Artificial Intelligence, External Audit Quality and Financial Accountability of Deposit Money Banks in Lagos, Nigeria

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Abstract
This study investigated the impact of artificial intelligence (AI), external audit quality on financial accountability of Deposit Money Banks (DMBs) in Lagos State, Nigeria. More specifically, this study examined the elements of the level of AI, effectiveness of AI in fraud detection, reliability and accuracy of the audit, as well as timeliness and efficiency of the audit, and the impact of these elements on financial accountability. Guided by Agency Theory, the study employed a survey research design. External auditors and audit specialists working in the four largest international audit firms (PwC, KPMG, EY and Deloitte) in Lagos were surveyed, and 912 usable responses were collected. Data were analyzed using descriptive statistics, reliability analysis using Cronbach's alpha, and simple and multiple regression analyses. The outcomes of the study revealed that the four model's independent variables had a positive and significant influence on financial accountability with a confidence level of 95%. The level of AI adoption ($\beta = 0.591$, $R^2 = 0.541$), effectiveness of AI in fraud detection ($\beta = 0.624$, $R^2 = 0.573$), reliability and accuracy of the audit ($\beta = 0.573$, $R^2 = 0.502$), and timeliness and efficiency of the audit ($\beta = 0.558$, $R^2 = 0.487$). The combined model was significantly high ($R^2 = 0.714$, $F = 558.46$, $p < 0.05$) and accounted for 71.4% of the variance in financial accountability in which the effectiveness of AI in fraud detection was the strongest of the four variables. The study found that the use of AI in external auditing strengthened financial accountability in Nigerian Deposit Money Banks (DMBs). It suggested the banks should allocate more resources toward the development of AI-based fraud detection systems and real-time auditing. It is recommended that the Central Bank of Nigeria (CBN) establishes a policy framework that balances the need to enhance the accountability of banks and the development of responsible AI in auditing.

Keywords: *Artificial Intelligence, Audit Quality, Financial Accountability, Deposit Money Banks*

Introduction

The rapid development of digital technologies has disrupted business operations across all sectors, including accounting, finance, and auditing. Within the innovations of digital technologies, Artificial intelligence (AI) refers to the ability of a computer system to learn, reason, and recognize patterns to make decisions and perform analyses that were once considered the domain of human intelligence. AI is beginning to transform the way financial

data is recorded, analyzed, and verified. In the discipline of finance and auditing, AI is becoming more important in the detection of fraud, the management of risk, and the use of predictive analytics. This allows auditors to go beyond sample-based testing to conduct complete and exhaustive population tests, which helps to identify outliers and improves the quality of financial reporting. External auditing is a key component for the reliability of financial statements. It provides stakeholders with the assurance of an independent assessment that the financial statements of a reporting entity fairly present its financial results and position (Watts & Zimmerman, 2023; Jensen & Meckling, 2023). Conventional auditing relies on a large degree of sampling, manual controls, and judgement-based assessments of risks. In the current environment of rapidly evolving and complex financial systems, these techniques fail to provide an assurance that accounts are free from material misstatement, manipulation, or fraud. AI provides a powerful and effective solution. Through the combined use of machine learning, natural language processing and robotic process automation, the population of all transactions can be assessed and the analyses can be executed in far less time to identify patterns that are out of the ordinary.

Explosive transaction volumes and advanced Digital systems compounded with increased financial criminal activity pose a challenge to financial accountability in the Nigerian Banking sector. Deposit Money Banks (DMBs) process millions of transactions every day. Auditors, however, mostly rely on manual reviews and sampling which cover only a minute fraction of the transactional activity. This inevitably leaves material misstatements and fraudulent activities undetected (Odia & Ogiedu, 2024; Umoren & Akpan, 2024). One way to understand the extent of the problem is to consider the annual statistics of fraud cases. The Nigeria Inter Bank Settlement System records a 196% annual increase in financial fraud for the year 2024, which increased from ₦17.67 billion in 2023 to ₦52.26 billion in 2024 (NIBSS, 2024). There are numerous barriers to the adoption of AI in Nigeria, including undeveloped infrastructure, limited expertise and high costs of AI implementation (Arenu & Oyewo, 2023; Ehioghiren & Atu, 2024). However, the potential benefits of AI, including the enhancement of audit quality and financial accountability, are acknowledged (Alsmairat & Al-Hazaima, 2023; Cao & Chychyla, 2024). The central objective of this study is to assess the impact of AI adoption on the quality of external auditing and to determine whether the enhancement of external auditing serves to advance financial accountability within DMBs in Lagos State. The specific objectives of the study are: (i) to assess the impact of the level of AI adoption on financial accountability; (ii) to examine the impact of the AI's role in fraud detection on financial accountability; (iii) to assess the impact of reliability and accuracy of auditing on financial accountability; (iv) to assess the impact of the timeliness and efficiency of auditing on financial accountability; and (v) to evaluate the total impact of the aforementioned AI and auditing quality constructs on financial accountability within DMBs.

Hypotheses of the Study

The study tested these null hypotheses.

H_{01}: There is no observable relationship between the level of AI adoption and the financial accountability of DMBs in Lagos.

H_{02}: There is no observable relationship between the effectiveness of AI in fraud detection and the financial accountability of DMBs in Lagos.

H_{03}: There is no observable relationship between the reliability and the accuracy of audits and the financial accountability of DMBs in Lagos.

H_{04}: There is no observable relationship between the timeliness and the efficiency of audits and the financial accountability of DMBs in Lagos.

H_{05}: There is no observable relationship between the level of AI adoption, the effectiveness of AI, and the reliability and timeliness of audits and the financial accountability of DMBs in Lagos.

Literature Review

Artificial Intelligence (AI) is the part of computer science that deals with the creation of systems that can perform tasks that would otherwise require human intelligence including learning and reasoning. In auditing, the main components of AI are machine learning that identifies anomalies in entire populations of transactions, robotic process automation (RPA) that carries out automated procedures and repetitive tasks within an audit, and natural language processing (NLP) that deals with the analysis of unstructured data (i.e. documents and correspondence) (Dai & Vasarhelyi, 2023; Gepp & Linnenluecke, 2023).

Audit quality encompasses the ability of audit processes to detect anomalies within financial records and offer a credible level of assurance regarding the integrity of the financial records. In the current study, this is reflected in the assessment of AI in fraud detection, reliability and accuracy of AI-driven audits, and the timeliness and efficiency of AI-driven audits. Financial accountability, which is the dependent construct in this framework, captures the liability of banks to handle financial resources judiciously and provide a clear account to the stakeholders. It is represented in the clarity of financial reporting, the adherence to financial regulations, and the reliability of financial statements (Mulgan, 2023; Adegbie & Fakile, 2023).

Theoretical Framework

Agency Theory, as advanced by Jensen and Meckling (1976), forms the basis of this study. According to the theory, modern corporations' framework where the ownership and management functions are separated creates the potential of information asymmetry and conflicts of interest of the managers acting contrary to the shareholders' interests. External auditing mitigates these agency problems through independent audits of the financial records and assurance of information symmetry between management and stakeholders (Watts & Zimmerman, 2023). The effectiveness of auditing is dependent on the quality of the audit. With the ability to perform real-time financial audits on the entire data set, AI holds the potential to improve the quality of audits and reduce the likelihood of financial misconduct. The Technology Acceptance Model (Davis, 1989) and Institutional Theory (DiMaggio & Powell, 1983) are additional theories in the study to understand the proliferation of AI within auditing in banks and other financial institutions.

Empirical Review

There are more studies connecting AI adoption to positive audit outcomes. Oluyombo and Ajakaiye (2024) noted that the implementation of AI by Nigerian audit firms would benefit the firms by improving productivity and efficiency. Wiryadinata et al. (2023) and Alsmairat and Al-Hazaima (2023) showed that AI-assisted fraud detection systems are vastly superior to traditional systems in detection of fraudulent activity. Dai and Vasarhelyi (2023) and Feruke (2024) noted that the use of AI to conduct full-population testing (practices that would allow auditors to examine the entire population of financial transactions), would refine the accuracy and reliability of audits, which in turn would improve the overall quality of financial reports. Patel et al. (2023) and Mpofu (2023) argued that the adoption of AI would help auditors detect irregularities and take corrective actions sooner. However, most studies have looked at these concepts in an isolated context and outside the Nigerian banking context and in most studies, AI is treated as an undifferentiated entity. This study aims to address this gap and decompose AI and audit quality into four quantifiable dimensions and examine their

individual effects as well as their combined effects on the financial accountability of Nigerian DMBs.

3. Methodology

This study employed a survey research design to collect primary data and examine relationships and hypothesis testing. The study area was Lagos State, which is called Nigeria's financial and commercial center. It is home to most DMBs, the Nigerian Exchange Group, the CBN Lagos office, and the major international audit firms. The study population consisted of external auditors and audit professionals in the "Big Four" audit firms (PwC, KPMG, EY, and Deloitte) in Lagos, the firms which have taken the lead in AI adoption in the Nigerian audit industry. Based on published staff estimates (PwC ≈ 1,000; KPMG ≈ 1,490; EY ≈ 500; Deloitte ≈ 600) and using the Taro Yamane (1967) sample size estimation formula with a 5% margin of error, a sample size of 1,064 respondents was identified, and respondents were selected using purposive sampling, which is a non-probability sampling technique.

The Taro Yamane sample size formula is as follows:

$n = N / [1 + N(e)^2]$

Primary data was collected using a structured questionnaire, and respondents' perceptions were measured on a five-point Likert scale. Content and construct validity were confirmed by an expert review and assessment aligned with the theory, and reliability was confirmed by Cronbach's alpha. The data were analyzed using descriptive statistics and simple and multiple regression analysis, setting the level of significance at $p < 0.05$.

The given econometric model yields the following expression:

$FA = \beta_0 + \beta_1 AIL + \beta_2 AIFD + \beta_3 ARA + \beta_4 ATE + \varepsilon$

where FA = financial accountability; AIL = AI adoption level; AIFD = AI effectiveness in fraud detection; ARA = audit reliability and accuracy; ATE = audit timeliness and efficiency; β_0 = constant; β_1–β_4 = coefficients; ε = error term.

4. Results and Discussion

Table 1: Demographic Profile of Respondents

Characteristic	Category	Frequency	Percentage
Job Title / Rank	Partner	58	6.4%
	Audit Manager	187	20.5%
	Senior Auditor	392	43.0%
	Audit Associate / Junior Staff	275	30.1%
Auditing Experience	6 years or more	584	64.1%
DMB Audit Involvement	Within preceding decade	912	100.0%

Source: Field survey, 2026

Of the 1,064 questionnaires given, 948 were returned. After screening, 912 were deemed usable. The response rate of the survey was 85.7%, which is above the 70% response rate threshold for survey-based research (Sekaran & Bougie, 2022). The respondent profile was satisfactory. 6.4% of respondents were partners, 20.5% were audit managers, 43.0% were senior auditors, and 30.1% were associates. 64.1% had over six years of audit experience and had conducted an external audit of a DMB in the last 10 years.

Table 2: Reliability Statistics

Construct	No. of Items	Cronbach's Alpha
AI Adoption Level	4	0.847
AI Effectiveness in Fraud Detection	4	0.861
Audit Reliability and Accuracy	4	0.839

Audit Timeliness and Efficiency	4	0.852
Financial Accountability	5	0.874

Source: Researcher's computation (2026)

All constructs recorded Cronbach's alpha values well above 0.70 (0.839–0.874), confirming the internal consistency and reliability of the instrument.

Table 3: Descriptive Statistics of Study Variables

Variable	Mean	Std. Dev.
AI Adoption Level (AIL)	3.87	0.74
AI Effectiveness in Fraud Detection (AIFD)	3.94	0.71
Audit Reliability and Accuracy (ARA)	3.79	0.78
Audit Timeliness and Efficiency (ATE)	3.82	0.76
Financial Accountability (FA)	3.91	0.69

Source: Field Survey, 2026

All variables had mean scores over 3.50, so there was likely general agreement on the positively framed variables. AI effectiveness in fraud detection had the highest mean (M = 3.94, SD = 0.71), and financial accountability had a mean of 3.91 (SD = 0.69). This likely means AI-augmented auditing is viewed as positively impacting transparency, as well as compliance and credibility of financial statements.

Test of Hypotheses

Hypotheses one to four were each assessed using simple regression, while hypothesis five was assessed using multiple regression. The results of the simple regression for the four individual predictors are outlined in Table 4.

Table 4: Summary of Simple Regression Results (H_{01}–H_{04})

Predictor (→ FA)	β	t	R^2	F	p
AI Adoption Level	0.591	10.368	0.541	107.50	0.000
AI Effectiveness in Fraud Detection	0.624	11.217	0.573	119.42	0.000
Audit Reliability and Accuracy	0.573	9.831	0.502	94.64	0.000
Audit Timeliness and Efficiency	0.558	9.447	0.487	89.25	0.000

Source: Researcher's computation (2026).

Each predictor exerted a significant, positive effect on financial accountability ($p < 0.05$), leading to the rejection of H_{01} through H_{04}. AI effectiveness in fraud detection was the strongest individual predictor ($\beta = 0.624$), explaining 57.3% of the variance in financial accountability.

Table 5: Multiple Regression Results (H_{05})

Variable	β	Std. Error	T	p
Constant	0.612	0.201	3.045	0.002
AI Adoption Level	0.312	0.069	4.522	0.000
AI Effectiveness in Fraud Detection	0.348	0.071	4.901	0.000
Audit Reliability and Accuracy	0.271	0.068	3.985	0.000
Audit Timeliness and Efficiency	0.259	0.067	3.866	0.000
$R^2 = 0.714$	Adj. $R^2 = 0.712$	$F = 558.46$	$p = 0.000$	

Source: Researcher's computation (2026).

The combined model was statistically significant ($F = 558.46$, $p < 0.05$) and described 71.4% of the variance in financial accountability. The contribution of all four predictors was statistically significant, thus H_{05} was rejected. This means that the combination of AI

adoption, fraud detection effectiveness, audit reliability and audit timeliness, in combination, was more powerful in relation to financial accountability than their individual dimensions.

Findings

According to H_{01}, financial accountability would not improve with greater levels of AI adoption. H_{01} was rejected, and therefore it can be said that the level of adoption of AI does improve financial accountability. This finding agrees with Oluyombo and Ajakaiye (2024), as with Agency Theory, suggesting that the level of financial accountability improves the level of supervision and, thus, reduces the level of information asymmetry between the managers of a bank and the stakeholders of the bank. Fraud detection was the most significant predictor, and the rejection of H_{02} is even more important, given the 196% increase in fraud in the banking sector, as reported by NIBSS (2024). This also agrees with Wiryadinata et al. (2023), Umoren and Akpan (2024), and indicates that the implementation of AI-based fraud detection in a bank, decreases the banks' fraud losses, increases the level of legal placement, and improves the confidence of stakeholders. H_{03} was also rejected, and this also supports Dai and Vasarhelyi (2023), and Feruke (2024). H_{04} was also rejected, and this corresponds to Patel et al. (2023), and Mpofu (2023), regarding the usefulness of AI in financial services offered through the AI service of the bank, as it helps to correct irregularities, before they affect the service. The most interesting was the rejection of H_{05}, where a synergistic effect was seen, and 71.4% of the variance was explained, which is more than the individual contribution of each of the constructs. This also responds to the gap in the literature, as the previous studies on this topic examined these variables more in isolation and less in a more integrated way.

Conclusion

This study provides substantial empirical support that the use of AI in external auditing strengthens the financial accountability of Deposit Money Banks in Lagos State, Nigeria. The level of AI adoption, the perceived effectiveness of AI in fraud detection, and the reliability, accuracy, and timeliness, and efficiency of audits all serve to heighten financial accountability. Detection of fraud was the most powerful of the individual predictors, and the combined model accounted for 71.4% of the variance. These outcomes were aligned with the Agency Theory and indicate a preference for the integration of AI in a broad manner, as opposed to a piecemeal manner, to achieve the greatest gains in accountability.

Recommendations

In light of the above, the study proffers that: Deposit Money Banks should increase the use of AI technologies, especially in the areas of fraud detection and real-time audit analytics, and seek to enhance the quality of audit-related data by improving their systems and infrastructure; Audit Firms should speed the adoption of AI-supported auditing systems and teach their personnel the data analytics and ML to improve the effectiveness and efficiency of audits; The CB and the FRCN should establish policies that allow the responsible use of AI in auditing with safeguards for transparency of auditing processes, data security, and the ethical use of data; ICAN and ANAN should update their training to include the ethical use of AI in auditing and applicable data analytics.

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