, infrastructures, and literacy levels of application/use of AI by professional auditors may account for increased audit effectiveness of Nigerian companies.

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