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PUBLIC SECTOR AUDIT AND FRAUD DETECTION IN NIGERIA: THE MODERATING ROLE OF TECHNOLOGY

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Abstract
Fraud within government ministries continues to undermine public financial management and accountability in Nigeria despite the existence of audit structures. This study examined the effect of public sector audit on fraud detection in Nigerian government ministries, focusing on financial audit, compliance audit, and special audit as core dimensions. In contrast, procurement fraud detection, payroll fraud detection, and asset theft detection served as outcome measures. The study also investigated the moderating role of technology. Anchored on positivist philosophy, a cross-sectional survey design was adopted. Primary data were collected through structured questionnaires administered to 320 audit-related personnel across selected federal and state ministries, yielding 296 valid responses for analysis. Data were examined using descriptive statistics, Pearson Product-Moment Correlation, multiple regression, and hierarchical regression analysis. Findings revealed that financial audit, compliance audit and special audit significantly influence procurement fraud detection, payroll fraud detection and asset theft detection. The moderation analysis indicated that technology significantly strengthens the audit–fraud detection relationship, increasing explanatory power from 61% to 69%.The study concludes that effective audit systems, particularly compliance and special audits, significantly enhance fraud detection, and that digital technologies amplify audit effectiveness. It recommends strengthening compliance enforcement, expanding forensic audit capacity, and deepening technology integration to improve transparency and reduce fraud in Nigerian government ministries. The study contributes to public sector auditing literature by integrating technology as a moderating variable within public-sector fraud detection models in a developing-country context.

Keywords: Fraud detection, ministries, Nigeria, public sector audit.

1.0 Introduction

In Nigeria, government ministries are responsible for budget execution, procurement of goods and services, payroll administration, and public asset management. These functions therefore expose government ministries to a high level of fraud risks. Hence the need for audit in the public sector cannot be undermined or be treated with levity. Changes in society are sometimes driven by technology. Therefore, various professions, including public sector audit, are now depending on technology by aligning with technological directions for a better job performance.The auditing profession, as it stands today, cannot refuse or avoid technology due to its effects and roles in the success and advancement of the profession. Hence, public sector audit has to leverage technology for better judgement, and intelligent skepticism because advancements in technology seems to have significantly altered the landscape of public sector auditing and fraud detection.

Fraud can manifest across multiple functional areas of government ministries. Fraud detection focuses on exposing manipulation, concealment, or public resources misuse. Fraud detection in the public sector deals with identifying and discovering of acts that are

intentional and intended todeceive(ACFE, 2024).The intentional deception always results in financial gain or other advantages that are undeserved by the perpetrator. Auditing in the public sector is therefore planned to provide independent assurance on public resources management. Public sector auditing therefore signifies a mechanism (statutory and professional) for promoting transparency, accountability, and effective stewardship of public funds.

New public management, according to Cordery and Hay (2025), has changed the context of public sector auditing in various ways. According to them, inquiry into the impact of the new public management on auditors in the public sector and audit institutions have largely been unconnected, with the exclusion of the critical scrutiny of performance audits. In Nigeria, initiatives such as the Integrated Personnel and Payroll Information System (IPPIS) and Government Integrated Financial Management Information System (GIFMIS) demonstrate the growing relevance of technology in strengthening audit effectiveness. The deployment of digital accounting systems, data analytics, biometric payroll systems, and electronic procurement platforms has enhanced thecapacity of auditors to detect fraud more efficiently and accurately.

Notwithstandinghow relevance public sector audits is, in Nigeria's government ministries fraud remains prevalent and inescapable. Public sector fraud remains a governance challenge that is persistent in Nigeria in spite of the existence of constitutional audit provisions, regulatory frameworks, and institutional oversight mechanisms. Government ministries, which serve as the primary vehicles for public expenditure execution, continue to record cases of procurement manipulation, payroll irregularities, and misappropriation of public assets. Association of Certified Fraud Examiners (ACFE) (2022) argued that evidence suggests that routine audit exercises sometimes fail to prevent or detect fraud in a timely manner, therefore, allowing losses to accumulate before corrective action is taken.The study believes that the introduction of technological tools can reduce and prevent fraud as detection may be easier.

This study therefore examines public sector audit and fraud detection in government ministries in Nigeria, focusing on how audit dimensions affect fraud detection proxies and how technology affects the relationship between the variables.Technology is introduced as a moderating variable to determine whether technological adoption strengthens or weakens the relationship between audit practices and fraud detection outcomes.

Research Objectives

The study intends to find out if public sector audits improve fraud detection in Nigeria and also how technology moderates the variables. The achieve the objectives six specific objectives were pursued. That is, to find out how

i. Financial audit improves procurement fraud detection
ii. Compliance audit improves procurement fraud detection
iii. Special audit improves procurement fraud detection
iv. Financial audit improves payroll fraud detection
v. Compliance audit improves payroll fraud detection
vi. Special audit improves payroll fraud detection
vii. Financial audit improves asset fraud detection
viii. Compliance audit improves asset fraud detection
ix. Special audit improves asset fraud detection
x. Technology moderates the relationship between public sector audit and fraud detection.

H_{01}: Financial audit does not improve procurement fraud detection significantly
H_{02}: Compliance audit does not improve procurement fraud detection significantly
H_{03}: Special audit does not improve procurement fraud detection significantly
H_{04}: Financial audit does not improvs payroll fraud detectionsignificantly
H_{05}: Compliance audit does not improve payroll fraud detectionsignificantly
H_{06}: Special audit does not improve payroll fraud detectionsignificantly
H_{07}: Financial audit does not improve asset fraud detectionsignificantly
H_{08}: Compliance audit does not improve asset fraud detectionsignificantly
H_{09}: Special audit does not improve asset fraud detectionsignificantly
H_{010}: Technology does not moderate the relationship between public sector audit and fraud detection.

Conceptual Explanations

Public Sector Audit

The audit process is a continuous process of audit evidence gathering (Edori&Egwanwor, 2024). It has to do with accounts and records examination and verification (Edori&Edori, 2018). Public sector audit denotes an independent and systematic examination of government ministries, departments, agencies, and other public institutions to guarantee that public resources are managed properly, well accounted for, and are used in compliance with laws and regulations that are established. It is a mechanism that iskey for promoting accountability, transparency, and efficiency in the management of public funds.Unlike private sector auditing, which focuses mainly on profitability and shareholder value, in public sector auditing stewardship, service delivery, and the protection of public interest is emphasized(INTOSAI, 2019). Practically, public sector audit stands as the bridge between the government and the citizensby making sure that those that public resources are entrusted with are held accountable for their actions. This makes public sector audit an essential tool in combating corruption and strengthening governance systems, particularly in developing countries like Nigeria where public financial management challenges are prevalent (World Bank, 2019).Despite its importance, several challenges facepublic sector audit, especially in developing countries. These includeaudit institutions lack of independence; insufficient funding and resources; auditors' inadequate technical capacity; weak/poor implementation of audit recommendations; and political interference. These challenges can reduce the effectiveness of audit systems and limit their ability to detect and prevent fraud. As noted by Hay and Cordery (2018), the effectiveness of public sector audit depends largely on institutional strength, professional competence, and the level of support from government and oversight bodies.

Financial Audit

Financial audit emphasesare on the examination of financial statements with the aim of ensuring accuracy, completeness, and fair presentation in accordance with applicable accounting standards. Ahmed (2022) and Wulandari, Putri and Marlina (2021) said that financial audit proves that the quantitative information the management presented is in conformity with accounting principles, so that it can provide information that are relevant for interest parties. It provides both independent and objective valuation of financial statements and internal controls of organizations, which helps stakeholders such as investors, creditors, regulators, general public, have confidence in the company's financial reportingaccuracy and reliability (Kemp, 2025). Jarah,Al-Jarrah, Al-Zaqeba, and Al-Jarrah (2022); Akther and Xu (2021) and Chalevas, Giannopoulos, Koutoupis, and Samara (2021) opined that financial auditserves as an instrumentfor verifying, evaluating, and providing confidence to rely on an entity's financial statements. financial audits conducted systematically and professionally,

plays a role of enforcing financial accountability since it ensures that financial statements presented are "accurate, relevant, and trustworthy" (Holili&Khoiroh, 2023).

Financial audit in the public sector is expected to enhance fraud detection by identifying misstatements, unauthorized expenditures, and financial manipulation within government ministries.Financial audit is aninstrument that is foundational for accountability in the public sector. It involves the independent financial statements' examination, accounting records scrutiny, and examination of related disclosures to determine whether they are fairly presented in all material respects. It examines the financial position and performance of a public entity in accordance with applicable standards. In the public sector context, financial audit goes beyond certification of figures; it assesses stewardship, legality of expenditure, and reliability of financial reporting. The International Organization of Supreme Audit Institutions, through ISSAI 100 and related standards, emphasizes that public sector financial auditing provides reasonable assurance that financial statements are free from material misstatement due to fraud or error and that public resources are managed in accordance with legislative intent (INTOSAI, 2019). Financial audit, in Nigeria, is a statutory mandate hence it is positioned as a key external oversight mechanism for detecting irregularities within government ministries.

Even though financial audit plays a] crucial role in the process of fraud detection, it is primarily and mostly periodic and retrospective. Traditional financial audits are not specifically designed to uncover all forms of fraud, particularly sophisticated schemes involving collusion (International Auditing and Assurance Standards Board, 2024). This limitation explains why financial audit alone may not fully prevent procurement fraud, payroll manipulation, asset diversion, and et cetera. Consequently, by focusing on regulatory adherence and investigative procedures respectively compliance audit and special audit complement financial audit. Furthermore, integration of technological tools.

Compliance Audit

Compliance audit is viewed as anevaluation that is independent whileadhering to thestandards that are applicable as references(Abbas, Kareem & Abd, 2020). Ithas to do with a full review of an establishment's adherence to "regulatory rules and guidelines" (Stephen, 2002). Vitez (2010) sees it as an audit that reviews business functions in order to determine if an organisation is adhering todefinite contractual, regulatory or requirements that are predetermined. It can be said that compliance audit is used reviewing employees or departments of a company. According to the International Organization of Supreme Audit Institutions (INTOSAI) (2019), compliance auditing assesses whether activities, financial transactions, and information comply, in all material respects, with authorities that govern the audited entity. Compliance audit evaluates the extent to which ministries adhere to public finance laws, procurement regulations, and administrative guidelines. Effective compliance auditing strengthens control over procurement processes and payroll systems, thereby reducing contract inflation, ghost workers, and unauthorized asset disposal opportunities. In Nigeria, Bovens (2007) opined that compliance auditing ensures adherence to the Public Procurement Act 2007, Financial Regulations, Fiscal Responsibility Act 2007, and other statutory frameworks guiding public expenditure. Viewing it from the perspective of public accountability, compliance auditing strengthens trust in governance systems by ensuring that discretionary powers are not exercise public by officials arbitrarily. Compliance audit strengthens rule-based governance yet excessive formalism may constrain it. Also, auditors focus may be on documentation without assessing substance over form adequately. Sometimes, fraudulent actors can create false documentation that appears compliant while

underlying misconduct are concealed. Furthermore, compliance audits are not continuous but often period, therefore, limiting real-time fraud detection capability. This limitation underpins the importance of integrating technology to enhance compliance monitoring.

Special Audit

Supreme audit institutions may conduct special investigations to address matters of public interest, particularly where there is suspicion of fraud or misuse of public funds (INTOSAI, 2019). Special audits are investigative in nature and often incorporate forensic accounting techniques such as data mining, document tracing, lifestyle analysis, and interviews.A special audit is ordered by authorities and is a non-routine investigation to examine areas specified such as suspected fraud, compliance violations, or financial mismanagement, which are not within the standard annual audits scope. Special audit, which includes forensic and investigative audits, is increasingly deployed to address fraud schemes that are complex and concealed. Special audits go beyond routine financial checks by applying investigative techniques to uncover fraud that may not be detected through conventional audit.Rezaee (2005) emphasizes that forensic audit practices reduce fraud occurrence by increasing the probability of detection and prosecution. International anti-corruption studies suggest that specialized investigative audits deter fraud by increasing perceived enforcement intensity (OECD, 2016).

Fraud Detection

Fraud detection denotes the process whichfraudulent activities are identified and detected in various organisations. Ithas to do with the identification and discovery of intentional acts of deception intended to result in financial gain or other undeserved advantages and it focuses on uncovering deliberate manipulation, concealment, or misuse of public resources. In computer science, it involves the use of data mining methods and analysing network properties in order to identify nodes that are abnormal or outliers that indicate fraudulent behaviour.Detthamrong, Chansanam, Boongoen, and Iam-On (2024) focused on financial fraud and opined that it extends is beyond the monetary losses that are immediate, since it can wear downthe trust of customer and hinder digital economy growth. Minastireanu and Mesnita (2019) therefore posit that timely detection is vital, as the probabilities of recovering losses significantly reduces if fraud is not promptly identified. This makes fraud detection in organisations a task that must be done in order to ensure the organization is not defrauded or reduce it to a minimum level.

Fraud detection in the public sector fraud detection does not only contribute to financial integrity of the system but also aligns with international anti-corruption commitments such as the United Nations Convention against Corruption (UNCAC). Early detection of fraud reduces revenue leakage, minimises fiscal wastage, and enhances service delivery performance. Therefore, in government institutions, effective fraud detection strengthens accountability and improves public trust. Again, it complements preventive controls such as compliance mechanisms and internal policies. Data-driven fraud detection leverages audit analytics and anomaly detection methods to identify outliers and systemic irregularities are central. For effective fraud detection, internal control frameworks such as the Committee of Sponsoring Organizations of the Treadway Commission (COSO) (2013) emphasize control activities, monitoring, and risk assessment as prerequisites

Procurement Fraud Detection

Public procurement is an aspect that is pivotal in the activities of the government with implications that are ramifying for the development of every country's economy and national growth (Ifejika, 2024). Furthermore,if public procurement is managed efficiently, it has the inherent ability to turn around a nation' fortunes, but if incompetently managed, it could

amount to animmense source of that will drain the economy. This, according to Moyo, Kebaetse, and Matlhabaphiri (2025), in each stage in the life cycle of procurement, fraud finds its residence yet the concept lacks universal glue.Furthermore, procurement fraud had resulted in severe financial challenges which had impacted negatively on the financial sustainability and delivering of primary services.

Procurement fraud occurs when the procurement process is manipulated in order to secure undeserved financial benefits. Most times, it involves manipulating or rigging bid, inflating prices, contract splitting, colluding with suppliers and false invoicing to steal public or organizational funds. It spans the whole procurement cycle, that is, from the pre-contract bid rigging to post-contract false invoicing.Since a large portion of government expenditure, procurement represents is globally recognized as an area offraud and corruption that is classified as “high-risk area”.

Procurement fraud detection involves the identification of irregularities such asbid pattern anomalies, price deviations from industry benchmarks; unjustified sole sourcing absent statutory exemption; and conflict of interest disclosures and negative vendor profiling.Modern practices leverage data analytics to automatically flag these indicators. For instance, to detect abnormal pricing and vendor behaviour, cluster analysis and machine learning algorithms are used in real-time procurement systems (Albrecht, et al. 2019).Ministries adopting e-procurement platforms combined with audit analytics report fewer procurement irregularitiescompared to those relying on manual procurement controls.Therefore, in public financial governance. Procurement fraud detection is consequently aneffective auditing functional outcome and also a strategic priority.

Payroll Fraud Detection

Payroll fraud remains very critical and a persistent issue within Nigeria's public sector, casting a shadow on the quest of the country for a transparent governance and an efficient financial management (Umar & Bappi, 2023). Payroll fraud is the stealing of cash from an organization by means of processing theirpayroll (Mustapha, 2023). Edori and Ogaluzor (2018) posit that the payroll preparation process is an area that is weak for fraud occurrence as it involves the payroll system manipulation by increasing employees’ total number, intentionally giving a total that is completely wrong, booking excess overtime, declaring false allowances, increasing salaries and wages etc. In explaining payroll fraud, Lomer (2018) maintained that payroll fraud encompasses the stealing of an organization’s money through its payroll system; and it may be done by both management and employees.Payroll fraud involves unauthorized payments, inclusion of ghost workers, manipulated pay grades, and fictitious overtime claims. Edori and Iwene (2025) are of the opinion that substantially and significantly risk is posed by payroll fraud on institutions because it results in losses financially, reputation damage, and regulatory non-compliance. In the public sector, without robust audit techniques, large payroll rosters and decentralized personnel systems make payroll fraud especially challenging to detect.Detection of payroll fraud relies typically onpayroll lists reconciliation with verified employment records; cross-checking payment records with biometric *databases* (e.g., national identity systems); and review of payroll changes for appropriate authorization.Payroll analytics, such as Benford’s Law application and trend analysis, help identify abnormal pay patterns.Edori and Iwene (2025) came to the conclusion that though diverse mechanisms and measures are in place to curb payroll fraud; payroll fraud remains a persistent business challenge universally.

Asset Theft Detection

Ganguly (2022) quoted Finance Online as saying that 95% of businesses come across problems that have to do with employee theft. Asset theft means unauthorized taking or

misuse of organization assets which may be physical, financial or intellectual. Asset theft in the public sector includes unauthorized disposal, pilferage of supplies, and government property misclassification. Unlike financial misstatement, asset theft involves physical loss of resources and its detection relies on physical inventory audits, comparison of asset registers with field inspections, and tagging and tracking systems integrated with digital registries.

Technology (Moderator Variable)

Technology According to Edori (2018), has to do with the application of science in solving problems. Edori further elucidated that if technology is applied and in the right direction, it can be of great benefit and profit to individuals and corporate organisations but if applied wrongly can result to an excessive harm and harm to individuals as well as corporate institution. Technology, in this context, refers to digital tools and systems used to support audit processes and fraud detection in government ministries. These include data analytics platforms, integrated financial management systems (IFMIS), biometric payroll systems (e.g., IPPIS), e-procurement and audit trail software.By increasing data processing speed, improving anomaly identification, and enabling real-time monitoring, technology enhances fraud detection. The fraud triangle framework by Cressey (1953), suggests that increased detection capability reduces the 'opportunity' element of fraud. Technology disrupts fraud opportunities by improving access to comprehensive datasets and enabling automated exception reporting.Technology usage significantly strengthens the impact of audit practices on fraud detection outcomes.

Technology can moderate the relationship between public sector audit and fraud detection by improving efficiency, accuracy, and effectiveness in audit procedures. Traditional audit methods often struggle to detect sophisticated fraud schemes due to manual processes and limited analytical capacity (Vasarthelyi, Alles, & Williams, 2010). The integration of technologies, such as computer-assisted audit techniques enhances auditors' ability to identify irregularities and fraudulent transactions more effectively (Appebaum, Kogan, &Vasarhelyi, 2017). Technology innovations have transformed the audit environment by enabling auditors to examine entire datasets, monitor transactions in real time, and identify suspicious patterns more efficiently.

Technology moderates the relationship by improving audit efficiency, enhancing real-time monitoring, reducing human error and bias, detect complex fraud patterns, strengthens transparency and record integrity. Looking at the theoretical perspective; in fraud triangle theory, technology reduces opportunities for fraud by increasing surveillance, monitoring, and internal control environments. In Technology Acceptance Model, the usefulness and ease of technological tools influence auditors' effectiveness in detecting fraud. Also, in Agency Theory, technology improves information transparency between government officials (agents) and citizens/government stakeholders (principals)

Consequently, technology strengthens the relationship between public sector audit and fraud detection.

Theoretical Framework

Governance Digital Theory emerged from the growing integration of digital technologies into governance and public administration systems. The theory explains how digital transformation improves transparency, accountability, service delivery, and institutional efficiency within public organizations. Scholars such as Luna-Reyes and Gil-Garcia (2014) argue that digital governance systems improve information accessibility, strengthen monitoring processes, and reduce opportunities for corruption and financial irregularities.The theory emphasizes that technology-driven governance systems, including e-governance

platforms, digital financial systems, and audit analytics, enhance organizational oversight by creating accurate and traceable financial records. In public sector auditing, digital governance systems facilitate real-time monitoring of financial transactions and improve transparency in procurement and payroll management.The relevance of Governance Digital Theory to this study lies in its explanation of how technology enhances audit effectiveness and fraud detection. The theory supports the argument that digitalauditsystems strengthen the relationship between public sector audit and fraud detection by improving information accuracy, monitoring capability, and accountability mechanisms.

Fraud Triangle Theory

Fraud Triangle Theory was developed by Donald R. Cressey in 1953. The theory posits that fraud occurs when three conditions exist simultaneously: pressure, opportunity, and rationalization. Pressure refers to financial or personal motivations that encourage fraudulent behavior. Opportunity arises from weak internal controls and ineffective monitoring systems, while rationalization involves the justification of unethical actions by the offender.Many accounting scholars and fraud examiners have expanded the theory by emphasizing the role of effective control systems in reducing fraud opportunities. Rezaee (2005) argued that strong audit systems and forensic procedures significantly reduce the likelihood of financial statement fraud and occupational fraud.The relevance of the Fraud Triangle Theory to this study is that public sector audit mechanisms are designed to minimize opportunities for fraud. Financial audits, compliance audits, and special audits strengthen control systems and improve accountability. Technology further reinforces these controls by enabling automated monitoring, digital verification, and anomaly detection. Thus, the theory provides a strong explanation for the relationship between audit practices and fraud detection in government ministries.

Agency Theory

Agency Theory was propounded by Michael C. Jensen and William H. Meckling in 1976. The theory explains the relationship between principals and agents, where principals delegate authority and resources to agents for management purposes. In the public sector context, citizens and government stakeholders are the principals, while public officials and ministry administrators act as agents.The theory assumes that agents may pursue personal interests rather than the interests of the principals, leading to corruption, fraud, and misuse of public resources. Consequently, monitoring and control mechanisms are required to ensure accountability and transparency.Public sector audit serves as one of these mechanisms by independently examining government financial activities and ensuring compliance with laws and regulations.Agency Theory is relevant to this study because it explains why fraud occurs in government ministries and why audit systems are necessary. Financial audit, compliance audit, and special audit help reduce information asymmetry and ensure that public officials are accountable for the use of public funds. Technology further strengthens monitoring efficiency and improves fraud detection capability.

Institutional Theory

Institutional Theory was developed by John W. Meyer and Brian Rowan in 1977. The theory argues that organizations operate within systems of formal rules, norms, and societal expectations that influence their behavior and decision-making processes. Organizations adopt structures and practices not only for operational efficiency but also to gain legitimacy and conform to institutional expectations.Later contributions by Paul J. DiMaggio and Walter W. Powell (1983) introduced the concept of institutional isomorphism, where organizations adopt similar practices due to regulatory, professional, and environmental pressures.The theory is relevant to this study because government ministries are required to comply with

institutional standards, financial regulations, and audit frameworks established by regulatory authorities. Public sector audit functions exist as institutional mechanisms for enforcing accountability and transparency. Technology adoption in auditing is also influenced by institutional pressure to modernize governance systems and improve fraud control mechanisms.

Empirical Studies

Studies on public sector auditing in developing countries largely focused on structural weaknesses and procedural limitations within government audit systems. For instance, Bingilar and Sawyer (2020) examined challenges obstructing the expression of valid audit opinions in government institutions. Their study identified weak audit standards, political interference, inadequate professional independence, and poor implementation of audit recommendations as major obstacles affecting audit quality. While the study provided important insights into operational deficiencies within public auditing, its emphasis remained largely descriptive and reform-oriented without empirically examining how these weaknesses directly affect fraud detection outcomes. Nonetheless, the study contributed to the understanding that audit effectiveness depends not only on technical procedures but also on institutional support and regulatory enforcement.Literature has adopted broader governance perspectives by linking public sector audit effectiveness to institutional accountability and anti-corruption performance.

Hay and Cordery (2018)argued that public sector auditing creates value by enhancing transparency, reducing information asymmetry, and strengthening oversight systems. Using documentary evidence from several jurisdictions, the authors demonstrated that independent Supreme Audit Institutions (SAIs) contribute significantly to early fraud detection and financial discipline. Unlike earlier descriptive studies, their work critically emphasized the institutional environment surrounding auditing, particularly legislative backing and operational autonomy. The study further suggested that audit effectiveness is heavily influenced by governance quality and political commitment to accountability.Extending this argument, Cordery and Hay (2025) employed cross-country survey data from Supreme Audit Institutions to examine determinants of public sector audit effectiveness. Their findings showed that audit independence, legislative oversight, and institutional capacity significantly improve accountability outcomes and fraud detection performance. The study is particularly important because it shifted attention from procedural auditing to systemic governance structures. It argued that even technically competent audit systems may fail in environments where political interference undermines institutional independence. This perspective aligns with Institutional Theory, which posits that organizational effectiveness is shaped by regulatory frameworks and institutional legitimacy.

Similarly, international evidence suggests that public sector auditing plays a strategic role in corruption control and governance reform. Liu and Lin (2012), using provincial panel data from China, found that government auditing contributes significantly to corruption control by increasing the detection of financial irregularities and strengthening post-audit rectification measures. Their findings indicated that corruption levels decline where corrective actions following audit findings are effectively implemented. Unlike studies that focus only on audit reporting, Liu and Lin demonstrated that the effectiveness of auditing depends on enforcement and institutional response to audit recommendations. This introduces a critical dimension often ignored in descriptive public sector audit literature: the implementation gap between audit findings and corrective governance actions.

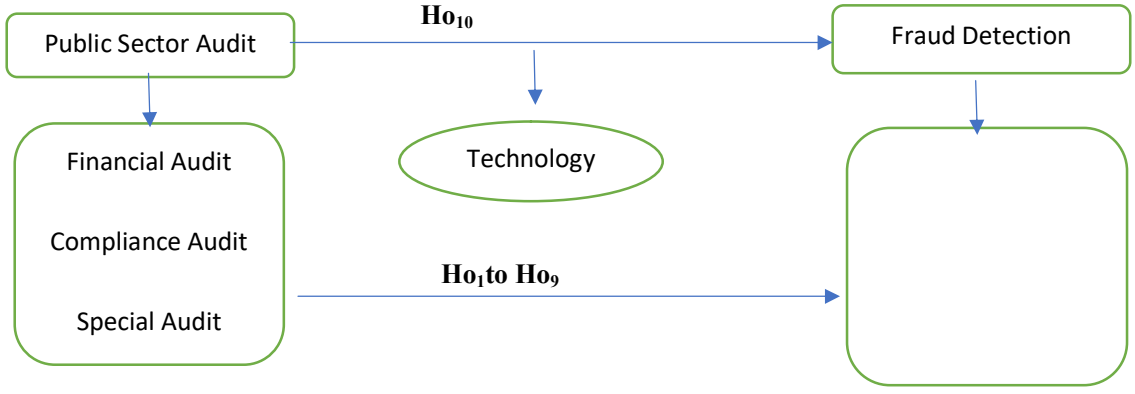
In the Nigerian context, Shinkafi (2025), in a study conducted in Zamfara State, examined how public sector audit practices influence accountability outcomes. Using survey and

regression analysis, the study revealed that audit compliance with standards and reporting transparency significantly improve accountability, whereas audit independence alone showed no significant effect. The findingschallenge traditional assumptions within Agency Theory that independence alone guarantees effective monitoring. Instead, it suggests that practical enforcement, transparency, and institutional responsiveness may be more important determinants of audit effectiveness in developing economies where political structures may weaken formal independence mechanisms.The role of audit reports in strengthening stewardship accountability has also been emphasized by Wisdom and Ogundana (2017). Their study argued that because financial statements serve as the primary medium through which government activities are communicated, audit reports become essential instruments for evaluating the stewardship responsibilities of public officials. While their work reinforces the accountability function of auditing, it focuses mainly on the informational role of audit reports and pays less attention to modern fraud detection mechanisms and technological transformation in auditing processes. Contemporary public sector audit literature now increasingly argues that traditional audit reporting alone may be insufficient in combating sophisticated financial fraud schemes.

Studies from other African countries reveal persistent structural and institutional barriers limiting audit effectiveness. Zinyama (2013), in Zimbabwe, examined the performance of the Comptroller and Auditor General and identified major constraints including weak legal frameworks, inadequate funding, poor remuneration, and lack of sanctioning authority. The study demonstrated that institutional weaknesses significantly undermine public audit effectiveness even when formal structures exist. Importantly, Zinyama's findings support the argument that audit systems cannot function effectively in isolation from broader governance reforms. This reinforces the growing scholarly consensus that accountability institutions require both operational capacity and political support to perform effectively.

A critical synthesis of the literature therefore reveals three major observations. First, public sector audit effectiveness is strongly influenced by institutional independence, legislative backing, and governance quality rather than merely procedural compliance. Second, the implementation of audit recommendations is as important as the audit exercise itself in reducing fraud and corruption. Third, technology has emerged as a major factor transforming public sector auditing by improving monitoring capability, transparency, and fraud detection efficiency. Despite these advances, limited empirical attention has been given to how technology moderates the relationship between audit dimensions and specific fraud detection outcomes such as procurement fraud, payroll fraud, and asset theft within Nigerian government ministries. This study therefore addresses an important empirical and contextual gap in the literature.

Conceptual Operational Framework



3.0Methodology

This study is anchored on the positivist research philosophy. The philosophy assumes that social phenomena can be objectively measured, quantified, and explained using statistical techniques. Positivism emphasizes empirical evidence, objectivity, and quantification in explaining relationships among variables. The philosophy is appropriate because the study examines measurable relationships between public sector audit and fraud detection, while assessing the moderating role of technology.This paradigm allows for hypothesis testing, objective measurement of variables, statistical generalization and quantitative validation of relationships.Given that fraud detection effectiveness and audit practices can be operationalized into observable indicators and measured through structured questionnaires, positivism provides a strong empirical foundation for this research.The study adopts a cross-sectional survey research designbecause data are collected at a single point in time and it allows the use of inferential statistics to test hypotheses.

The population comprises internal auditors, accountants, procurement officers, payroll officers, and asset management officers in selected Federal and State Government Ministries in Nigeria.For this study10 Federal Ministries and10 State Ministrieswere purposively selected based on size, budget allocation, and fraud risk exposure. The study adopts a stratified random sampling technique to ensure proportional representation across targeted respondents within each stratum; simple random sampling was applied.To accommodate non-response bias, 320 questionnaires were distributed to respondents across the selected ministries.Data for the study were collected through a structured questionnaire designed using a 5-point Likert scale ranging from:1 = Strongly Disagree,2 = Disagree,3 = Neutral,4 = Agree, and5 = Strongly Agree.

To ensure the quality of the research instrument, both validity and reliability tests were conducted. Face and content validity were established through expert review by specialists in accounting, auditing, and research methodology who examined the questionnaire for clarity, relevance, and adequacy in measuring the study constructs. Their observations and recommendations were incorporated into the final draft of the instrument.Reliability of the instrument was assessed using Cronbach's Alpha coefficient, which measures the internal consistency of questionnaire items. A pilot study was conducted using a small sample of respondents outside the study population. The reliability coefficients obtained for the study variables exceeded the acceptable threshold of 0.70, indicating that the instrument was reliable and suitable for the study.

To minimize the problem of common method bias, several procedural remedies were implemented. Respondents were assured of anonymity and confidentiality to reduce evaluation apprehension and socially desirable responses. Questionnaire items were carefully worded to avoid ambiguity and leading questions. In addition, the independent and dependent variables were arranged in separate sections of the questionnaire to psychologically separate respondents' evaluation of variables. Statistically, Harman's single-factor test was conducted to determine whether a single factor accounted for the majority of covariance among the variables. The result indicated that common method bias was not a significant concern in the study.

The study also conducted robustness and diagnostic tests to validate the assumptions underlying regression analysis. Multicollinearity among independent variables was examined using the Variance Inflation Factor (VIF) and tolerance values. The results showed that all VIF values were below the threshold of 10, indicating absence of multicollinearity. These diagnostic tests confirmed the suitability of the data for regression analysis and enhanced the robustness and credibility of the findings.

Data collected from the field were analyzed using both descriptive and inferential statistical techniques. Descriptive statistics such as frequencies, percentages, mean, and standard deviation were used to summarize respondents' opinions. Inferential statistics included Pearson Product Moment Correlation (PPMC) to examine the strength and direction of relationships among variables, Multiple Regression Analysis to determine the effect of public sector audit dimensions on fraud detection, and Hierarchical Regression Analysis to assess the moderating effect of technology on the relationship between public sector audit and fraud detection. Statistical analysis was performed, and hypotheses were tested at a 5% level of significance.

Table 3.1:
Reliability Test Results (Cronbach's Alpha)

Variables	Number of Items	Cronbach's Alpha	Decision
Financial Audit (FA)	5	0.812	Reliable
Compliance Audit (CA)	5	0.846	Reliable
Special Audit (SA)	5	0.831	Reliable
Procurement Fraud Detection (PFD)	5	0.874	Reliable
Payroll Fraud Detection (PYFD)	5	0.852	Reliable
Asset Theft Detection (ATD)	5	0.826	Reliable
Technology (TECH)	5	0.889	Reliable

Source: Authors computation, 2026.

Table 3.1 presents the reliability test results for the study variables using Cronbach's Alpha coefficient. The results indicate that all the variables recorded reliability coefficients above the minimum acceptable threshold of 0.70 recommended by methodological scholars. Specifically, Financial Audit recorded 0.812, Compliance Audit 0.846, and Special Audit 0.831, indicating strong internal consistency among the questionnaire items measuring audit dimensions.Similarly, Procurement Fraud Detection (0.874), Payroll Fraud Detection (0.852), and Asset Theft Detection (0.826) also demonstrated high reliability, showing that the items used to measure fraud detection constructs were consistent and dependable. Technology recorded the highest reliability coefficient of 0.889, suggesting a very high level of consistency among the items measuring technological adoption and application in audit processes.Overall, the results confirm that the research instrument was reliable and suitable for data collection and subsequent statistical analysis.

Table 3.2:
Multicollinearity Diagnostic Test (VIF and Tolerance Values)

Variables	Tolerance Value	VIF	Decision
Financial Audit (FA)	0.612	1.634	No Multicollinearity
Compliance Audit (CA)	0.587	1.703	No Multicollinearity
Special Audit (SA)	0.641	1.560	No Multicollinearity
Technology (TECH)	0.704	1.420	No Multicollinearity

Source: Authors computation, 2026.

Table 3.2 presents the Variance Inflation Factor (VIF) and tolerance values used to test for multicollinearity among the independent variables. Multicollinearity occurs when independent variables are highly correlated with one another, which may distort regression estimates and reduce the reliability of the model.

The results show that all VIF values are below the maximum acceptable threshold of 10, while the tolerance values are above the minimum threshold of 0.10. Specifically, Financial Audit recorded a VIF of 1.634, Compliance Audit 1.703, Special Audit 1.560, and Technology 1.420. These values indicate low intercorrelation among the predictor variables.The findings therefore confirm the absence of multicollinearity problems in the regression model, implying that each independent variable contributes uniquely to explaining variations in fraud detection. Consequently, the regression estimates generated from the study can be considered reliable and robust.

4.0 Data Analysis

Out of the 320 distributed questionnaires, 296 were valid for analysis.
Pearson Product Moment Correlation (PPMC).

Correlation Matrix

Variables	FA	CA	SA	PFD	PYFD	ATD	TECH
FA	1						
CA	.62**	1					
SA	.58**	.55**	1				
PFD	.61**	.66**	.59**	1			
PYFD	.57**	.63**	.60**	.68**	1		
ATD	.54**	.59**	.62**	.65**	.71**	1	
TECH	.69**	.72**	.65**	.74**	.76**	.70**	1

Source: Authors computation, 2026.

All audit dimensions (FA, CA, SA) are positively and significantly correlated with fraud detection measures (PFD, PYFD, ATD).Compliance Audit shows the strongest relationship with Procurement Fraud Detection (r = .66).Special Audit shows stronger relationship with Assets Theft Detection (r = .62).Technology has the strongest correlation with Payroll Fraud Detection (r = .76).All correlations are below 0.80, indicating absence of multicollinearity.There is strong preliminary evidence supporting positive relationships among the variables.

Regression Analysis and Hypothesis Testing

Three direct regression models were estimated, followed by a moderation model.

Model 1: Effect on Procurement Fraud Detection (PFD). ***Regression Output***

Variable	Beta (β)	t-value	Sig.
Constant	0.812	4.11	.000
FA	0.241	3.98	.000
CA	0.356	5.72	.000

Variable	Beta (β)	t-value	Sig.
SA	0.198	3.11	.002
R^2			=0.58
Adj.-R^2			=0.57
F			=132.44
p = .000			

Source: Authors computation, 2026.

Financial Audit significantly improves procurement fraud detection (β = 0.241, p < 0.05).Compliance Audit has the strongest effect (β = 0.356).Special Audit also contributes positively.58% of variation in procurement fraud detection is explained by audit dimensions.

Model 2:
Effect on Payroll Fraud Detection (PYFD)

Variable	Beta (β)	t-value	Sig.
Constant	0.694	3.88	.000
FA	0.218	3.56	.001
CA	0.331	5.29	.000
SA	0.264	4.42	.000
R^2			=0.61
Adj.-R^2			=0.60
F			=148.77
p = .000			

Source: Authors computation, 2026.

All audit dimensions significantly enhance payroll fraud detection.Compliance audit again shows strongest predictive power.61% of variation explained.

Model 3:
Effect on Assets Theft Detection (ATD)

Variable	Beta (β)	t-value	Sig.
Constant	0.732	3.94	.000
FA	0.196	3.09	.002
CA	0.284	4.63	.000
SA	0.312	5.02	.000
R^2			=0.55
Adj.-R^2			=0.54
F			=119.66
p = .000			

Source: Authors computation, 2026.

Special Audit has strongest influence on assets theft detection.All audit types are significant predictors.55% explanatory power.

Moderation Analysis (Technology as Moderator)
Step 1: Without Moderator
$R^2 = 0.61$

Step 2:
With Technology and Interaction Terms

Variable	**Beta**	**Sig.**
TECH	0.401	.000
FA*TECH	0.132	.011
CA*TECH	0.148	.004
SA*TECH	0.119	.018
R^2		=0.69
ΔR^2		=0.08
F-change		=21.77
p = .000		

Source: Authors computation, 2026.

Technology significantly moderates the relationship between audit practices and fraud detection.The increase in R^2 from 0.61 to 0.69 indicates that technology strengthens audit effectiveness by 8%.

The results showed that:

i. Compliance audit emerged as the strongest predictor across fraud detection measures.
ii. Special audit is particularly effective for asset theft detection.
iii. Payroll fraud detection shows highest responsiveness to audit systems.
iv. Technology significantly strengthens audit impact, confirming the digital governance advantage.

Discussion of Findings
Financial Audit and Fraud Detection Measures
The regression results revealed that financial audit has a positive and statistically significant effect on procurement fraud detection ($\beta = 0.241$, $p < 0.05$), payroll fraud detection ($\beta = 0.218$, $p < 0.05$), and assets theft detection ($\beta = 0.196$, $p < 0.05$). Consequently, the null hypothesis was rejected.This finding implies that financial audit significantly enhances fraud detection proxies in Nigerian government ministries. The result aligns with the accountability framework proposed by Bovens (2007), which emphasizes that structured financial oversight strengthens institutional accountability and transparency. The finding is also consistent with the empirical evidence of Hay and Cordery (2018), who reported that strong public sector audit systems improve financial discipline and reduce mismanagement.

Furthermore, the result corroborates the fraud prevention theory advanced by Rezaee (2005), which posits that continuous financial scrutiny reduces opportunities for financial

misstatement and asset diversion. The implication is that financial audit serves as the first line of institutional defense against procurement manipulation, payroll padding, and asset misappropriation.However, although significant, financial audit showed comparatively lower beta coefficients than compliance and special audits in some models, suggesting that financial audit alone may not sufficiently address sophisticated fraud schemes without complementary audit mechanisms.

ComplianceAudit and Fraud Detection Measures

The analysis demonstrated that compliance audit has the strongest predictive power across the three fraud detection measures: procurement fraud detection ($\beta = 0.356$, $p < 0.05$), payroll fraud detection ($\beta = 0.331$, $p < 0.05$), and assets theft detection ($\beta = 0.284$, $p < 0.05$). The null hypothesis was therefore rejected.This finding suggests that strict compliance audit has significant effect on fraud detectionproxies in public ministries. The findings resonate with evidence from World Bank (2019), which showed that adherence to public financial management regulations reduces leakages and expenditure irregularities.The strong beta values indicate that procurement and payroll fraud in Nigerian ministries are often rooted in non-compliance with established financial rules. Therefore, enforcement of compliance audit mechanisms directly curtails fraudulent practices.

SpecialFinancial Audit and Fraud Detection Measures

Results revealed that special audit significantly affects procurement fraud detection ($\beta = 0.198$, $p < 0.05$), payroll fraud detection ($\beta = 0.264$, $p < 0.05$), and particularly assets theft detection ($\beta = 0.312$, $p < 0.05$). The null hypothesis was rejected.This finding indicates that special audit are particularly effective in uncovering hidden fraud schemes. The prominence of special audit in detecting asset theft is logical, as asset-related fraud often requires deeper investigative procedures beyond routine financial reviews.The finding is consistent with the fraud examination principles which reported that proactive fraud investigations significantly reduce loss magnitude and detection time.Additionally, the result supports the analytical perspective that advanced investigative audit techniques significantly improve anomaly detection accuracy.The implication is that while financial and compliance audits serve preventive roles, special audits perform corrective and investigative roles critical for fraud exposure.

Technology Moderating Role

The hierarchical regression results showed that the inclusion of technology increased R^2 from 0.61 to 0.69 ($\Delta R^2 = 0.08$, $p < 0.05$). Interaction terms (FA*TECH, CA*TECH, SA*TECH) were all statistically significant. The null hypothesis was therefore rejected.This finding demonstrates that technology strengthens the impact of financial, compliance, and special audits on fraud detection. The presence of e-procurement systems, biometric payroll platforms, audit analytics software, and Integrated Financial Management Information Systems enhances audit efficiency and fraud identification accuracy.The result aligns with global evidence from World Bank (2019), which found that integrated financial management systems reduce leakages in developing countries. It also corroborates the digital governance because digital procurement systems significantly improve fraud detection outcomes.Furthermore, the moderating effect supports that technology-enabled audit amplify detection capabilities beyond traditional audit approaches.The implication is clear: technology does not merely function as an independent predictor of fraud detection; it enhances the effectiveness of existing audit systems.

Theoretical Interpretation of Findings

The findings strongly support the assumptions of Agency Theory, Fraud Triangle Theory, Institutional Theory, and Governance Digital Theory.From the perspective of Agency

Theory, the significant influence of audit mechanisms confirms that monitoring systems reduce information asymmetry and improve accountability among public officials.The Fraud Triangle Theory is also validated because stronger audit systems and technological controls reduce opportunities for fraud occurrence, thereby weakening one of the major drivers of fraudulent behavior.Institutional Theory explains why ministries adopting structured audit procedures and digital governance systems achieve better fraud detection outcomes due to institutional pressures for transparency and accountability.Finally, Governance Digital Theory is strongly supported by the moderation results, which demonstrate that technology significantly enhances audit effectiveness and strengthens fraud detection capacity in public institutions.

5.0Summary, Conclusion and Recommendation

This study examined the relationship between public sector audit and fraud detection in government ministries in Nigeria, with specific focus on the dimensions of financial audit, compliance audit, and special audit, and how they influence procurement fraud detection, payroll fraud detection, and assets theft detection. The study also investigated the moderating role of technology in strengthening the effectiveness of audit practices in fraud detection.

Correlation analysis indicated strong positive relationships between audit dimensions and fraud detection measures, with all coefficients significant at the 1% level. The regression results showed that financial audit significantly improves procurement fraud detection ($\beta = 0.241$), payroll fraud detection ($\beta = 0.218$), and assets theft detection ($\beta = 0.196$). Compliance audit emerged as the strongest predictor across the models, with beta values of 0.356, 0.331, and 0.284 respectively. Special audit also significantly influenced fraud detection, particularly assets theft detection ($\beta = 0.312$).The moderation analysis revealed that technology significantly strengthens the relationship between audit practices and fraud detection. The inclusion of technology increased the explanatory power of the model from 61% to 69%, confirming that digital systems such as e-procurement platforms, biometric payroll systems, and audit analytics enhance fraud detection effectiveness.

Overall, the study demonstrates that public sector audit mechanisms significantly contribute to fraud detection in Nigerian government ministries, and that technology plays a critical amplifying role in enhancing audit effectiveness.

This study investigated the effect of public sector audit on fraud detection in government ministries in Nigeria, focusing on financial audit, compliance audit, and special audit as core audit dimensions, while examining procurement fraud detection, payroll fraud detection, and assets theft detection as outcome measures. It further assessed the moderating influence of technology on the relationship between audit practices and fraud detection.

Based on the empirical findings derived from primary data analysis, the study concludes that public sector audit significantly enhances fraud detection mechanisms in Nigerian government ministries.

In conclusion, effective public sector audit, supported by strong compliance mechanisms and digital technology, is a critical instrument for combating procurement fraud, payroll fraud, and assets theft in Nigerian government ministries. Strengthening audit systems and technological infrastructure will significantly improve transparency, accountability, and public financial management performance.

Recommendations

i. Government ministries should strengthen routine financial audit mechanisms.
ii. Given that compliance audit emerged as the strongest predictor of fraud detection, ministries should prioritize strict enforcement of regulatory compliance.
iii. Ministries should institutionalize specialized audit functions.
iv. Ministries should expand digital infrastructure to support fraud detection.

Other recommendations are:

v. Although audit mechanisms are effective, continuous professional development is necessary to sustain performance.
vi. To enhance audit credibility, internal audit units should operate with greater independence from administrative interference.

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