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EFFECT OF FORENSIC ANALYSIS ON FRAUD MANAGEMENT IN PUBLIC SECTOR: AN EMPIRICAL APPROACH

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ABSTRACT

The introduction of forensic analysis in public sector management has become an important area of specialization due to its significant role in fraud management and prevention. This study evaluated the effect of forensic analysis on fraud management in the public sector of Nigeria, with specific focus on selected Ministries, Departments, and Agencies (MDAs) in Kogi State, Nigeria. The population of the study comprised 360 accounting, audit, finance, treasury, and compliance officers drawn from 36 selected MDAs. Data were collected through the administration of structured questionnaires designed on a five-point Likert scale and analyzed using multiple regression analysis with the aid of Statistical Package for Social Sciences (SPSS Version 26). The findings revealed that forensic investigation had a significant positive effect on fraud prevention, while forensic litigation showed a positive but statistically insignificant effect on fraud prevention in Kogi State public sector institutions. The study concludes that forensic analysis plays a significant role in reducing fraudulent activities and improving fraud management in the public sector of Nigeria. The study recommends that regulatory authorities and government agencies should strengthen forensic investigation practices, improve accountability mechanisms, and review existing financial fraud management policies to enhance fraud detection capacity and ensure effective prevention of financial irregularities.

Keywords*:* Forensic investigation, forensic litigation, fraud prevention, public sector, multiple regression analysis

1.0 Introduction

Globally, the public sector is expected to operate with high levels of integrity, transparency, accountability, and efficiency in order to ensure that public resources are properly managed for sustainable economic and social development. Public sector spending across the world remains highly susceptible to waste, fraud, and corruption, which weakens governance and reduces public trust in government institutions. According to the International Federation of Accountants (IFAC, 2021), minimizing this risk requires strong internal control systems, high-quality financial reporting, and effective audit mechanisms to strengthen accountability and transparency in public institutions. Similarly, the Organisation for Economic Co-operation and Development (OECD, 2024) emphasizes that public sector integrity is fundamental to good governance, as fraud and corruption undermine economic rationality, public confidence, and service delivery. These persistent global challenges have made forensic analysis an increasingly important tool for fraud detection, prevention, and financial accountability in both developed and developing economies.

The public sector is expected to operate with proficiency and high levels of integrity, transparency and accountability, such that financial records and transactions are carried out and conducted with efficient mechanisms and rigorous oversight that are setup to ensure that public resources especially funds are appropriated, deployed and utilized effectively for the

purpose they are meant for and for the benefit of the society at large (Okonkwo & Okegbe, 2025). It is therefore important for public institutions to develop and adopt measures that will timely prevent potential frauds before their adverse negative effects on the institution. A potent strategy in achieving this involves the use of forensic analysis approaches, a specialized accounting field combining auditing and investigative skills to prevent fraudulent activities and transactions in the public sector (Almubaydeen et al., 2024).

The introduction of forensic analysis in public sector management has become a strong field of specialization for corporate organizations because of its relevance in fraud management. Forensic analysis is built on the establishment of functional structures in public institutions, strict adherence to the rule of law, and the implementation of accountability and transparency tools in financial transactions with the view to avoiding fraudulent practices within the system. The use of forensic analysis entails a systematic, deliberate, and thorough investigation, meticulous evaluation of financial transactions and records, analysis of documentation, and tracing the origins of financial activities with the intention of mitigating incidences of financial inappropriateness and misconduct (Bhasin, 2020). Based on fraud detection and preventive theories, two main proxies namely forensic investigative skills and litigation support skills are used principally to prevent financial frauds in public institutions (Ogutu & Mwachiro, 2023).

In the investigation role of forensic analysis, the topmost services include the examination of financial fraud committed by employees, the examination of financial disputes, settling the rights of employees leaving institutions, arbitration services, and investigating cases related to professional negligence (Adam et al., 2024). In the litigation role of forensic analysis, following the disclosure of significant fraud or scandals, measures are put in place to mitigate, reduce, or eradicate the prevalence of such financial misconduct (Onah & Ugwu, 2022). These preventive measures include setting up rules, standards, and regulations aimed at enhancing accountability, governance, and mitigating financial irregularities.

Public institutions in Nigeria are often exposed to financial fraud and other related financial misappropriation due to ineffective due process, which has made it necessary for the deployment of forensic analysis approaches for their operations. This is because of the vital role they play in any economy through mobilization, distribution, and redistribution of service delivery and resources across the country. This situation necessitates the implementation of forensic analysis to guide public sector institutions in their accounting and auditing practices in order to prevent fraudulent activities. The rate of financial fraud in Nigeria's public institutions is increasing, resulting in huge financial losses and also harming the reputation of institutions. Even with the notable advancements in forensic accounting in recent years, financial fraudulent activities such as money laundering, misappropriation, and embezzlement still plague Nigeria's public sector institutions. Currently, the integrity and functional operations of the public sector have been compromised due to a widespread and continuous rise in fraudulent activities and other non-professionalism in the generation, communication, and storage of records and information. Hence, fraud does not only hinder effective public sector management, but also exerts strain on overall national development (Hassan & Sanni, 2023).

There has been prevalence and frequent fraudulent activities in public sector institutions in Nigeria. Consequent upon the relevance of the application of forensic analysis in fraud detection and prevention, several studies have explored the role of forensic analysis in varying contexts, especially among developing economies like Nigeria. A review of the studies conducted by Eniola and Popoola (2024), Frankline et al. (2022), and Onuora et al. (2022) revealed that forensic accounting has positive and significant impact on financial accountability in the public sector. Some other studies such as Garba (2024), Okorafor et al.

(2024), Edward (2021), and Eko (2020) have also showed inconsistent, mixed, and inconclusive roles of forensic accounting in fraud detection and prevention.

Even though these studies reveal valuable insights into the roles of forensic accounting in institutions in Nigeria, a significant gap in the literature emerges due to the inconsistency in the findings in the context of Nigeria's public sector. It is against this backdrop that this study is premised on determining whether the deployment of forensic analysis has had impact on fraud management in Nigeria's public sector. Based on the above, the main objective of this research is to evaluate the effect of forensic analysis on fraud management in the public sector in Nigeria. However, the specific objectives of this research are as follows:

i. To find out the effect of forensic investigation on fraud prevention in the public sector in Nigeria.
ii. To analyse the effect of forensic litigation on fraud prevention in the public sector in Nigeria.

This study on the effect of forensic analysis on fraud management in the public sector in Nigeria is significant in the following areas. First, policy makers will find the findings of this study very useful in making policies that will improve fraud management in the public sector in Nigeria. Second, although studies have been conducted on the role of forensic analysis on fraud management, this study advances knowledge on the extent to which forensic analysis has impacted fraud prevention in the public sector in Nigeria. Lastly, this study provides the practical relationship that exists between forensic analysis and fraud detection and prevention in the public sector in Nigeria. In addition, this study provides the impact of forensic investigation and forensic litigation on fraud prevention in the public sector in Nigeria.

2.0 Literature Review

The literature review focuses on the issues related and relevant to this study. The literature review discussed on the following headings: conceptual review, theoretical review and empirical review accordingly.

2.1 Conceptual review

The conceptual review of this study is premised on the two main variables of this study: dependent variable (fraud management, i.e. fraud detection and fraud prevention) and the independent variable (forensic analysis, i.e. forensic investigation and forensic litigation).

Forensic Analysis

The field of forensic analysis has evolved significantly and more recently with the technological advancements and standard regulatory frameworks, requiring forensic accountants to stay up-to-date with the emerging compliance requirements and fraud schemes (Lee & Kim, 2024). These recent understanding of forensic analysis underscore the growing importance of field in safeguarding financial straightforwardness and integrity and the support for legal investigations globally. It can be seen from various definitions that forensic analysis is a specialized scientific field that combines accounting, auditing, and investigative skills to detect, evaluate, analyze and report financial misrepresentations and frauds. It involves examining financial data and transactions to uncover irregularities and provide evidences for legal and regulatory proceedings.

Forensic Investigation

The forensic investigation is a method of forensic accounting that uses a combination of accounting knowledge and investigation skills to identifying the fraudulent activities and

financial misconducts in a corporations (Hopwood, et al., 2018). It combines some basic accounting skills with investigative approaches and methodologies, making it crucial and easy for detecting financial misconducts. Investigative (forensic) accountants are therefore very essential in analysing financial accounts, records and transactions to detect fraudulent conducts and provide evidence legally (Williams & Green, 2020). They also scrutinize financial records using accounting knowledge and investigative skills to identify, detect, analyze, and report frauds (Robinson & Khatib 2024).

Forensic Litigation

According to Jackson and Miller (2020), forensic litigation services are professional services that are provided by financial experts, accountants or accounting consultants to assist the legal unit/team in corporate litigation proceedings. The forensic litigation support helps in examining, analyzing, understanding and presenting financial data during legal procedures. The experts involved in forensic litigation also combine auditing, accounting and financial analysis to support in legal disputes, by ensuring that accurate, trustworthy and reliable financial evidence are provided. The merging of different auditing/accounting disciplines in litigation support services underscores the importance of accurate, reliable and trustworthy financial information that are presented in legal proceedings for fair, equal and just solutions.

Fraud Management

Fraud has been described in several literature by writers and scholars, to generally means 'trickery, deceit, breach of trust/confidence committed for purpose of profit or to gain undue and dishonest advantage by the person that commits. According to Olaoye, et al. (2014 as cited in Okafor and Nwankwo 2024), fraud is an intentional alterations in records or data to gain undue and dishonest advantages by the perpetrator(s). According to Inayoa and Isito (2016 as cited in Anderson & Williams, 2023), fraud is a global phenomenon that has existed across several centuries and it distorts businesses and eventually leads their collapse and liquidation if it is not detected and prevented.

Fraud Detection

Fraud detection is the identification of fraud or fraudulent activities within a corporate institution, using various tools, techniques and methodologies to discover and uncover inappropriateness, irregularities and general misconducts. According to Garcia and Martinez (2024), fraud detection is therefore the process of identifying instances of fraudulent activities within a system or an organization. The process of fraud detection relies on both proactive measures which include robust internal control mechanisms and, reactive measures which include forensic accounting investigations to determine, detect and mitigate fraud related to financial records and transactions. However, Anderson and Brown (2023) define fraud detection as an ongoing process of monitoring and evaluating financial transactions with the aim to identifying suspicious patterns or activities that may give an indication of fraudulent behaviour.

Fraud Prevention

Fraud prevention practice is a fundamental and important aspect of the forensic analysis process, which serves as a risk management tool that guarantees total adherence to established standards, rules, and regulatory provisions, hence promoting the integrity of financial reporting in any corporation (Simeunović et al., 2016 as cited in Garba, 2024). Therefore, fraud prevention refers to the execution of measures or approaches aimed at mitigating the negative effects or consequences associated with financial misconduct and irregularities not only in the spending of finance but also in the reporting of such transactions in financial records.

Furthermore, Enofe et al. (2015) define fraud prevention as the execution of certain and deliberate plans in order not to allow fraudulent activities to take place in any corporate setting. Prevention must therefore come before the attempt of fraud.

The prevalence of fraud in the public sector has become a major concern globally and particularly in developing economies such as Nigeria, where weak institutional controls, poor accountability mechanisms, and inadequate enforcement of financial regulations have increased the vulnerability of public institutions to fraud and corruption. Public sector fraud manifests in various forms such as embezzlement, contract inflation, ghost workers, payroll fraud, procurement manipulation, bribery, and misappropriation of public funds. These fraudulent practices weaken governance structures, reduce service delivery efficiency, and undermine public confidence in government institutions (Adebisi & Gbegi, 2015).

In Nigeria, the public sector remains one of the most exposed sectors to financial misconduct due to ineffective internal controls and weak compliance systems. Reports from anti-corruption agencies such as the Economic and Financial Crimes Commission (EFCC) and the Independent Corrupt Practices Commission (ICPC) continue to reveal increasing cases of financial irregularities involving Ministries, Departments, and Agencies (MDAs). This persistent occurrence of fraud has led to significant financial losses, poor infrastructure development, and declining public trust in governance. According to Mike et al. (2022), the increasing complexity of financial fraud in Nigeria's public sector has made the application of forensic accounting and fraud prevention mechanisms not only necessary but indispensable for ensuring accountability and transparency.

Fraud prevention in the public sector therefore goes beyond detecting fraud after occurrence; it involves establishing proactive systems such as strong internal controls, regular forensic investigations, effective auditing procedures, staff ethical orientation, and strict regulatory compliance mechanisms aimed at minimizing the opportunity for fraud to occur. This makes fraud prevention a critical component of fraud management and public sector sustainability.

2.2. Theoretical Review

In this study the fraud management lifecycle theory and fraud prevention theory have been considered as the most relevant theories (theoretical framework) to underpin this study as it provides how certain tools (such as forensic analysis) can engage fraud identification and prevention in public sector.

2.2.1 Fraud Management Lifecycle Theory

The theory of fraud management lifecycle was first presented by Wilhelm, Wesley Kenneth in 2004. According to Wilhelm, fraud can only be sufficiently managed if and only if all the stakeholders identify and carry out their responsibilities and functions effectively. The author of the theory sees fraud management as the process of "monitoring, identifying, reporting and prevention of fraud in a corporation or an organization". Fraud management lifecycle theory highlights the inter-play of process, people and policy in the end-to-end handling of fraudulent acts.

In the theory, Wilhelm (2004) stated that the fraud management lifecycle comprises eight stages consequently, the fraud management lifecycle is highly evolving, dynamic, and adaptive. According to Wilhelm (2004), the eight stages are: deterrence, prevention, detection, mitigation, analysis, policy investigation and; prosecution.

2.2.2 Fraud Preventative Theory

The Fraud Preventative Theory was propounded by William S. Albrecht (1991). The theory is founded on the premise that preventing fraud is more cost-effective, cheaper, and more beneficial than identifying, detecting, and addressing fraud after its occurrence. The central argument of the theory is that organizations should focus more on proactive measures that reduce the opportunity for fraud rather than relying only on reactive measures after fraud has already taken place.

The main tenets of Fraud Preventative Theory are continuous monitoring, the implementation of stringent internal control mechanisms, and fostering an ethical work environment. Internal control mechanisms are policies and procedures that organizations establish to safeguard their assets, promote operational efficiency, and ensure accurate financial reporting (Bhasin, 2020). The continuous monitoring approach involves regular analysis, reviews, audits, and assessments with the view to identifying suspicious or anomalous activities in a timely manner. Lastly, fostering an ethical working environment involves leadership commitment, ethical training programs, and the establishment and implementation of clear codes of conduct. These components work synergistically to create a barrier against fraud and build an organizational framework that resists fraudulent practices.

In the context of the public sector in Nigeria, the implementation of Fraud Management Lifecycle Theory and Fraud Preventative Theory can lead to substantial improvement in fraud detection and prevention. Public sector institutions in Nigeria can benefit from the adoption of robust internal control mechanisms and regular forensic processes for identifying and mitigating potential fraud risks. Moreover, ensuring an ethical work environment through continuous training and strong codes of conduct can further strengthen institutional defenses against fraudulent activities. The integration of forensic analysis tools, aligned with the principles of Fraud Preventative Theory, ensures a comprehensive approach to fighting fraud, thereby maintaining and enhancing the overall integrity, reputation, and performance of public institutions.

2.3. Empirical Review

The study of Oraby (2025) evaluated the impact of forensic accounting measures on the detection and prevention of different forms of financial fraud in Saudi Arabia. In order to achieve these objectives, the study utilized a survey research design by gathering data from primary sources. The analysis of the data was conducted using least square regression technique to test the hypotheses at 5% level of significance. The analysis of the results of the overall regression model indicated a positive impact on the detection and prevention of financial fraud. While the individual regression models for forensic accounting measures, internal control mechanisms and financial and financial reporting, showed a positive impact on detection and prevention of financial frauds respectively.

Okorafor et al., (2024) in their study investigated whether forensic accounting skills have influence on fraud investigation in the electricity distribution firms in Nigeria. This was conducted by focusing on the 'Enugu Electricity Distribution Company' (EEDC). The study used a descriptive survey research approach, with a sample size of only fifty-two. The analysis of the data was conducted using multiple regression technique to test the hypotheses at 5% level of significance. The finding of the study revealed that forensic accounting skills have significant influence reduction in fraud and facilitate fraud investigations in EEDC. It is therefore concluded that forensic accounting skills of the auditors should further be enhanced so as to ensure that frauds are adequately investigated and prevented in the company.

Eniola and Popoola (2024) investigated the impact of forensic accounting approaches, with specific attention on fraud examination, fraud investigation and fraud prevention on the financial transparency and accountability in the banking sub-sector in Nigeria. The study used a field survey research design where data were collected from secondary and primary sources with specific emphasis on the use of questionnaire administration to staff in the selected banks. The study analysed ninety-eight (98) copies of filled questionnaire using frequency and regression (multiple) analysis to draw a prediction on the relationship between forensic accounting approaches and financial transparency and accountability. The findings of the study indicated that fraud investigation practices significantly influence transparency and accountability in Nigeria banks. The study concluded by underscoring the positive effects of forensic accounting approaches on financial transparency and accountability in Nigerian banking sector.

Adam et al. (2024) investigated the specific effects of forensic accounting on prevention of financial frauds in institutions in Nigeria, with a specific focus on the financial institution, First Bank of Nigeria (FBN). The study develops specific objectives which include how to utilize it to combat financial frauds and malpractices. In order to achieve this broad objective, the study utilized an ex-post facto research design by gathering data from both secondary and primary sources. The analysis of the data was conducted using multiple regression technique to test the hypotheses at 5% level of significance. The findings of the study emphasize that improving the forensic investigation can sufficiently reduce financial frauds, in FBN. The study conclude that forensic accounting is indispensable in the financial practices in financial institutions.

Onyema, et al. (2024) examined the impact forensic accounting has had on fraud management in selected DMBs in Nigeria. In order to achieve this objective, the study used a survey research design with a questionnaire designed in a five-point scale to collect the data used for the study. Both regression analysis and analysis of variance were used to analyze the data retrieved from the survey. The results of the study revealed that forensic accounting has had a statistically positive impact on fraud detection, fraud prevention and fraud reduction in DMBs in Nigeria. The study concludes that deploying forensic accounting approaches would save the bank the heavy losses they experience due to fraud.

Emmanuel, et al. (2022) investigated the nexus between forensic auditing and fraud management in public sector institutions in Port Harcourt, Nigeria. . In order to achieve this broad objective, the study utilized an ex-post facto research design by gathering data from both secondary and primary sources. The analysis of the data was conducted using percentage and Pearson correlation techniques in the study. The study revealed that there is a direct positive relationship fraud management and forensic auditing and therefore concluded that the management of institutions should ensure that forensic audits are carried out in their organization at least annually as this would help in the prevention of 'white-collar' crimes in these institutions.

The research conducted by Simon (2022) evaluated the impact of forensic accounting practices on the financial accountability in the context of Machakos County's Government, Kenya. The study collected data using primary sources which were analysed using inferential statistics. The findings of the research indicated a significant direct correlation between the implementations of fraud investigations and fraud preventions, and the improvement of financial responsibility. The study suggests that it is beneficial for County's government to develop a specific and dedicated forensic accounting units/departments and actively engage qualified personnel. Furthermore, the study reveals that it is essential for auditors at national and county levels to establish effective procedures with the aim to mitigating the risk of employees participating in the act of financial fraud.

Agboare (2021) in a study explored the effect of forensic accounting on the discovery of financial inappropriateness within the Nigerian listed DMBs in Nigeria. The study used a descriptive survey research approach, and the analysis of the data was conducted using multiple regression technique to test the hypotheses at 5% level of significance. The study reveals that implementing forensic accounting approaches/methods, such as conducting investigations, examining financial transactions and covering up for missing accounting records will considerably boost the ability to identify and address financial crimes in the listed DMBs in the country. The study conclude that forensic accounting has not only helped in identifying financial inappropriateness but also have the ability to addressing financial fraud in DMBs in Nigeria.

Eko, et al. (2020) evaluated the forensic accounting measures used to preventing and detecting frauds in commercial banks in Nigeria. The study focused on data processing, trend analysis and ratio analysis which are usually used to preventing and detecting frauds in commercial banks. The data collected by the study were analyzed using least square regression models. The findings indicated that by applying the forensic investigation measures, there is significant improvement in the prevention frauds in commercial banks. The study further showed that most of the commercial banks' workers lack the ability, capacity and awareness of data processing techniques which would have further help in fraud prevention.

The review revealed that previous studies have focused on the impact of forensic accounting measures on financial reporting quality in Nigeria. However, there is a gap in the literature, as most of the studies only examine forensic accounting on corporate governance and accountability. Additionally, primary data collected through surveys and interviews as used by most of the studies may introduce self-reporting biases, inconsistences and inaccuracies. This study therefore aims to fill this gap by leveraging primary data sources, using descriptive survey (questionnaire), to analyze the impact of forensic analysis (focusing on forensic investigation and litigation) on fraud management (focusing on fraud detection and prevention).

3.0 Methodology

3.1 Research Design

This study explored and adopted quantitative survey design. This research design allows for a high level of objectivity, standardization in data gathering, generalizability, validity and reliability through rigorous approaches. In this study the form of quantitative research design utilized is the cross-sectional survey research design. This is because cross-sectional survey allows for collection of data through a self-reported approaches or measures since the data that would be collected for the study belong to primary source.

3.2 Population and Sample the Study

The study area is the public sector organizations in Kogi State, Nigeria which are the Kogi State's Ministries, Departments and Agencies. There are forty one (41) MDAs in Kogi State according to (Kogi State Ministry of Information and Communications, 2025). Therefore, the population of this study is the 41, however, from the list of all the MDAs and different attributes that composed the study population, the study will consider selection from the relevant MDAs.

For the purpose of the study, the Yamani's (1967) formula for sampling method is adopted in the determination of the sample size. The formula is presented as:

$$n = \frac{N}{1 + N(e)^2}$$

(Where: N = population; n = sample size; and e = confidence level/ margin of error. Using a margin of error of 5%, with a population of 41):

$$\begin{aligned} n &= \frac{41}{1 + 41(0.05)^2} \\ &= \frac{41}{1 + 41(0.0025)} \\ &= \frac{41}{1 + 41(0.0025)} \\ &= \frac{41}{1 + 0.1015} \\ &= \frac{41}{1.1025} \\ &= 37.19 \end{aligned}$$

The sample size for this study is therefore 37.

In this study, multi-stage sampling technique is used to select the samples.

3.3 Sources of Data

The primary source of data used for this study is the questionnaire, while secondary sources were mainly used for the literature review and other supporting sections of the study. The questionnaire was designed as a structured instrument to obtain relevant and current information from respondents in selected Ministries, Departments, and Agencies (MDAs) in Kogi State, Nigeria.

The nature of the questionnaire scale adopted for this study is the five-point Likert scale, which was used to measure respondents' level of agreement or disagreement with the statements relating to forensic analysis and fraud management. The scale consists of: Strongly Agree (SA) = 5, Agree (A) = 4, Undecided (U) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1.

Section A of the questionnaire captured the socio-demographic characteristics of the respondents such as gender, age, educational qualification, professional qualification, years of experience, organizational level, and department/unit. Sections B and C focused on the core variables of the study, where Section B measured forensic analysis using forensic investigation and forensic litigation, while Section C measured fraud management using fraud detection and fraud prevention.

The use of the questionnaire and the Likert scale was considered appropriate because it enabled the researcher to collect standardized responses from a large number of respondents efficiently, thereby improving reliability, validity, and ease of statistical analysis using SPSS.

3.4 Method of Data Collection

The questionnaires were administered through direct survey with the assistance of trained research assistants. In the direct survey approach, the heads of accounts, audit, finance, treasury, and compliance units were approached physically, and the purpose of the study as well as the ethical considerations guiding the research were clearly explained to them before administration of the instrument. This approach was adopted because it allows for a high response rate and reduces the cost in terms of time and other resources during the data collection process.

The instrument used for data collection in this study was adapted from the study of Adebayo et al. (2024) on "Forensic Accounting Practices and Fraud Management in Selected Listed Fast Moving Consumer Goods (FMCGs) in Nigeria." The instrument was adapted rather than adopted because, although the core variables of the study—forensic analysis and fraud management—remain similar, the study differs in terms of sector, population, and research context. While Adebayo et al. (2024) focused on listed FMCG companies in Nigeria, this study focuses on public sector institutions, specifically selected Ministries, Departments, and Agencies (MDAs) in Kogi State, Nigeria.

Therefore, certain modifications were made to the original instrument to suit the objectives, nature, and operational environment of the public sector. In addition, the researcher developed some additional items to improve the relevance and applicability of the questionnaire to the present study. This adaptation ensured that the instrument adequately captured the peculiarities of forensic investigation, forensic litigation, and fraud prevention within the public sector context.

3.5 Methods of Data Analysis

This study used Statistical Package for the Social Sciences (SPSS) as the software for the data analysis. This study used the software for analysis because it provides a wide range of statistical procedures such as descriptive, inferential, factor analysis and advanced methods of regression which are required by this study's data to be able to achieve the objectives and hypotheses testing. In addition, SPSS as software is also easy to use and highly adaptable and compatible with the nature of the data obtained for this study.

Analysis was conducted using multiple linear regression analysis to test the hypotheses of this study. The choice of the multiple regression analysis was because it offers the technique that model the relationship between continuous outcomes and multiple predicator variables. Also, the multiple linear regression analysis measures the linear relationship, direction and impact of predicator variables (forensic investigation and litigation) on the continuous outcome variable (fraud prevention).

3.6 Model Specification

This study used multiple linear regression analysis and hence this study adopted the model of Adebayo, et al., (2024) with certain modifications to suit this study. In this study, the independent variable is forensic analysis which is proxied by forensic investigation (FI) and forensic litigation (FL) while the dependent variable is fraud management which is proxied by fraud prevention (FP).

The function for this study is therefore given in equation 1:

$$FM = f\left(FA\right) \tag{1}$$

The model relationship is presented in equation 2:

$$FP = f\left(FI, FL\right) \tag{2}$$

The model specification of study is as shown in equation 3.

$$FP = \beta_0 + \beta_1\left(FI\right) + \beta_2\left(FL\right) + \varepsilon_1 \tag{3}$$

Where: FM = Fraud management; FA = Forensic analysis; FI = Forensic investigation; FL = Forensic litigation; FP = Fraud prevention; β_0 = Interception of the line; β_1, β_2 = Slope of the FI and FL respectively and ε = Error terms

Based on the model, the hypotheses of this research are stated in the null forms as presented below:

H_{01}: Forensic investigation has no significant effect on fraud prevention in public sector in Nigeria.

H_{02}: Forensic litigation has no significant effect on fraud prevention in public sector in Nigeria.

4.0 Results and Discussion

In this study, a total of three hundred six (360) questionnaires were administered to the respondents out of which two hundred and ninety-nine (299) representing (83.1%) were returned and two hundred and sixty-five (265) representing (73.6%) were validly filled. This high level of return was because the research used physical approach and the research assistant persuaded the respondents to fill the instrument on the spot and it was retrieved immediately.

4.1 Validity & Reliability Tests

Based on the analysis as indicated in Table 4.1, the instrument were valid within the acceptable values. Furthermore, the average variance extracted (AVE) that represent a confirmatory test of variance captured by a construct with the variance due to random measurement error were also captured. The AVE of each of the measure in this study was set at 0.6, that is, more than or equal to 60% of the variance, as the cut-off value. The cummulative AVE values were calculated, and they were all greater than the recommended values of 0.6, suggesting that the variance explicated by each construct exceeds that due to measurement error.

Table 4.1: Measurement Model

S	Variables	Items	Factor Loading	AVE	Cronbach Alpha
1	**Fraud management**	Fraud detection	0.9121	0.8642	0.765
		Fraud preventions	0.8162		
2	**Forensic analysis**	Forensic investigation	0.9616	0.9167	0.781
		Forensic litigation	0.8718		
			Average	**0.8905**	**0.773**

Source: Researcher's Computation, (2026)

Reliability of the instrument was tested using the Cronbach's coefficient alpha (α), computed, the scores were correlated and a correlation coefficient of 0.773 which was greater than 0.7

was obtained. Then the reliability of the instrument was considered high enough to judge the instruments as reliable for this study.

4.2 Descriptive Analysis

The correlation analysis is used to determine the relationship between the proxies of the dependent variables (fraud prevention) and the independent variables (forensic investigation and forensic litigation). The essence of the correlation analysis is to measure the relationship between fraud prevention and forensic litigation and; fraud prevention and forensic litigation.

Table 4.2 Correlation Analysis

Items	FI	FL	FP
FI	1.000		
FL	0.906***	1.000	
	0.000		
FP	0.838***	0.781***	1.000
	0.000	0.000	

Source: Researcher's compilation (2026)

The correlation analysis in Table 4.2 indicates following: First, that forensic investigation has significant positive relationship with fraud prevention, this is indicated by (r = 0.838; p = 0.000). This is an indication that fraud prevention will increase if forensic investigation increases and vices versa. Second, that forensic litigation has significant positive relationship with fraud prevention, this is indicated by (r = 0.781; p = 0.000). This is an indication that fraud prevention will increase if forensic litigation increases and vices versa. This implies that fraud detection and prevention have direct relationship with forensic analysis, therefore if forensic analysis skills and approaches are deployed, it will improve the fraud detection and prevention in Public Sector in Nigeria.

4.3 Test of Hypotheses

This study conducted a multiple regression analysis on the data in order to determine how fit the model is and to determine the extent of the effect of the independent variable proxies (i.e. forensic investigation and forensic litigation) on the dependent variable proxy (fraud prevention). The results of the regression analysis is presented in Table 4.3.

Table 4.3: Model Analysis for Hypotheses

Items	Values	t-value	p-value
Constant		0.860	0.000
f-stat	313.287		
df	264		
R	0.840		
R square	0.705		
Adjusted R square	0.703		
Std. Error of the Estimate	0.734		
Durbin-Watson	2.009		
Forensic investigation		9.229	0.000
Forensic litigation		1.500	0.135

Source: Researcher's compilation (2026)

Table 4.3 provides the model summary for the regression analysis conducted to assess the effect of the predictors (forensic investigation and forensic litigation) on the dependent variable (fraud prevention). The R value of 0.840 indicates an approximately 84.0% relationship between fraud prevention and the predicators of forensic investigation and forensic litigation. This value showed a considerable strong relationship between fraud prevention and the predicators. The R^2 value of 0.705 indicates that approximately 70.5% of the variability observed in fraud prevention can be accounted for by the predictor variables incorporated (forensic investigation and forensic litigation) into the regression model. The interpretation of R^2 suggests that the model of the study provides a reasonably good fit to the observed data, capturing a sufficient part of the underlying variability in fraud prevention. However, it's essential to recognize that approximately 29.5% of the variability in fraud prevention remains unexplained by the predictor variables (forensic investigation and forensic litigation) included in the model but by other variables not captured.

This adj. R-squared value of 0.703 indicates that approximately 70.3% of the variability observed in fraud prevention is explained by the predictor variables (forensic investigation and forensic litigation) included in the model, after adjusting for the total number of the predictors. The interpretation of the adjusted R-squared reveals that, even after accounting for the complexity that exist in the model due to the inclusion of multiple predictors, a significant portion of the variability in fraud prevention is still captured by the model of the study. It is important however, to note that approximately 29.7% of the variability in fraud prevention remains unexplained by the predictors included in the model of the study, even after adjustment.

This standard error of the estimate value of 0.734 indicates the average amount of error in predicting fraud prevention is based on the regression model. In practical and real terms, it signifies that, the actual fraud prevention values, on average, deviate from the predicted values by approximately 0.734 units. However, this lower standard error according to the estimate suggests that the study's model's predictions are quiet precise, with the observed values closely related and aligned with the predicted values. Also in Table 4.9, the Durbin-Watson (D-W) statistic is shown as 2.009, which is above and around the ideal value of 2. This D-W result suggests that there is no autocorrelation present in the residuals of the regression model of this study. This value of D-W statistic provides the assurance that the assumptions that underline the regression model, particularly with respect to the independence of residuals, are met. This analysis therefore reinforces the credibility and reliability of the model's findings and improve on the confidence in its ability to accurately predict and capture the effects of the predictor variables (forensic investigation and forensic litigation) on fraud prevention in the context of Public Sector in Nigeria. Finally, based on the calculated F-statistic of 313.287 shows that the regression model of this study has some degree of maximum explanatory power over the variability observed in fraud prevention in Public Sector in Nigeria. However, based on this study, the interpretation as provided the F-stat is contingent upon its associated p-value.

4.4 Test of Hypothesis One

H_{01}: *Forensic investigation has no significant effect on fraud prevention in Public Sector in Nigeria.*

Firstly, for the forensic investigation and fraud prevention, the t-statistic and p-value indicates a positive and significant effect ($t = 9.229$; $p = 0.000$) as shown in Table 4.3. Consequently, the null hypothesis three: "Forensic investigation has no significant effect on fraud prevention in Public Sector in Nigeria" based model 2b is rejected ($p < 0.05$), that is, forensic investigation has significant effect on fraud prevention in Public Sector in Nigeria. Based on the t-statistic

for every 1% increase in forensic investigation there is an increase of 9.229% in fraud prevention by Public Sector in Nigeria.

This finding is consistence with the finding of Onyema, et al. (2024) that examined the effect forensic analysis has had on fraud management and arrived at forensic analysis had statistically positive impact on fraud detection, fraud prevention and fraud reduction. Similarly, Okorafor et al. (2024) also supported the finding of this study. Finally, the finding of this study is consonants with Ojukwu, et al. (2020) that revealed direct relationship between forensic analysis and internal control leading to fraud prevention.

4.5 Test of Hypothesis Two

H_{02}: *Forensic litigation has no significant effect on fraud prevention in Public Sector in Nigeria.*

Fourthly, for the forensic litigation and fraud prevention, the t-statistic and p-value indicates a positive and insignificant effect (t = 1.500; p = 0.135) as shown in Table 4.3. Consequently, the null hypothesis four: "Forensic litigation has no significant effect on fraud prevention in Public Sector in Nigeria" based model 2b is accepted (p > 0.05), that is, forensic litigation has significant effect on fraud prevention in Public Sector in Nigeria. Based on the t-statistic for every 1% increase in forensic investigation there is insignificant an increase of 3.487% in fraud prevention by Public Sector in Nigeria.

The finding of this study is only partially consistent with the study of Adam et al. (2024) that emphasized that improving the forensic litigation can sufficiently prevent financial frauds. Similarly, while negating the finding of this study, Ojo-Agbodu, et al. (2022) also indicated a positive significant effect of forensic litigation on fraud prevention but however supported this study by concluding that there is significant positive association between forensic litigation and fraud prevention in Public Sector in Nigeria.

5.0 Conclusion

In the course of this study on the effect of forensic analysis on fraud management in Public Sector in Nigeria, certain findings were achieved and based on these findings, conclusions. Generally, this study concludes that forensic analysis has significantly and positively affect fraud management in Public Sector in Nigeria. This implies that the forensic analysis approaches used in Public Sector in Nigeria has contributed to the detection and subsequent reduction in financial frauds in the institutions. However, this study reaches the following specific conclusions. This study further revealed that forensic investigation has significant positive effect on fraud prevention in Public Sector in Nigeria. It is therefore the opinion of this study based on this finding that Public Sector in Nigeria have deployed the necessary forensic investigation skills to prevent fraud within the system. More than ever before, the forensic experts in the financial institutions are using their skills to prevent fraud which has resulted in the reduction in the occurrence of fraudulent activities in the bank especially as it relates to internet and online fraud. The finding of this study also indicated that forensic litigation has no significant positive effect on fraud prevention in Public Sector in Nigeria. Based on this assertion, this conclude that forensic litigation has not achieved the required potential because the regulatory framework required to support effective and efficient legal actions in the courts are readily not available and where available do not have sufficient provisions for litigations.

This study therefore offers some recommendations to improve the prevention of fraud in Public Sector in Nigeria. First, the public sector institutions should make adequate investments in advanced digital fraud detection mechanisms or technologies and also provide for continuous training for forensic experts that can significantly enhance fraud prevention.

Second, the public sector institution should encourage and promote ethical leadership and ensuring the deployment of culture of integrity and accountability as a way to improving fraud management. Third, the regulatory authorities in the public sector institutions should make it a policy and as a matter of prerequisite requirement for all the public sector institutions in the country to establish a functional forensic unit or section to monitor financial activities with the aim to managing fraud. Lastly, the regulatory bodies such as the government should revise the operational details guiding financial fraud management with the aim to improving public sector institutions' in fraud detection capacity and the mitigation of irregularity efficaciousness, so as to be more successfully in the incorporation forensic analysis measures and practices.

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