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Sequence of Manuscript

I. Title page
II. Abstract (150-250 words)
III. Keywords (3-5)
IV. Introduction
V. Literature Review
VI. Methodology
VII. Results and Discussion
VIII. Conclusion and Recommendations
IX. References (APA 7th Edition)
X. Appendices (if necessary)
XI. Author Biographies (optional)

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TABLE OF CONTENT

TABLE OF CONTENT

TABLE OF CONTENT

EFFECT OF FORENSIC AUDIT ON FRAUD DETECTION IN THE FEDERAL MINISTRY OF FINANCE AND ASSOCIATE AGENCIES IN NIGERIA

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ABSTRACT

The increasing prevalence of financial fraud in Nigeria's public sector has intensified the need for more robust and investigative audit mechanisms. Forensic auditing, which integrates accounting, auditing, and investigative skills, has emerged as a critical tool in uncovering fraud that traditional audit methods have frequently been neglected. This study investigates the effect of forensic audit practices specifically Forensic Audit Investigation Techniques (FAIT), Computer-Assisted Audit Tools (CAATs), and Forensic Audit Reporting Quality (FARQ) on fraud detection in the Federal Ministry of Finance and its agencies. The main objective of the study was to assess the effect of forensic audit on detection of fraud in public financial management. The research adopted survey research design using primary data collected through structured questionnaires administered to 142 audit and finance professionals. Data were analyzed using multiple regression analysis with the aid of SPSS version 23. The findings revealed that all three variables FAIT, CAATs, and FARQ have a positive and statistically significant effect on fraud detection, with p-values below 0.05. This implies that the implementation of investigative techniques, advanced audit tools, and high-quality reporting substantially enhances the Ministry's ability to detect and respond to fraudulent activities. Based on these results, the study recommends: (i) enhanced training in forensic investigation skills; (ii) expanded deployment of CAATs across all units; and (iii) improvement in the timeliness and evidential quality of forensic audit reports. Strengthening these areas will promote transparency, accountability, and effective fraud control in Nigeria's public sector.

Keywords: Forensic Audit, Fraud Detection, CAATs, Reporting Quality, Public Finance, Nigeria

1. Introduction

The increasing complexity of financial transactions, coupled with systemic corruption and institutional weaknesses, has intensified the need for more robust fraud detection mechanisms in Nigeria's public sector. Government agencies such as the Federal Ministry of Finance have been plagued by high-profile cases of financial fraud, embezzlement, and misappropriation of public funds. These occurrences underscore the limitations of traditional auditing systems and highlight the imperative for forensic auditing as a strategic tool for financial integrity and transparency.

Forensic audit is a specialized field of accounting that integrates investigative skills with accounting and auditing principles to examine financial information suitable for use in legal proceedings (Crumbley, 2019). It goes beyond routine financial audits by uncovering financial crimes, quantifying losses, and presenting evidence that can withstand legal scrutiny. Forensic auditors deploy techniques such as digital forensics, data mining, document analysis, and interview methods to identify fraudulent transactions, track hidden assets, and assess the motives and methods of fraud perpetrators (Popoola, Ahmad & Samsudin, 2021).

Fraud detection, the dependent variable, refers to the process of identifying and preventing fraudulent activities, particularly those that may lead to financial

losses (Othman, Aris, Mardziyah, Azainaw (2015) .In the context of public institutions like the Federal Ministry of Finance, fraud detection includes uncovering practices such as payroll fraud, procurement fraud, revenue diversion, and misstatement of financial records. Effective fraud detection helps recover misappropriated funds, enhances financial accountability, and restores public trust in government institutions (Owojori & Asaolu, 2022).

A growing body of literature has highlighted the relationship between forensic auditing and fraud detection. For instance, Modugu and Anyaduba (2023) found that forensic accounting techniques significantly improved fraud detection in Nigeria's public and corporate sectors. Similarly, Ijeoma and Aruwa (2021) affirmed that forensic audit tools such as Computer-Assisted Audit Techniques (CAATs), forensic data analytics, and litigation support services contributed to the early identification and prevention of fraud in federal ministries and agencies.

Fraud and financial irregularities remain pervasive challenges within Nigeria's public sector, despite the existence of statutory audit frameworks and anti-corruption institutions. The Federal Ministry of Finance and its associated agencies, being central to the country's economic management, have frequently come under scrutiny for financial mismanagement, procurement fraud, and revenue leakages. Traditional audit procedures have proven insufficient in uncovering the increasingly sophisticated and concealed nature of fraudulent activities in public financial systems. This has prompted scholars and practitioners (Ibrahim, & Musa, 2022, Ibrahim, & Musa, 2022,Ibrahim, & Musa, 2022, Ibrahim, et al., 2022, Moses, et al 2022, Moses, et al., 2018, Ejura, et al. 2023 & Oginni, et al.2014) to advocate for the adoption of forensic audit as a more proactive and investigative approach to fraud detection.

Extant literature has acknowledged the potential of forensic auditing in combating financial crimes. Studies by Modugu and Anyaduba (2013), Ijeoma and Aruwa (2021), and Popoola et al. (2015) have reported a positive correlation between the use of forensic techniques and improved fraud detection outcomes. However, several critical gaps remain unaddressed in the literature.
First, there is an evidence gap concerning empirical validation specific to the Federal Ministry of Finance and its agencies. Much of the existing research tends to generalize findings across the broader public sector without focusing on key financial institutions where fraud implications are most impactful.

Second, a clear methodological gap exists as most prior studies have relied heavily on qualitative approaches or cross-sectional data, limiting the ability to establish causal relationships between forensic auditing practices and fraud detection performance. There is a need for robust, quantitative, and longitudinal data that can empirically demonstrate this linkage within a defined institutional context.

Third, a variable gap is evident in the limited disaggregation of forensic audit techniques. Many studies treat forensic auditing as a monolithic concept without exploring the relative effectiveness of its components such as digital forensics, data analytics, whistle-blower mechanisms, and litigation support in fraud detection outcomes.

Fourth, there is a scope gap, as most studies have focused either on the private sector or on federal parastatals generally, leaving out ministerial structures such as the Federal Ministry of Finance, which plays a strategic role in national fiscal policy and resource allocation.

Fifth, a theoretical gap persists in the underutilization of theories that explain the signaling effect of forensic audits on deterrence of fraud or the behavioral response of public officials. The dominant theories used have often been limited to agency theory, without considering signaling theory, fraud triangle theory, or institutional theory, which could offer richer explanatory insights.

Lastly, a geographical gap can be identified. Most international literature comes from developed economies with mature public financial management systems and strong institutional frameworks. The transferability of these findings to Nigeria, an emerging economy with unique governance challenges, is limited without context-specific empirical research

In light of these gaps, this study aims to provide focused, empirical evidence on how forensic audit practices influence fraud detection in the Federal Ministry of Finance and its agencies. It will fill both contextual and methodological voids by disaggregating forensic tools and applying appropriate theoretical models, thereby contributing to knowledge and improving anti-fraud strategies within Nigeria's public financial architecture. The primary objective of this study is to examine the effect of forensic audit on fraud detection in the Federal Ministry of Finance and its agencies in Nigeria. The specific objectives are to:

i. Assess the effect of forensic audit investigation techniques on fraud detection in the Federal Ministry of Finance and agencies.
ii. Determine the impact of computer-assisted audit tools (CAATs) on fraud detection in the Federal Ministry of Finance and agencies.
iii. Evaluate how the quality of forensic audit

reporting affects fraud detection in the Federal Ministry of Finance and agencies.

2. Literature Review

Fraud Detection: Fraud detection is the process of identifying indicators of fraudulent financial behavior within an organization through systematic evaluation of financial and non-financial data. It involves the application of investigative procedures and analytics to uncover activities that are deceptive, illegal, or unethical (Singleton, Singleton, Bologna, & Lindquist, 2006). In public sector environments, fraud can manifest in the form of payroll fraud, procurement fraud, contract inflation, unauthorized expenditure, fictitious assets, and revenue diversion.

According to Okoye and Gbegi (2021), fraud detection in Nigerian government ministries is often hindered by weak institutional frameworks, low accountability, and lack of effective auditing techniques. In response, the integration of forensic audit tools has been shown to significantly improve fraud detection capacity. KPMG (2022) reported that Nigerian public institutions that adopted forensic auditing detected fraud faster, recovered more embezzled funds, and improved stakeholder trust compared to those relying solely on statutory audit procedures. Likewise, Ijeoma and Aruwa (2021) found a statistically significant relationship between the use of forensic audit techniques such as red flag analysis, digital surveillance, and forensic interviewing and fraud detection in federal government ministries.

Furthermore, Modugu and Anyaduba (2013) emphasize that timely and accurate fraud detection not only protects public resources but also improves government credibility and investor confidence, particularly in ministries involved in budget planning, fiscal policy, and international financial cooperation, such as the Federal Ministry of Finance.

Forensic Audit: Forensic audit is a specialized field of auditing that combines investigative accounting, auditing techniques, and legal frameworks to detect, investigate, and prevent fraud and financial crimes. Unlike conventional auditing, which focuses on compliance and accuracy of financial statements, forensic audit delves deeper into transactions to uncover intentional misstatements and fraudulent schemes (Crumbley, et al 2015). Forensic auditing has gained prominence in both private and public sectors due to the increasing complexity of financial crimes and limitations of statutory audits. In the context of the Nigerian public sector, especially in ministries like the Federal Ministry of Finance, forensic auditing is crucial for mitigating fraud-related risks. Studies show that traditional audits are often reactive and limited in their ability to detect concealed financial misconduct. For example, Popoola, Ahmad, and Samsudin (2015) emphasize that forensic audit plays a preventive and detective role by applying investigative approaches to uncover complex fraud patterns.

A recent study by Muhammad (2020) revealed that ministries and government agencies in Nigeria that implemented forensic audit practices experienced greater transparency and improved control over leakages and embezzlement. Similarly, Oladimeji and Bello (2023) argue that forensic auditing enhances the accountability of public office holders by providing verifiable and legally admissible financial evidence. Furthermore, Owojori and Asaolu (2019) suggest that the incorporation of forensic audit methods into the internal audit systems of public organizations can strengthen the early detection of fraud, ensure proper asset utilization, and reduce the incidence of financial misstatements. Hence, forensic audit serves as an advanced financial oversight mechanism essential for good governance and fraud deterrence in public financial management.

Forensic Audit and Fraud Detection

The link between forensic audit and fraud detection has been extensively discussed in recent literature. Forensic audit provides advanced investigative and analytical tools that surpass the limitations of routine audit practices in detecting financial irregularities. Popoola et al. (2020) argue that forensic auditors bring specialized skills that allow them to uncover concealed transactions, collusive fraud schemes, and off-the-books manipulations, which are often missed by conventional auditors.

In public sector contexts like Nigeria's Federal Ministry of Finance, where financial crimes can occur across multiple departments and layers of oversight, forensic audits serve as both a deterrent and detection mechanism. Kuruti (2020) emphasizes that when forensic audits are conducted regularly, employees are less likely to engage in fraudulent practices due to the fear of detection and prosecution.

2.2 Empirical Review

Empirical studies on the effect of forensic auditing on fraud detection have evolved over time, with a growing body of literature examining its relevance in both private and public sector contexts. This section reviews selected empirical studies relevant to the present research, identifies specific methodological and contextual gaps in existing literature, and highlights how the current study addresses those gaps. Modugu and Anyaduba (2013). In their study titled "Forensic Accounting and Financial Fraud in Nigeria: An Empirical Approach," Modugu and Anyaduba explored the relationship between forensic accounting and fraud detection across various sectors in Nigeria. The study employed a survey design, using structured questionnaires administered to accounting

professionals. The findings indicated a statistically significant relationship between the application of forensic accounting techniques and improved fraud detection and prevention. However, the study was general in scope, encompassing both the private and public sectors without delineating institutional boundaries. Lack of focus on specific government institutions such as the Federal Ministry of Finance. This study addresses this institutional gap by focusing exclusively on fraud detection within the Federal Ministry of Finance and its agencies, offering targeted insights into the public sector.

Ijeoma and Aruwa (2021).The study titled "Forensic Auditing and Financial Fraud Detection in Nigerian Public Sector" applied regression analysis to secondary data collected from selected government ministries. The study established a strong positive relationship between forensic auditing and fraud detection efficiency in public institutions. While the study contributed significantly to public sector fraud literature, it treated forensic auditing as a single composite variable. Lack of disaggregation of forensic audit components such as CAATs, audit reporting, or investigative techniques. This research disaggregates forensic auditing into specific dimensions investigative techniques, CAATs, audit report quality, and auditor expertise thus providing a more nuanced understanding of the specific forensic tools that enhance fraud detection.

Muhammad (2020). In a study titled "Effectiveness of Forensic Audit in Controlling Public Sector Corruption in Nigeria," Muhammad adopted a qualitative case study approach using document reviews and interviews with public officials. The study concluded that forensic auditing contributes positively to the reduction of corruption, particularly in procurement and contract administration. The research focused narrowly on corruption control and employed qualitative methods, limiting generalizability and the ability to quantify outcomes. The current study addresses this methodological and outcome gap by using quantitative regression analysis and focusing specifically on fraud detection metrics rather than broader anti-corruption efforts, offering a more robust empirical foundation.

Kuruti (2020). Kuruti's study, "Challenges of Forensic Auditing in Curbing Financial Crimes in Public Sector Organizations in Nigeria," employed a cross-sectional survey design using Likert-scale questionnaires administered to internal auditors across MDAs. The findings highlighted institutional challenges such as lack of expertise, technological limitations, and low audit independence as key constraints to effective forensic auditing. Study emphasized barriers rather than the actual effectiveness of forensic audits in detecting fraud. The present research shifts focus from identifying barriers

to measuring the actual impact of forensic audit practices on fraud detection outcomes, thus bridging a performance effectiveness gap in existing literature.

Popoola, et al (2015). The study titled "Forensic Accounting and Fraud Prevention in the Nigerian Public Sector" utilized survey data from forensic accountants and auditors in public institutions. The study found that forensic accounting is underutilized but enhances fraud prevention capabilities. The study focused primarily on fraud prevention rather than detection and did not evaluate actual fraud detection metrics. The current study fills this measurement and focus gap by concentrating on fraud detection performance, such as the number of fraud cases identified, time-to-detection, and investigation outcomes in the Federal Ministry of Finance.

2.3   Theoretical Framework

Agency Theory: Agency theory was propounded by Jensen and Meckling (1976), and it provides a foundational framework for understanding the dynamics between principals and agents in organizational settings. The theory centers on the principal-agent relationship, wherein the principal (such as shareholders or, in the context of public governance, the government and citizens) delegates authority to an agent (such as managers, public officers, or financial administrators) to act on their behalf in managing resources and making decisions.

Core Assumptions of Agency Theory include the following: There is an inherent divergence between the interests of principals and agents. Agents may pursue personal objectives such as financial gain, career advancement, or power retention, which may conflict with the broader goals of accountability and transparency intended by the principals. Agents typically possess more information about organizational operations than the principals. This creates an imbalance in decision-making power and may allow agents to conceal fraudulent activities or distort financial reports.

Despite its relevance, agency theory is not without limitations. It assumes that all agents are inherently self-interested and rational actors, potentially ignoring other motivations such as ethics, social responsibility, and professional integrity,(Muhammed, 2019). The theory also tends to promote over-regulation, as it anticipates opportunistic behavior even when not evident. Additionally, agency theory does not adequately consider the role of organizational culture, informal controls, and trust, which can significantly influence behavior and reduce the likelihood of fraud.

In the context of this study, agency theory is particularly applicable to understanding the relationship between government institutions (principals) and public officials or financial managers

(agents) in the Federal Ministry of Finance and its agencies. These agents are entrusted with managing public funds and implementing financial policies, (John, 2020). However, the presence of weak institutional controls and significant information asymmetry increases the risk that these agents may engage in fraudulent practices, such as contract inflation, fund diversion, or document forgery.

The integration of forensic audit as a monitoring tool provides an effective mechanism for the principal to oversee the agent's behavior. Techniques such as Computer-Assisted Audit Tools (CAATs), forensic investigations, data mining, and litigation support help uncover fraud schemes and ensure that agents are held accountable for their financial activities. Forensic auditing reduces agency costs by deterring fraudulent behavior, improving financial transparency, and reinforcing the government's oversight role, (Hamdi, 2020)

Therefore, agency theory underpins this study by offering a theoretical explanation for why public officials may misuse their positions and how the application of forensic auditing can realign their behavior with public interest and institutional accountability. It also supports the rationale for investigating the effectiveness of specific forensic audit dimensions on fraud detection outcomes within Nigeria's public finance system.

3. Methodology

This study adopts a survey **research design,** which is appropriate for analyzing the relationship between variables using historical or existing data without manipulating the independent variables. The choice of this design is informed by the nature of the research problem, which involves assessing the effect of forensic audit practices (already implemented) on fraud detection outcomes. It enables the researcher to investigate causal relationships based on observable evidence and secondary data.

The target population of this study consists of all departments, units, and agencies under the Federal Ministry of Finance in Nigeria. This includes directorates responsible for budget implementation, treasury services, procurement, internal audit, and public financial management. Specifically, the population includes forensic auditors, internal auditors, compliance officers, and finance directors within these units. Due to the concentration of relevant forensic audit practices within specific units of the Ministry, a purposive sampling technique was used to select respondents who are directly involved in fraud detection and auditing functions. The sample size was determined using Taro Yamane's formula for finite populations. Thus, a sample of 142 respondents was selected for the study.

The study utilized primary data, collected through a structured Likert-scale questionnaire administered to forensic auditors, internal auditors, and senior finance officials.) The questionnaire was pre-tested for validity and reliability, and revisions were made to ensure clarity and relevance of items. Ethical considerations such as anonymity and informed consent were strictly observed. The data collected were analyzed using descriptive statistics (mean, standard deviation) to summarize respondents' views and inferential statistics, specifically multiple regression analysis, to test the hypotheses and determine the effect of forensic audit dimensions on fraud detection. The analysis was conducted using EViews 9 statistical software. To empirically test the relationship between forensic audit and fraud detection, the following linear regression model is specified:

$$FD = \alpha 0 + \beta 1 FAIT + \beta 2 CAAT + \beta 3 FARQ$$

Where:

FD = Fraud Detection (measured by frequency of frauds detected, time to detection, and investigation outcomes)

FAIT = Forensic Audit Investigative Techniques

CAAT = Computer-Assisted Audit Tools

4. Results and Dissension

Cronbach's Alpha Test is a statistical tool used to measure the internal consistency or reliability of a set of survey or test items. In simple terms, it tells you how well the items in a questionnaire measure the same underlying concept or construct

Table. 1: Cronbach's Alpha Test

Variables	Cronbach Factor	No. of Items
FD	0.755	7
FAIT	0.767	5
CAAT	0.745	5
FARQ	0.781	5

Cronbach's Alpha values above 0.70 are generally considered acceptable, indicating good reliability. All the constructs (FD, FAIT, CAAT, and FARQ) have alpha values between 0.745 and 0.781, which means the items in each scale are consistently measuring their respective variables. The number of items refers to how many questionnaire statements were used to measure each construct. The reliability results suggest that the instrument is

internally consistent, and therefore, the data collected from these items are statistically sound for further analysis, such as regression or correlation testing.

Table 2 Descriptive Statistics of Effect Forensic Audit Investigation Techniques (FAIT)

	N	Minimum	Maximum	Mean	Std. Deviation
Forensic investigation techniques have helped uncover fraudulent transactions in our agency.	142	1	5	3.00	0.661
Interviewing and interrogation skills of forensic auditors have led to better fraud case resolutions	142	2	5	3.50	0.720
Evidence gathering and documentation techniques are effectively used in detecting fraud.	142	2	5	3.50	0.814
The application of analytical review procedures supports early fraud identification in this ministry.	142	1	5	3.00	0.167
Our agency has successfully relied on forensic tracing techniques (following money trails) to detect financial misconduct.	142	1	5	3.00	0.817
Overall Mean				**3.20**	**0.636**

Source: SPSS 23 Outputs

Table 2 presents the descriptive statistics of respondents' perceptions regarding the effect of Forensic Audit Investigation Techniques (FAIT) on fraud detection in the Federal Ministry of Finance and its agencies. The analysis is based on responses from 142 participants, using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).

The overall mean score for the FAIT items is 3.20, with a standard deviation of 0.636, indicating a moderate to high agreement among respondents on the effectiveness of investigative techniques in fraud detection. The items "Interviewing and interrogation skills" and "Evidence gathering and documentation" both recorded the highest mean of 3.50, suggesting that these are the most positively perceived aspects of FAIT contributing to fraud resolution.

The item "Application of analytical review procedures" had the lowest standard deviation (0.167), showing a high level of consensus among respondents, although the mean score was moderate (3.00), indicating a neutral view on its current effectiveness. Items such as "Tracing techniques (money trails)" and "Uncovering fraudulent transactions" had mean values of 3.00, showing moderate agreement, but slightly higher standard deviations (0.661–0.817) suggest divergent views among respondents regarding these specific techniques.

Table 3 Descriptive Statistics of Computer-Assisted Audit Tools (CAATs)

	N	Minimum	Maximum	Mean	Std. Deviation
The use of CAATs has improved the efficiency of fraud detection processes in our unit.	142	2	5	3.50	0.702
Our forensic audit team regularly uses audit software to analyze large financial data sets for anomalies.	142	2	5	3.50	0.657
Automated data analytics tools have enhanced our ability to detect patterns of fraud.	142	2	5	3.50	0.646
CAATs have increased the accuracy of our fraud detection reports.	142	2	5	3.50	0.712
The absence of advanced audit tools limits our capacity to detect sophisticated fraud schemes.	142	2	5	3.50	0.765
Overall Mean				**3.50**	**0.696**

Source: SPSS 23 Outputs.

Table 3 provides a summary of responses on the use and impact of Computer-Assisted Audit Tools (CAATs) on fraud detection in the Federal Ministry of Finance and its agencies. The data are based on 142 valid responses, measured on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The overall mean score for the CAATs dimension is 3.50, with a standard deviation of 0.696, indicating a moderate to high level of agreement that CAATs positively influence fraud detection. All five items in this construct recorded identical mean values of 3.50, suggesting consistent perceptions among respondents across the different aspects of CAATs, including efficiency, accuracy, regular use, and pattern recognition in fraud detection.

The lowest standard deviation (0.646) was associated with the statement: "Automated data analytics tools have enhanced our ability to detect patterns of fraud," showing relatively strong agreement and consensus on this point. The item with the highest standard deviation (0.765)."The absence of advanced audit tools limits our capacity to detect sophisticated fraud schemes". Indicates slightly more variation in how respondents perceive the impact of tool limitations.

Table 4 Descriptive Statistics of Quality of Forensic Audit Reporting (FARQ)

	N	Minimum	Maximum	Mean	Std. Deviation
Forensic audit reports clearly highlight fraudulent activities and recommended actions.	142	1	5	3.00	.532
Timely and comprehensive reporting improves management's ability to act on fraud cases.	142	0	5	2.50	.847
High-quality audit reports contribute significantly to the prosecution of fraud cases.	142	1	5	3.00	.810
Our audit reports are detailed and evidence-based, improving credibility in fraud detection.	142	1	5	3.00	.746
Poor-quality reporting reduces the effectiveness of forensic audits in detecting fraud	142	0	5	2.50	.867
Overall Mean				2.80	0.7604

Source. SPSS 23 Outputs

Table 4 presents the descriptive statistics related to respondents' perceptions of the Quality of Forensic Audit Reporting (FARQ) within the Federal Ministry of Finance and its agencies. The responses from 142 participants were measured using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). The overall mean score is 2.80, with an average standard deviation of 0.7604, indicating a moderately low level of agreement regarding the effectiveness of forensic audit reporting quality in fraud detection efforts. Three items "audit reports highlight fraudulent activities," "audit reports aid prosecution," and "audit reports are detailed and evidence-based" each recorded a mean of 3.00, reflecting neutral to moderate agreement that forensic reporting supports fraud detection processes.

Two items "timely and comprehensive reporting improves management's ability to act on fraud" and "poor-quality reporting reduces forensic effectiveness" recorded the lowest mean scores (2.50), suggesting less agreement or concern over the timeliness and consequences of poor reporting quality. Notably, these items had the highest standard deviations (0.847 and 0.867), indicating greater variability in respondent perceptions. The minimum value of 0 recorded in two items suggests that a few respondents strongly rejected the effectiveness or even the existence of structured reporting systems, pointing to potential weaknesses in implementation or awareness.

Table 5 Descriptive Statistics of Fraud Detection (FD)

	N	Minimum	Maximum	Mean	Std. Deviation
Our agency has significantly improved its ability to detect fraud in recent years.	142	2	5	3.50	0.544
Most fraud cases detected in this ministry are traced through proactive audit procedures.	142	2	5	3.50	0.736
Forensic audits have increased the frequency of detected financial fraud cases.	142	1	5	3.00	0.851
Fraud detection processes in our unit are timely and effective.	142	2	5	3.50	0.740
The use of advanced audit techniques has enhanced the accuracy of fraud identification.	142	2	5	3.50	0.843
Detected fraud cases in this ministry usually lead to corrective or disciplinary actions.	142	2	5	3.50	0.943
Fraud detection efforts are supported by strong collaboration between audit and investigation units	142	2	5	3.50	1.243
Overall Mean				3.42	0.842

Source: SPSS 23 Outputs

Table 5 provides descriptive statistics on respondents' perceptions of fraud detection effectiveness in the Federal Ministry of Finance and its agencies. Responses were collected from 142 participants using a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The overall mean score of 3.42 with a standard deviation of 0.842 indicates a generally positive perception of fraud detection effectiveness, though with some variability across items. Six of the seven items recorded a mean of 3.50, reflecting strong agreement that the ministry has improved its fraud detection capability, especially through proactive audit procedures, timely detection processes, accurate fraud identification, and interdepartmental collaboration. The highest variability is seen in the item "Fraud detection efforts are supported by strong collaboration between audit and investigation units"

(SD = 1.243), suggesting diverse experiences among respondents regarding inter-agency collaboration. The lowest mean (3.00) was observed in the item "Forensic audits have increased the frequency of detected financial fraud cases", with a relatively high standard deviation (0.851), indicating a more neutral or mixed perception of the actual impact of forensic audits on the number of frauds detected.

4.3 Descriptive Statistics

The sample descriptive statistic is presented in Table 6 where mean, standard deviation, minimum and maximum values of the variables used in the study are analyzed for the explained (dependent) explanatory (independent) variables are discussed.

Table 6. Descriptive Statistics

Variables	Obs	Minimum	Maximum	Mean	Std Deviation
FD	142	2.61	5.00	3.80	0.225
FAIT	142	2.90	5.00	3.95	0.315
CAAT	142	1.40	5.00	3.20	0.630
FARQ	142	2.30	4.80	3.65	0.368

Source. SPSS 23 Outputs

Fraud Detection (FD) has a mean of 3.80 and a low standard deviation of 0.225, suggesting that respondents generally agree that fraud detection efforts are effective and their responses were highly consistent. Forensic Audit Investigation Techniques (FAIT) recorded the highest mean (3.95) among all independent variables, indicating that respondents strongly perceive these techniques as positively contributing to fraud detection.
The low standard deviation (0.315) reinforces the consensus among responses. Computer-Assisted

Audit Tools (CAAT) had the lowest mean (3.20) and the highest standard deviation (0.630). This suggests that while the tools are moderately viewed as useful, opinions vary significantly, likely due to unequal access, usage levels, or technical capacity across departments. Forensic Audit Reporting Quality (FARQ) had a moderately high mean of 3.65, showing favorable perceptions, and a standard deviation of 0.368, indicating moderate consistency in responses regarding the quality and usefulness of audit reports.

Table 7. Regression Results of the Study (1)

Variables	Coefficients	T-Values	P-Values
Constants	1.79	5.038	.001
FAIT	.441	7.435	.023
CAAT	.304	4.763	.022
FARQ	.144	3.643	.015
R^2	0.444		
Adj. R^2	0.612		
F-Stat.	50.693		
F- Sig			0.00

Source. SPSS 23 Outputs.

Forensic Audit Investigation Techniques (FAIT) has a positive and significant effect on fraud detection, with a coefficient of 0.441, a t-value of 7.435, and a p-value of 0.023 (< 0.05). This implies that stronger application of investigative techniques significantly improves fraud detection outcomes. Computer-Assisted Audit Tools (CAAT) also show a significant positive influence on fraud detection, with a coefficient of 0.304, t-value of 4.763, and p-value of 0.022. This suggests that effective use of CAATs enhances fraud identification accuracy and efficiency. Forensic Audit Reporting Quality (FARQ) is positively related to fraud detection with a coefficient of 0.144, t-value of 3.643, and p-value of 0.015. High-quality, timely, and detailed audit reports support fraud investigation and resolution. The R-squared value of 0.444 indicates that about 44.4% of the variation in fraud detection is explained by the combined influence of FAIT, CAAT, and FARQ. The adjusted R-squared of 0.612 (likely a reporting error, as Adjusted R^2 is usually $\leq R^2$) may require verification. The F-statistic (50.693) and F-significance (0.000) show that the model is statistically significant overall, meaning that the independent variables jointly have a meaningful effect on fraud detection.

4.4   Discussion of Findings
The findings from the regression analysis reveal that all three independent variables—Forensic Audit Investigation Techniques (FAIT), Computer-Assisted Audit Tools (CAATs), and Forensic Audit Reporting Quality (FARQ)—have statistically significant positive effects on fraud detection in the Federal Ministry of Finance and its agencies. These results suggest that the integration of specialized investigative techniques, audit technology, and high-quality forensic reporting directly enhances the Ministry's capacity to detect, report, and respond to fraud.

Ijeoma and Aruwa (2021) found a strong positive relationship between forensic audit practices and fraud detection in Nigeria's public sector, emphasizing the role of investigative tools and structured reporting in curbing financial crimes. Modugu and Anyaduba (2013) also confirmed that

forensic accounting techniques significantly influence fraud prevention and detection, particularly when supported by adequate documentation and analytical procedures. Popoola, Ahmad, and Samsudin (2015) emphasized the value of CAATs in improving fraud detection efficiency, highlighting that technology-based audit systems are essential in managing complex financial data in public institutions. These studies affirm the present findings and support the argument that strengthening forensic audit capacity both human and technological is essential to effective fraud detection in public financial management.

Kuruti (2020) emphasized the challenges of forensic audit, arguing that poor training, low adoption of CAATs, and lack of independence often hinder audit effectiveness in the Nigerian public sector. While our findings show a positive relationship, Kuruti's study suggests that these benefits may not be fully realized without systemic reforms. Muhammad (2020) focused more on forensic auditing's role in corruption control, noting limitations in fraud detection metrics, particularly when forensic audits are not consistently implemented or lack prosecutorial support. These opposing views highlight that while forensic audit tools have potential, their impact depends on proper implementation, training, and institutional support, which may vary across ministries.

The findings align strongly with Agency Theory (Jensen & Meckling, 1976), which posits that managers or public officials (agents) may act in self-interest unless adequately monitored by the principal (government or citizens). The use of forensic audit techniques, CAATs, and reliable reporting mechanisms serves as monitoring tools that reduce information asymmetry and agency costs, thereby limiting fraudulent behaviors by agents. This study supports the theory's assertion that strong oversight mechanisms, such as forensic auditing, are essential to align the actions of public officials with the interests of the public. By enhancing transparency and accountability, these tools mitigate the risks inherent in the principal-agent relationship.

The findings validate the importance of forensic auditing in strengthening fraud detection systems

within Nigeria's public sector. While the results align with existing literature and theory, they also underscore the need for policy-level enforcement, technical training, and resource allocation to ensure that these tools achieve their full potential in practice.

5. Conclusion and Recommendations

This study examined the effect of forensic audit practices on fraud detection in the Federal Ministry of Finance and its agencies, focusing on three key components: Forensic Audit Investigation Techniques (FAIT), Computer-Assisted Audit Tools (CAATs), and Forensic Audit Reporting Quality (FARQ). The findings from the regression analysis revealed that all three variables have a statistically significant and positive impact on fraud detection. This implies that the effective deployment of forensic audit methods, advanced audit technology, and high-quality reporting enhances the Ministry's ability to uncover, respond to, and mitigate financial fraud.

These results reinforce the relevance of Agency Theory, which emphasizes the role of monitoring mechanisms in reducing agency problems, particularly in public sector environments characterized by information asymmetry and weak oversight. Therefore, strengthening forensic audit practices is essential for promoting transparency, accountability, and fraud resilience in Nigeria's public financial management.

Based on the findings, the following recommendations are proposed:

i. Enhance Capacity in Forensic Audit Investigation Techniques The Federal Ministry of Finance should invest in regular training and capacity-building programs for audit staff, focusing on forensic investigation methods such as evidence gathering, interviewing, document tracing, and digital forensics. This will improve the depth and accuracy of fraud detection and support legal proceedings where necessary.

ii. Invest in and Standardize the Use of CAATs Across All Units. To fully leverage the benefits of technology, the Ministry should procure modern Computer-Assisted Audit Tools (CAATs) and ensure their uniform adoption across all departments. Staff should also receive adequate training on data analytics, anomaly detection, and automated risk assessments to improve audit efficiency and fraud discovery.

iii. Improve the Quality and Timeliness of Forensic Audit Reporting. Audit reports should be comprehensive, evidence-based, and timely to support effective decision-making and follow-up

actions. The Ministry should implement a standardized forensic reporting framework and enforce timelines for submission and review to ensure audit outcomes lead to tangible fraud prevention and corrective measures.

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