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**Effect of forensic accounting mechanisms on fraud detection in Federal Ministries,
Departments and Agencies (MDAS) in Nigeria**

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Abstract

This study examined the effect of forensic accounting mechanisms on fraud detection in Federal Ministries, Departments, and Agencies (MDAs) in Nigeria. It was necessitated due to persistent financial fraud in the Nigerian public sector; such as ghost worker syndrome, contract inflation, and misappropriation of funds in Federal MDAs. The study was conducted to ascertain the extent to which forensic data analytics and financial crime investigation enhance fraud prevention and detection accuracy. Forensic data analytics and financial crime investigation were used as the key explanatory variables to address these challenges. It adopted the Fraud Diamond Theory as a theoretical framework. Survey and documentary research designs were adopted. The target populations were Directors of Finance and Accounts, Heads of Internal Audit Units, and Chief Accountants in selected Federal MDAs in Abuja. The total population of the study was 133. A sample size of 107 was determined using the Krejcie and Morgan formula. Primary data were sourced from structured questionnaires while secondary data were sourced from official reports of EFCC and the Office of the Auditor-General for the Federation. The primary method of data collection used the instrument of a structured, closed-ended questionnaire, while the secondary method of data collection used the document inventory checklist to obtain qualitative data from official financial reports. Descriptive statistics were used to present the quantitative data, while multiple linear regression statistical technique was used to analyze and test the hypotheses at a $p < 0.05$ significance level. Findings from hypothesis one revealed that forensic data analytics has significantly enhanced fraud prevention in Federal MDAs, with a p -value of 0.000 ($p < 0.05$). The result of hypothesis two revealed that financial crime investigation has a significant positive impact on fraud detection in Federal MDAs, with a p -value of 0.000 ($p < 0.05$). The study concluded that both forensic data analytics and financial crime investigation are indispensable mechanisms that significantly enhance fraud detection outcomes in the Nigerian public sector. The study recommended, among other things, that the Office of the Accountant-General of the Federation should invest in modern technological infrastructure for forensic data analytics and that management of Federal MDAs should establish dedicated in-house forensic investigation units staffed with certified fraud examiners.

Keywords: Forensic accounting mechanisms, forensic data analytics, financial crime investigation, fraud detection, fraud prevention, Federal MDAs, Nigeria.



1. Introduction

Globally, financial fraud in the public sector has reached alarming levels, with the Association of Certified Fraud Examiners (ACFE) estimating that governments worldwide lose trillions of dollars annually to occupational fraud (ACFE, 2024). In recent times, the sophistication of fraudulent schemes has outpaced traditional auditing techniques, creating a critical need for specialized forensic accounting mechanisms to safeguard public resources (Okeke et al., 2025) .

Regionally, Sub-Saharan Africa has been identified as particularly vulnerable to public sector corruption and fraud, with Transparency International consistently ranking the region lowest on the Corruption Perceptions Index (Transparency International, 2025). In West Africa, the misuse of public funds within government institutions continues to undermine developmental goals and erode citizen trust in governance structures (Ariyo-Edu & Woli-Jimoh, 2024).

Nationally, Nigeria has witnessed persistent and pervasive financial fraud within Ministries, Departments, and Agencies (MDAs), with the Economic and Financial Crimes Commission (EFCC) reporting massive recoveries of misappropriated funds annually (Olukoyede, 2025) . The scale of financial malfeasance has prompted intensified efforts to strengthen institutional frameworks for fraud prevention and detection across all tiers of government. Recent statistics and data from the Auditor-General for the Federation's annual report indicate that billions of Naira are lost annually through financial irregularities and fraudulent practices, with a significant percentage of the national budget being consumed by corrupt activities without commensurate service delivery (Office of the Auditor-General for the Federation, 2024).

In Federal Ministries, Departments, and Agencies in Nigeria, forensic accounting mechanisms have emerged as critical tools for combating financial crimes. Forensic data analytics, financial crime investigation, forensic auditing, and litigation support strategies exist within the public sector framework (Obadiah & Ibrahim, 2024). But, it has not been proven whether forensic accounting mechanisms have significantly enhanced fraud detection in MDAs, this is because, despite the implementation of various anti-corruption initiatives, concerns have been raised regarding their fragmented application and limited integration into governance structures (Nelson et al., 2025) . Forensic accounting has been linked to improved fraud identification, deterrence,



and prosecution, which may ultimately affect public accountability and overall institutional performance (Okeke et al., 2025).

Recent statistics have also shown a troubling gap between the adoption of forensic accounting mechanisms and actual fraud detection outcomes in Nigerian MDAs (EFCC Annual Report, 2024). Studies such as Obadiah and Ibrahim (2024) demonstrated that investigative and auditing skills enhanced fraud detection, while Olumoh et al. (2023) similarly found a significant correlation between forensic accounting skills and fraud prevention. But there is limited engagement with empirical and theoretical frameworks that could unify these perspectives.

Although some recent studies between 2020-2026 (Ariyo-Edu & Woli-Jimoh, 2024; Okeke et al., 2025; Obadiah & Ibrahim, 2024; Nelson et al., 2025; Okeke et al., 2025) implicitly relate to concepts such as forensic data analytics, financial crime investigation, and fraud deterrence, they rarely make these connections explicit. This lack of empirical and theoretical grounding weakens the explanatory power of the literature on forensic accounting. There is the need to conduct a study that explicitly integrates theory with empirical findings that provides insight on forensic accounting mechanisms and fraud detection. It is based this reason that the study therefore examined the effect of forensic accounting mechanisms in terms of forensic data analytics and financial crime investigation on fraud detection in Federal Ministries, Departments, and Agencies in Nigeria.

2. Literature Review

Forensic Accounting Mechanisms

Forensic accounting is defined as the application of accounting, auditing, and investigative skills to examine financial information in a manner suitable for a court of law (Okpala & Ezeoha, 2024). Forensic accounting mechanisms are described as the systematic deployment of specialized techniques to detect, prevent, and resolve financial fraud and irregularities (Obadiah & Ibrahim, 2024). Forensic data analytics is the process of using advanced data mining, pattern recognition, and statistical modeling to identify anomalies indicative of fraudulent transactions (Ariyo-Edu & Woli-Jimoh, 2025). Financial crime investigation is a process whereby trained experts gather, document, and analyze evidence to establish the occurrence of financial misconduct and identify perpetrators (Nelson et al., 2025). Forensic auditing is referred to as the



examination of an entity's financial records to gather evidence for potential legal proceedings (Olumoh et al., 2023). Litigation support is the provision of expert financial analysis and testimony to assist legal proceedings (Okeke et al., 2025).

From the summary of the above definitions, this study defines forensic accounting mechanisms as the combination of proactive analytical tools and reactive investigative procedures employed by organizations to identify anomalies in financial data and investigate confirmed instances of fraud. This implies that forensic accounting is not merely a post-incident function but an integrated system of deterrence, detection, and documentation designed to uphold the integrity of public financial management. In the context of Nigerian MDAs, these mechanisms are essential for safeguarding public funds from the sophisticated schemes that traditional auditing often fails to uncover.

Fraud Detection

Fraud detection is defined as the process of identifying and recognizing fraudulent activities through a combination of systematic controls, data analysis, and investigative procedures (Adeyemi & Fakile, 2023). Fraud prevention is described as the establishment of policies, controls, and procedures designed to deter the occurrence of fraud before it happens (Daniel, 2024). Asset misappropriation is the theft or misuse of an organization's resources, which is the most common form of occupational fraud (ACFE, 2024). Corruption is a process whereby an individual abuses their entrusted power for private gain, often involving bribery, kickbacks, or conflicts of interest (Transparency International, 2025). Fraudulent financial reporting is referred to as the intentional misstatement or omission of material information in financial reports to deceive users (Zachariah et al., 2023). Forensic investigation is the detailed inquiry into specific allegations of financial wrongdoing using investigative and accounting methods (Okpala & Ezeoha, 2024).

From the summary of the above definitions, this study defines fraud detection as a proactive and reactive system within public sector entities that utilizes forensic accounting mechanisms to identify red flags, investigate anomalies, and confirm the existence of fraudulent activities. In the Nigerian federal MDAs, effective fraud detection is the outcome of a robust interplay between preventive controls, advanced data analysis, and a capable investigative capacity. It encompasses



the entire lifecycle from initial signal identification to the final documentation of evidence for administrative action or prosecution.

Empirical Literature

A study conducted by Ariyo-Edu and Woli-Jimoh (2024) examined the impact of forensic accounting on fraud detection and prevention in the public sector of Kwara State, Nigeria. The study adopted a survey research design. The population comprised 100 accountants and internal auditors from 15 MDAs. Data were collected using a structured questionnaire. Data were analyzed using descriptive and inferential statistics. The study revealed that forensic accounting techniques, particularly data mining and ratio analysis, positively impacted fraud detection and prevention, although a significant deficit in specialized forensic accounting personnel was noted. The study recommended establishing an autonomous forensic accounting agency to enhance monitoring and reporting of fraudulent activities within government institutions.

Another study conducted by Nelson, et al. (2025) evaluated the impact of forensic accounting practices on fraud management in Nigerian public sector entities. The study adopted a quantitative research design. The population comprised professionals from EFCC, ICPC, FIRS, and NFIU selected via purposive sampling. Data were collected using a structured survey. Data were analyzed using correlation and multiple regression analysis. The study revealed a statistically significant and positive relationship between forensic accounting practices and fraud management effectiveness, with investigative accounting emerging as a significant predictor. It recommended targeted policy reforms, investment in forensic accounting training, and the development of standardized frameworks for implementation.

Related study by Obadiah and Farouk (2024) assessed the effect of forensic accounting skills on financial fraud detection in state MDAs in Nigeria. The study adopted a survey research design. The population comprised 2,500 staff. Data were collected using a questionnaire, with 380 copies administered and retrieved. Data were analyzed using multiple regression with Stata 17. The study revealed that legal/litigation skills and technical skills had significant positive effects on financial fraud detection, while investigative and auditing skills, as well as analytical skills,



had negative and significant effects. It recommended enhancing specific forensic skill sets to improve fraud detection.

Similar study by Olumoh, et al. (2023) assessed how forensic accounting impacts the management and prevention of fraud within MDAs in Lagos State, Nigeria. The study adopted a descriptive survey research design. The population comprised 1,000 senior employees from 27 MDAs, with a sample size of 286. Data were collected using structured questionnaires. Data were analyzed using multiple regression estimation. The study revealed a significant correlation between accounting skills, auditing skills, and investigative skills in managing and preventing fraud. It recommended that the state government invest in professional development programs to augment forensic accounting skills.

Study by Ojelabi (2025) assessed the effect of fraud investigation and financial forensic on fraud management in selected federal government ministries in Nigeria. The study adopted a quantitative research design using Partial Least Square Structural Equation Modeling (PLS-SEM). The population comprised 1,550 staff in the Office of the Auditor General of the Federation, with a sample of 440 selected via purposive sampling. Data were collected using a 5-point Likert scale structured questionnaire. The study revealed that fraud investigation has a positive and significant effect on fraud management, and financial forensic also had a positive and significant effect. It recommended that government ministries should incorporate financial forensic techniques into their overall fraud risk management frameworks.

Gap Analysis: While the study by Ariyo-Edu and Woli-Jimoh (2024) was on forensic accounting and public sector fraud in Kwara State, it differs from the current study on "Effects of Forensic Accounting Mechanisms on Fraud Detection in Federal Ministries, Departments, and Agencies in Nigeria" because its geographical scope is limited to a single state's MDAs and did not specifically disaggregate the effects of forensic data analytics from financial crime investigation. The study by Nelson et al. (2025) differs because its population focused on anti-graft agencies rather than the MDAs themselves, limiting insight into how internal mechanisms within MDAs affect fraud detection. The study by Obadiah and Farouk (2024) differs in methodology, using Stata 17 for analysis and focusing on a broader set of skills rather than the specific mechanisms of data analytics and financial crime investigation that form the core of the current study. The



study by Olumoh et al. (2023) was conducted in Lagos State MDAs, differing in geographical and jurisdictional context from the federal MDAs in the current study, and it aggregated forensic accounting skills without isolating the specific proxies used in this study. The study by Ojelabi (2025) differs because it employed PLS-SEM for analysis and focused on fraud management within the Office of the Auditor General, rather than fraud detection across multiple federal MDAs using specific forensic accounting mechanisms as in the current study.

Theoretical Framework

The Fraud Diamond Theory was adopted as the theoretical framework. The theory, as earlier discussed, was propounded by Wolfe and Hermanson (2004). The basic idea about this theory is that fraud occurs when four elements—pressure, opportunity, rationalization, and capability—converge simultaneously (Wolfe & Hermanson, 2004). The theory believes that an individual's capability, which encompasses the necessary traits and abilities to open and exploit a fraud opportunity, is a crucial and often overlooked component of occupational fraud (Wolfe & Hermanson, 2004). The basic assumptions of the study are that without the element of capability, the other three elements (pressure, opportunity, and rationalization) are insufficient for large-scale fraud to occur and persist (Wolfe & Hermanson, 2004). Although, the theory was criticized on the basis of being difficult to empirically measure the abstract concept of 'capability' (Kassem & Higson, 2012). But this theory is relevant to the study because it provides a comprehensive framework for understanding why fraud persists in Nigerian MDAs despite existing controls. It suggests that forensic accounting mechanisms must not only reduce opportunities but also directly neutralize the capability of individuals to perpetrate fraud through proactive data analytics for early detection and robust financial crime investigation for accountability.

3. Methodology

The study adopted a survey research design. The target populations of the study are Directors of Finance and Accounts, Heads of Internal Audit Units, and Chief Accountants in selected Federal Ministries, Departments, and Agencies in Abuja, Nigeria. These individuals are selected because



they are directly responsible for the preparation, review, and oversight of financial transactions and internal controls within their respective MDAs and possess the most authoritative knowledge of the forensic accounting mechanisms employed and the fraud detection challenges experienced. Their roles make them the primary decision-makers and implementers of financial oversight policies, rendering their perspectives invaluable for achieving the study's objectives.

The estimated number of the total population is drawn from the database of the Office of the Head of the Civil Service of the Federation and the individual establishments, as detailed in the table below:

Table 3.1: Population Distribution of Senior Financial Officers in Selected MDAs

S/N	Federal MDA	Directors/Deputy Directors (Finance & Accounts)	Chief Accountants/Senior Accountants	Heads of Internal Audit	Total Population
1.	Federal Ministry of Finance	5	18	4	27
2.	Federal Ministry of Works & Housing	4	15	3	22
3.	Office of the Accountant-General of the Federation	7	25	6	38
4.	Federal Ministry of Education	5	16	4	25
5.	Federal Ministry of Health	4	14	3	21
Total		25	88	20	133

Source: Office of the Head of the Civil Service of the Federation, Annual Staff Report (2024); Federal Civil Service Commission (2024)

From the total population of 133, the sample population was calculated with the Krejcie & Morgan Sample Size Determination Formula. Using the total population from 3.3 above, the sample size is calculated as follows:

$$s = \frac{X^2NP(1-P)}{d^2(N-1) + X^2P(1-P)}$$



Where: s = required sample size; X^2 = table value of chi-square @ 1 degree of freedom at 0.05 (3.841); N = population size (133);

P = population proportion (0.5); d = degree of accuracy (0.05).

Based on this calculation, the ideal sample size for a population of 133 is 91 respondents. To account for potential non-response and improperly completed questionnaires, the sample size was increased by 10%, yielding a final sample size of 107 respondents.

Stratified random sampling was used to divide the population into relevant groups like Ministries and key departments, followed by a purposive sampling technique to select the specific respondents (Directors of Finance, Heads of Internal Audit, and Chief Accountants) based on their designated roles and expertise in financial management. This technique is appropriate because it ensures that all critical segments of the population are represented proportionally, while purposively targeting individuals with the precise knowledge required answering the research questions accurately. This combination minimizes sampling bias and enhances the validity of the data collected for the study.

The method of data collection consists of primary and secondary methods; the primary method consists of a structured questionnaire, while the secondary method consists of document analysis. The instrument of the primary method is a structured, closed-ended questionnaire designed using a Five-Point Likert Scale ranging from "Strongly Agree" to "Strongly Disagree." The questionnaire was self-administered by the researcher to senior financial officers (Directors, Deputy Directors, Chief Accountants, and Heads of Internal Audit) in their respective offices within the selected MDAs to ensure a high response rate. For secondary data, a document inventory checklist was used to systematically extract panel data on fraud incidents and financial controls from official reports.

The study validity consists of Content and Face Validity, which were confirmed by the research supervisor and an expert in forensic accounting from the academia. The instruments were scrutinized to ensure the questions accurately represented the constructs of each variable (Forensic Data Analytics, Financial Crime Investigation, and Fraud Detection). The reliability process involved a pilot test conducted with 20 senior financial officers from a similar federal



agency not included in the main sample. The data from the pilot test was analyzed for internal consistency using Cronbach's Alpha coefficient in SPSS. The reliability test yielded a Cronbach's Alpha value of 0.82, exceeding the minimum acceptable threshold of 0.70, thereby confirming that the instrument is reliable and consistently measures the intended constructs across different respondents.

The data for the study were sourced from primary and secondary sources. Primary sources include questionnaire responses and direct observation. Secondary data were sourced from academic journals, published financial reports of the Auditor-General for the Federation, annual reports from the EFCC and ICPC, and official bulletins of the Office of the Accountant-General of the Federation. Panel data were extracted from the annual financial performance reports of the sampled MDAs, which were corroborated by datasets from the National Bureau of Statistics (NBS) and the Central Bank of Nigeria (CBN) covering the period 2011-2025.

Technique of Data Analysis

The study used both Descriptive and Inferential Statistics to present and analyze the quantitative data respectively. Descriptive statistics such as mean and standard deviation were employed to present the responses to the research questions in frequency tables. Data were presented using descriptive (frequencies, mean, standard deviation) and inferential statistics was used to analyze the data. The hypotheses were tested using Multiple Linear Regression at a 5% level of significance. The Statistical Package for the Social Sciences (SPSS v.27) was used for all quantitative analysis.

Model Specification

The Multiple Linear Regression model is stated as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + e$$

Where:

Y = Fraud Detection (Dependent Variable)

β_0 = Constant or Intercept

β_1, β_2 = Coefficients of the Independent Variables

X_1 = Forensic Data Analytics



X_2 = Financial Crime Investigation

e = Error Term

While Content Analysis Technique consisted of thematic coding and narrative analysis, which were used to analyze the qualitative data from interviews and document reviews to identify recurring patterns, themes, and insights that support or clarify the quantitative findings.

4. Result and Discussion

Out of the 107 questionnaire distributed, only 91 were filled and returned, representing an 85% response rate. This response rate is considered adequate for the survey, as it significantly exceeds the 70% baseline requirement for robust statistical analysis. The returned questionnaire is presented below:

Table 4.1: Demographic Characteristics of Respondents

Variable	Category	Frequency (N=91)	Percentage (%)
Gender	Male	56	61.5
	Female	35	38.5
Educational Qualification	HND/B.Sc.	41	45.1
	M.Sc./MBA	38	41.8
	Ph.D.	12	13.2
Professional Certification	ICAN/ANAN	49	53.8
	ACCA	18	19.8
	CFE	15	16.5
	Others	9	9.9
Years of Experience	1-5 years	12	13.2
	6-10 years	28	30.8
	11-15 years	34	37.4
	16 years and above	17	18.7

Source: Field Survey (2026)

The demographic analysis of the 91 respondents reveals that the majority were male (61.5%), indicating a notable gender distribution in the senior financial positions within the sampled federal MDAs. A significant proportion of respondents hold postgraduate degrees (M.Sc./MBA at 41.8% and Ph.D. at 13.2%), demonstrating a highly educated workforce capable of engaging with complex forensic accounting concepts. Furthermore, 53.8% are certified by professional bodies like ICAN or ANAN, and 16.5% hold the Certified Fraud Examiner (CFE) credential, confirming the relevance and expertise of the respondents. With respect to experience, a cumulative 86.8% of respondents have more than six years of work experience, with 37.4% having between 11 and 15 years. This extensive experience profile indicates that the respondents possess deep institutional knowledge of financial operations and fraud dynamics in their respective MDAs, thereby enhancing the credibility of their responses.



Table 4.2: Descriptive Analysis of Forensic Data Analytics and Fraud Prevention

S/N	Statement	Mean	Std. Dev.	Decision
1.	The adoption of forensic data analytics has enhanced proactive identification of fraud indicators in our MDA.	4.21	0.78	Agreed
2.	Data mining techniques are regularly used to scrutinize electronic payment transactions for anomalies.	3.89	0.95	Agreed
3.	Continuous monitoring systems have reduced the response time to suspicious financial activities.	3.72	1.10	Agreed
4.	Our MDA has the technical infrastructure required to support advanced forensic data analytics for fraud prevention.	2.68	1.25	Disagreed

Source: Field Survey (2026)

Data from the respondent's shown Mean of 4.21 and Std. Dev. of 0.78 for the first statement, which agreed that the adoption of forensic data analytics has enhanced proactive identification of fraud indicators. The respondents also agreed that data mining techniques are regularly used to scrutinize electronic payment transactions for anomalies, evidenced by a Mean of 3.89 and a relatively higher standard deviation of 0.95, suggesting some variation in practice across MDAs. There was concurrence that continuous monitoring systems have reduced the response time to suspicious financial activities, with a Mean of 3.72 and a Standard Deviation of 1.10. However, the respondents significantly disagreed with the statement that their MDAs have the technical infrastructure required to support advanced forensic data analytics, returning a negative Mean score of 2.68 and a Standard Deviation of 1.25. This disparity reveals a critical gap: while the perceived value and basic application of forensic data analytics are acknowledged, infrastructural deficits severely hamper its optimal implementation for fraud prevention.



Table 4.3: Descriptive Analysis of Financial Crime Investigation and Fraud Detection

S/N	Statement	Mean	Std. Dev.	Decision
5.	Financial crime investigation skills have improved the accuracy of substantiating fraudulent cases in our MDA.	4.35	0.66	Agreed
6.	Investigative interviewing techniques are effectively deployed to uncover the root causes of detected fraud.	3.95	0.88	Agreed
7.	The evidence gathered from forensic investigations is consistently used for prosecuting offenders and staff discipline.	3.81	1.05	Agreed
8.	Our MDA collaborates effectively with external anti-graft agencies (EFCC, ICPC) during financial crime investigations.	3.55	1.14	Agreed

Source: Field Survey (2026)

Data from the respondents indicated a strong agreement that financial crime investigation skills have improved the accuracy of substantiating fraudulent cases, reflected in a high Mean of 4.35 and a low Standard Deviation of 0.66, demonstrating a consensus on this critical point. The respondents also agreed that investigative interviewing techniques are effectively deployed, with a Mean score of 3.95, and that evidence from forensic investigations is consistently used for prosecution and discipline, with a Mean of 3.81 and a Standard Deviation of 1.05. Furthermore, they agreed that their MDAs collaborate with external anti-graft agencies, though with a slightly lower Mean of 3.55 and higher standard deviation (1.14), indicating that inter-agency collaboration, while present, is not uniformly robust across all MDAs. Collectively, these results suggest that the reactive dimension of forensic accounting—the investigation—is well-regarded for its direct contribution to the detection and substantive handling of fraud. The findings highlight that human expertise in investigation directly enhances the accuracy and depth of fraud detection processes.



Data Analysis and Hypothesis Testing

The regression analysis was conducted to test the two null hypotheses formulated for the study. The results are presented in the following tables from the SPSS v.27 output.

Table 4.4: Model Summary

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate	Durbin-Watson
1	.748 ^a	.560	.550	.45321	1.982

a. Predictors: (Constant), Financial Crime Investigation, Forensic Data Analytics

The model shows a strong correlation ($R = 0.748$) between the predictors (Forensic Data Analytics and Financial Crime Investigation) and Fraud Detection. About 56.0% of the variance in Fraud Detection is explained by the model ($R^2 = 0.560$). The adjusted R^2 of 0.550 confirms a good model fit, indicating that the independent variables collectively explain 55.0% of the variation in the dependent variable while adjusting for the number of predictors. The Durbin-Watson statistic of 1.982 suggests no autocorrelation in the residuals, as it falls within the acceptable range of 1.5 to 2.5.

Table 4.5: ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	22.987	2	11.494	55.967	.000b
Residual	18.072	88	.205		
Total	41.059	90			

a. Dependent Variable: Fraud Detection

b. Predictors: (Constant), Financial Crime Investigation, Forensic Data Analytics

The overall ANOVA model is statistically significant, with a Sum of Squares value of 22.987, df (degree of freedom) of 2, Mean Square value of 11.494, F (factor) value of 55.967, and a Sig. value of 0.000. This confirms that the regression model, as a whole, significantly predicts the dependent variable (Fraud Detection), and that the independent variables jointly provide a statistically valid explanation for the variations observed in fraud detection across MDAs.



Table 4.6: Coefficients^a

Model		Unstandardized Coefficients	Standardized Coefficients			
		B	Std. Error	Beta	t	Sig.
1 (Constant)		.876	.223		3.928	.000
Forensic Data Analytics	Data	.458	.085	.442	5.412	.000
Financial Crime Investigation	Crime	.523	.079	.538	6.592	.000

a. Dependent Variable: Fraud Detection

The Constant shows the Unstandardized Coefficients value of 0.876, Std. Error of 0.223, with a statistically significant t-value of 3.928 ($p = 0.000$). The result of hypothesis one shows the unstandardized coefficient for Forensic Data Analytics is 0.458 with a standard error of 0.085. The standardized Beta coefficient is 0.442, with a t-value of 5.412 and a statistically significant p-value of 0.000. The null hypothesis is therefore rejected because the calculated p-value of 0.000 is less than the estimated value of 0.05. The result of the hypothesis therefore revealed that there is a significant positive effect of forensic data analytics on fraud prevention in federal MDAs, Nigeria. It is concluded that forensic data analytics significantly enhances the proactive identification and prevention of fraudulent activities in public sector institutions.

The result of hypothesis two shows the unstandardized coefficient for Financial Crime Investigation is 0.523 with a standard error of 0.079. The standardized Beta coefficient is 0.538, with a t-value of 6.592 and a statistically significant p-value of 0.000. The null hypothesis is therefore rejected because the calculated p-value of 0.000 is less than the estimated value of 0.05. The result of the hypothesis therefore revealed that there is a significant positive impact of financial crime investigation on fraud detection in federal MDAs, Nigeria. It is concluded that robust financial crime investigation mechanisms directly and substantially enhance the capacity of MDAs to accurately detect and confirm fraudulent activities. The results indicate that Financial Crime Investigation ($\beta = 0.538$) exerts a slightly stronger influence on Fraud Detection compared to Forensic Data Analytics ($\beta = 0.442$), though both are statistically and practically significant.



Discussion of Findings

Finding of hypothesis one indicated that t-value of 5.412 with a p-value of 0.000, which is lower than the estimated threshold of 0.05. The result shows that forensic data analytics has a statistically significant positive effect on fraud prevention in Federal MDAs, Nigeria. This finding aligns with the study conducted by Ariyo-Edu and Woli-Jimoh (2024), which revealed that forensic accounting techniques, particularly data mining and ratio analysis, positively impacted fraud detection and prevention in the public sector of Kwara State. The result corroborates their emphasis on the critical role of data-driven proactive monitoring mechanisms. The finding is further supported by the study of Olumoh et al. (2023), which established a significant correlation between analytical accounting skills and fraud management in Lagos State MDAs, confirming that analytical capabilities are indispensable for identifying fraudulent patterns before they escalate. The finding is supported by the Fraud Diamond Theory propounded by Wolfe and Hermanson (2004), who believed that the element of "opportunity" is a necessary precondition for fraud to occur. By deploying pervasive forensic data analytics, MDAs systematically reduce the opportunity for unmonitored financial transactions, thereby attacking a fundamental pillar upon which fraudulent activities rest. The descriptive statistics, however, nuanced this finding by revealing an infrastructural gap, with respondents disagreeing that their MDAs possess adequate technical infrastructure. This suggests that while the effect of data analytics is significant, its full potential remains constrained by technological limitations, echoing the concerns of Obadijah and Farouk (2024) regarding the need for enhanced technical resources to optimize fraud detection outcomes.

Finding of hypothesis two indicated that t-value of 6.592 with a p-value of 0.000, which is lower than the estimated threshold of 0.05. The result shows that financial crime investigation has a statistically significant positive impact on fraud detection in Federal MDAs, Nigeria. The standardized coefficient (Beta = 0.538) confirms that this variable is the strongest predictor of effective fraud detection among the forensic accounting mechanisms examined. This finding aligned with the study conducted by Nelson et al. (2025), which revealed that investigative accounting emerged as a highly significant predictor of fraud management effectiveness in Nigerian public sector entities, underscoring the critical role of human expertise in forensic



inquiries. The finding is also consistent with Ojelabi (2025), who found that fraud investigation had a positive and significant effect on fraud management in selected federal government ministries, reinforcing the centrality of investigatory competence. The finding is supported by the Fraud Diamond Theory propounded by Wolfe and Hermanson (2004), who believed that the element of "capability" is crucial for large-scale fraud to occur and persist. Financial crime investigation directly neutralizes this element by ensuring that the requisite skills, authority, and systems are in place to not only detect but also effectively document and prosecute fraudulent acts, thereby deterring capable individuals. This robust finding confirms that forensic accounting's reactive dimension—thorough investigation—is pivotal for transforming anomaly detection into actionable outcomes such as staff discipline, asset recovery, and criminal prosecution. The qualitative interview data corroborated this, as senior respondents emphasized that the credibility of the fraud detection system hinges on the perceived certainty of investigation and sanctions. However, the slightly higher standard deviation for items concerning inter-agency collaboration suggests that the full impact of investigation is sometimes hampered by coordination gaps with external bodies, a nuance that requires policy attention to ensure seamless synergy between internal MDA units and anti-graft agencies.

5. Conclusion and Recommendations

The study concluded that forensic data analytics has a significant and positive effect on fraud prevention in Federal MDAs in Nigeria. This objective was achieved, as the empirical evidence confirmed that proactive data mining and continuous monitoring mechanisms are fundamental to early detection and deterrence of fraudulent activities. It also concluded that financial crime investigation has a significant and positive impact on fraud detection in Federal MDAs. This objective was also achieved, establishing that robust investigative skills and procedures are the cornerstone for transforming fraud alerts into substantiated cases and successful prosecutions. The study further concluded that although both mechanisms are empirically effective, their optimal performance is constrained by infrastructural deficits and inconsistent inter-agency collaboration. It was concluded that the integration of the Fraud Diamond Theory provides a robust framework for understanding how forensic accounting mechanisms neutralize both the



opportunity and capability for fraud, thus forming a comprehensive fraud management ecosystem.

Based on the above findings, the study recommended that, the Office of the Accountant-General of the Federation should prioritize and invest in modern technological infrastructure specifically designed for forensic data analytics, such as advanced anomaly detection software, to bridge the identified infrastructural gap and enable real-time, continuous monitoring of all financial transactions across MDAs. Management of Federal MDAs should establish and empower dedicated in-house forensic investigation units staffed with certified fraud examiners and forensic accountants, ensuring they possess both the technical tools and the administrative authority to conduct thorough and unimpeded financial crime investigations.

References

- Adeyemi, S. B., & Fakile, A. S. (2023). Forensic accounting and fraud detection in Nigerian public sector. *Journal of Accounting and Financial Management*, 9(2), 45-58.
- Ariyo-Edu, D., & Woli-Jimoh, S. (2024). Forensic accounting and public sector fraud detection in Kwara State, Nigeria. *International Journal of Forensic Accounting Research*, 6(1), 88-105.
- Association of Certified Fraud Examiners (ACFE). (2024). *Report to the Nations: 2024 Global Study on Occupational Fraud and Abuse*. Austin, TX: ACFE.
- Daniel, A. O. (2024). Treasury Single Account and public financial management reforms in Nigeria. *Nigerian Journal of Accounting and Finance*, 12(3), 112-129.
- Economic and Financial Crimes Commission (EFCC). (2025). *Annual Report on Financial Crimes Investigation and Prosecution 2024*. Abuja: EFCC Publications.
- Federal Civil Service Commission. (2024). *Staff Establishment Report for Federal Ministries, Departments and Agencies*. Abuja: FCSC Press.
- Kassem, R., & Higson, A. W. (2012). The new fraud triangle model. *Journal of Emerging Trends in Economics and Management Sciences*, 3(3), 191-195.
- Nelson, O. A., Lucky, A. O., Bukola, O. O., & Oludami, T. A. (2025). Forensic accounting practices and fraud management in Nigerian public sector: A quantitative analysis. *ResearchGate Journal of Accounting and Finance*, 14(1), 34-52.
- Obadiah, M., & Ibrahim, F. (2024). Effect of forensic accounting skills on financial fraud detection in Nigerian state ministries. *African Journal of Accounting, Auditing and Finance*, 8(2), 201-218.
- Obadiah, M., & Farouk, S. (2024). Forensic accounting skills and fraud detection: Evidence from state MDAs in Nigeria. *International Journal of Forensic Accounting and Auditing*, 7(4), 156-173.
- Office of the Accountant-General of the Federation. (2024). *Annual Financial Report of the Federal Government of Nigeria*. Abuja: OAGF Press.



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- Office of the Auditor-General for the Federation. (2024). *Annual Report on the Accounts of the Federation of Nigeria*. Abuja: OAUGF Publications.
- Office of the Head of the Civil Service of the Federation. (2024). *Annual Staff Report of Federal Ministries, Departments and Agencies*. Abuja: OHCSF Press.
- Ojelabi, O. A. (2025). Fraud investigation and financial forensic on fraud management in selected federal government ministries in Nigeria. *ResearchGate Journal of Forensic Studies*, 3(1), 67-84.
- Okeke, C. I., Eze, N. M., & Obi, J. C. (2025). Forensic accounting mechanisms and public sector accountability in Nigeria: Recent developments. *Journal of Public Sector Finance and Governance*, 11(2), 78-95.
- Okpala, K. E., & Ezeoha, A. E. (2024). Conceptualizing forensic accounting for fraud detection in emerging economies. *West African Journal of Accounting and Finance Research*, 5(3), 112-130.
- Olukoyede, O. (2025). EFCC's role in combating public sector fraud: Progress and challenges. *Nigerian Journal of Anti-Corruption Studies*, 4(1), 1-18.
- Olumoh, B. A., Sanni, F. O., & Balogun, J. A. (2023). Forensic accounting and fraud management in Lagos State ministries, departments and agencies. *African Journal of Management and Accounting Research*, 10(2), 89-107.
- Transparency International. (2025). *Corruption Perceptions Index 2024*. Berlin: Transparency International Secretariat.
- Wolfe, D. T., & Hermanson, D. R. (2004). The fraud diamond: Considering the four elements of fraud. *The CPA Journal*, 74(12), 38-42.
- Zachariah, P., Suleiman, A., & Ogunyemi, O. (2023). Fraudulent financial reporting in Nigerian public institutions. *Journal of Public Administration and Finance*, 8(1), 45-63.