

Effect of Fraud Analytic and Fraud Auditing on Fraud Management in Federal Government Ministries in Nigeria

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Abstract

Fraud has long been a pervasive issue within government organizations worldwide, and Nigeria is no exception. Federal Ministries in Nigeria, like many public institutions, have faced significant challenges in detecting, preventing, and mitigating fraudulent activities. This study examined effect of fraud investigation and fraud auditing on fraud management in selected federal government ministries in Nigeria. The Population for this study consisted of all the 1550 staff of the Office of the Auditor General of the Federation. However, respondents for this study is Five Hundred and Twenty (520) of them are assigned forensic duties. Primary data was collected using 5-point Likert scale structured questionnaire for the study, the study employed the Partial Least Square Structural Equation Modeling (PLS-SEM) to model the regression analysis. The analysis revealed that fraud auditing has positive and significant effect on fraud management, also the it was found that fraud analytic has positive and significant effect on fraud management. It is concluded that fraud auditing and fraud analytic has positive and significant effect on fraud management in the under study federal government ministries and agencies in Nigeria, Based on the study's findings, it is recommended that organizations should ensure that adequate resources, including financial and human resources, are allocated to support the fraud auditor efforts. It is recommended that organizations should utilizes sophisticated techniques to analyze vast amounts of data from various sources such as transaction records, customer information, and external databases.

Key words: *Fraud Auditing, Fraud Analytic, Fraud Management*

Introduction

Fraud has long been a pervasive issue within government organizations worldwide, and Nigeria is no exception. Federal Ministries in Nigeria, like many public institutions, have faced significant challenges in detecting, preventing, and mitigating fraudulent activities. The misappropriation of public funds, embezzlement, and corrupt practices have not only hindered the efficient functioning of these ministries but have also eroded public trust in the government. Nigeria, with its complex administrative structure and vast public expenditure, has encountered a multitude of fraudulent activities within its federal ministries. Fraudulent schemes range from bribery and corruption to procurement fraud, payroll fraud, and asset misappropriation. These fraudulent acts divert significant financial resources away from essential public services, hinder socioeconomic

development, and tarnish the image of the Nigerian government. To combat this problem, there is an increasing recognition of the importance of forensic accounting practices in enhancing fraud management within federal ministries in Nigeria.

Globally, corruption has received attention with several international agreements aimed at addressing it. Corruption presents serious threats to economic growth, individual livelihoods, and civil society across the world.

The United Nations Convention Against Corruption (UNCAC) of which Nigeria is a signatory requires UNCAC State parties to the Convention to undertake effective measures to prevent corruption (Chapter II, articles 7 to 14), criminalise corrupt acts, and ensure effective law enforcement (Chapter III, articles 15 to 42), cooperate with other State parties in enforcing anti-corruption laws (Chapter IV, articles 43 to 50), and assist one another in the return of assets obtained through corruption (Chapter V, articles 51 to 59) The world in trying to be free from the frequent rise in white-collar crimes came up with the introduction of various anti-crimes agencies to fight financial crimes, irregularities and other fraudulent activities in all sectors of the economy (Simeunovic, et al., 2016; Temitope 2016; Sujatha & Gomez 2015). The detection and evidences of fraud on it are comparatively more obscure and difficult (Gottschalk 2010).

The collapse of companies like the Enron case and many others were some of the major recent events that led to the development of forensic accounting (Kleinman & Anandarajan, 2011; Eyisi & Agbaeze 2014; Rezaee et al 2016). In the last few years, authorities responsible for the establishment of laws came up with laws that would assist auditors and accountants to detect fraud within the organisations (DiGabriele, 2011; Sujatha & Gomez 2015). These laws, for example, the Sarbanes Oxley Act 2002, culminated into the establishment of the Public Company Accounting Oversight Board as well as the Accounting Standards (DiGabriele 2008; Simeunovic et al 2016) to deal with fraud primarily in the private sector. The forensic accounting practices necessitated and equipped auditors with forensic skills (DiGabriele 2009; Ojo 2012; Rezaee et al. 2016).

The issue of fraud is one of the critical ethical issues militating against the development of any nation, to fulfill its social, political and economic obligations to its citizens, hence, effective fraud management system is a fundamental requirement. In general, fraud prevention is not only important in the process of improving the quality of public service but also the quality of life of populace (Tapang & Ihendinihu, 2020).

There have been conscious efforts on the part of the Office of the Auditor-General for the Federation to deploy Forensic Accounting practices in the auditing of the accounts of the Federal Government Ministries, Departments and Agencies. This has resulted in Forensic Audit from 2021 of the following Federal Government MDAs: Nigeria Immigration Service, Nigeria Custom Service, Foreign Affairs Ministry, Police Trust Fund and the Federal Government Staff Loans Board. In addition, the Office of the Auditor General for the Federation equally established a Forensic Laboratory for the Office in July 2021. It would not have been out of place to carry out an empirical study of this nature so as to see the extent to which the Forensic practices undertaken by the Office of the Auditor General for the Federation has helped in fraud management.

Most activities of government globally are centred on improving public confidence in the management of its funds through enacted reforms and series of measures aimed at improving the efficiency of resource mobilization and allocation. However, many countries in Africa struggle

with the most appropriate approach to ensure effective fraud prevention. According to studies, government agencies, structures and procedures reforms in charge of different areas of national finance in Africa are fragile, and are mostly unable to create satisfactory budgets, controlling public spending, and effectively utilizing government funds and resources. (Khersiat, 2018).

Forensic practice is the tripartite practice of utilizing accounting, auditing and investigative skills to assist in legal matters. It is a specialized field of accounting that describes engagements that result from actual or anticipated disputes or litigation. Ehioghiren and Atu (2016) averred that forensic accounting practices encompasses three major areas, investigation, dispute resolution and litigation support. Forensic accounting practices have been identified as tools in detecting and implementing of white-collar investigations (Hansen, 2009). Degboro and Olofinsola (2007) described forensic accounting practices as the application of criminalist methods, and integration of accounting investigative activities and law procedures to detect and investigate financial crimes and related accounting misdeeds. According to Enofe et al., (2016) forensic accountants play a role in litigation support services in the public sector and are relevant in documentation and reporting. It has been observed that forensic accounting practices play a significant role in curbing crime and corrupt practices in any public sector since it provides a mechanism to hold people accountable, such that those who manage resources in any fiduciary capacity do not easily abuse that trust without detection.

Investigative auditing fraud analytics and financial forensic skills are all used in forensic accounting practices to help in court proceedings (Enofe et al 2016). In addition, forensic accounting requires practitioners to be expert consultants during auditing with special investigative services skills that provide accounting facts in times of prosecution (Nigrini, 2020). It involves the application of special skills in accounting, auditing, finance, quantitative methods, law and research (Crain et al., 2019). It is the relationship of accounting, law and prosecution, and it includes legal assistance, investigation, and dispute resolution (Eze, 2019; Umar et al., 2020).

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Since the 1990s, studies on various aspects of Forensic Accounting have emerged. These include research on forensic accounting education (e.g. Rezaee et al., 1992; Rezaee et al., 2004); specialised skills and technical abilities of Forensic Accountants (e.g Davis et al., 2010; Digabriele, 2008; Nunn et al., 2006; Rosen, 2006); and the role of Forensic Accountants (e.g. Apostolou & Crumbley, 2005; Messmer, 2004; Ramaswamy, 2005). The current work has been motivated to build on empirical works on the role of forensic accountants in the public sector in Nigeria considering the uniqueness and dearth of researches in the area.

Majority of establishments today including the public sector have put more effort into strengthening the forensic accounting system to increase their capacity to examine and manage fraud related issues and general misappropriation of assets. These efforts have led to the seeming improvement in due process, fraud prevention and improved management of public money (Gbegi, & Adebisi, 2015). However, despite the solidification of forensic accounting in government parastatals, the objectives are not attained at the expected level.

With the development of accounting knowledge, fraud has become increasingly complex with impressive outcomes as fraudsters have become more seriously innovative with adverse impacts (Herbert, et al., 2017).

The empirical studies reviewed have major gaps showing that even though there have been an increasing number of empirical literature (Ile & Odimegwa, 2018; Khersiat, 2018; Dada & Jimoh, 2020) that have examined forensic accounting practices as a way of helping the organizations manage fraud, the results remained inconsistent and mixed. Moreover, the studies have used different variables and methodology to investigate fraud management but none of these studies used fraud investigation, fraud analytic support, financial forensics and fraud auditing as forensic accounting practices. Thus, it is essential to confirm and establish the relationship between forensic accounting practices and fraud management in the context of these practices. In addition, most of the studies had been exploratory, while this current study fills the empirical gap.

This study identified some population gaps because most of the studies used private sector and financial institutions while the current study is focused on public sector and the methodological gaps identified in this study is that most studies used ordinary least square (OLS) model as a tool for analysis while the current study will be using partial least square model (PLSM) to fill these gaps found in previous studies. The current study will be highlighting and focusing on the vital position which forensic accounting practices (forensic investigation, fraud analytic support, financial forensics and fraud auditing) play in fraud management in selected Federal Government Ministries in Nigeria.

The study also identified theoretical gaps. For example, previous studies used theories like fraud diamond theory, fraud triangle theory and pentagon fraud theory only concentrated on individual and occurrence of fraud, however, the gap is that those theories have no institutional setting and element of corporate governance which will help us to nip fraud occurrence in the board. It is against that background that this study has identified a theoretical gap and will be making use of the principal agency theory as well as the fraud hexagon theory. The main objective of this study is to investigate the effect of fraud investigation and fraud auditing on fraud management in selected federal government ministries in Nigeria. The specific objectives are to:

examine the effect of fraud analytic on fraud management in selected federal government ministries in Nigeria.

evaluate the effect of fraud auditing on fraud management in selected federal government ministries in Nigeria.

The following null hypotheses was formulated

H0₁: Fraud analytic has no significant effect on fraud management in selected federal government ministries in Nigeria.

Ho2: Fraud auditing has no significant effect on fraud management in selected federal government ministries in Nigeria

Literature review

Concept of fraud auditing

Hillison et al., (2019) defined fraud audit as a process of detecting intentional act performed involving the use of deceit in order to obtain an unfair or illegal advantage. Fraud audit looks into financial Statement Audit which brings a series of explanations concerning the distinction between fraud and error from the perspective of the intention of the person who commits it, in order to steal assets or to resort to fraudulent financial reporting.

Wiley (2019) stated that fraud audit aim at creating an environment that would encourage the detection, prevention, and correction of fraudulent actions. The fraud auditor needs a series of knowledge and abilities related to: the main fraud schemes, the triggering factors, and the profiles of those who commit such acts, corresponding red flags, obtained through financial analysis, accounting and auditing standards, the way of implementing an efficient control system, and information systems.

Fadzil et al., (2015) viewed fraud audit as a process of looking into a financial statement to enable the auditor to express an opinion whether the financial statements are prepared, in all material respects, in accordance with an identified financial reporting framework and that the financial statements give a true and fair view or present fairly, in all material respects of the financial results and state of affairs of the client entity. Although the auditor's opinion enhances the credibility of the financial statements, the user cannot assume that the opinion is an assurance as to the future viability of the entity nor the efficiency or effectiveness with which management has conducted the affairs of the entity.

Kabir (2019) described fraud audit as a way of detecting errors and fraud; to prevent errors and fraud; and to help the client to improve upon his accounting and internal control systems. It must be emphasised that audit is not designed to detect errors, fraud and significant weaknesses in the client's systems but the audit work should be carried out in such a manner as to be able to expose errors, frauds and weaknesses. Also, the expectation of the people on the issues of the auditors' responsibilities in detecting and curtailing fraudulent act are high. As a result, a significant number of people or respondents believed that auditors' responsibilities should be widened.

Fraud Auditing

Hillison et al., (2019) defined fraud audit as a process of detecting intentional act performed by one or several managing individuals, upon persons responsible for governance, employees, or third parties, involving the use of deceit in order to obtain an unfair or illegal advantage. Fraud audit looks into financial Statement Audit which brings a series of explanations concerning the distinction between fraud and error from the perspective of the intention of the person who commits it, in order to steal assets or to resort to fraudulent financial reporting.

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Onuorah and Ebimobowei (2012) saw fraud audit as a process of summarising and adapting investigative auditing, criminology, litigation services, and financial skills to uncovering fraud. He further affirmed that forensic accounting is a discipline that is made up of fraud knowledge, financial expertise and a sound knowledge and understanding of business reality and the working of the legal system. Fraud is a social malady which keeps the perpetrators enriched and elevated in the society in the temporal period it occurs while it causes pains, frustration, losses and economic retrogression to the victims, be it individual, corporate bodies and the nations at large.

Nkiru and Jane (2016) described fraud audit as the application of financial skills and investigative ability within the context of rule of evidence to examine unsettled issues. Fraud audit plays a very essential role in the business organisations. It facilitates the prevention, detection and investigation of fraud and other economic crimes in the economy. Fraud audit cover, fraudulent financial transactions, legal elements of fraud investigation, criminology and ethics. Forensic auditing or accounting is that aspect of accounting that provides analysis suitable to the court which will form the basis for discussion, debate and ultimate dispute resolution. Fraud is one of the evils irrespective of peoples' status, age, ethnicity, religion and organisation affiliation consciously and unconsciously indulged in through varying methods, approaches and tactics.

Sabo (2016) described fraud auditor as one who is charged with the responsibility of examining and reporting on the financial statements so as to detect any misappropriations or fraudulent practices. It is also seen as "an examination and evaluation of a firm's or individual's financial information for use as evidence in event". During a forensic auditing, professionals compile and assess financial information to be used in legal proceedings, whereas the auditing is conducted by forensic auditors who rely on the principles of law, business and ethics. These reports are sometimes used to prepare legal defences as well as prosecuting a party for fraud, embezzlement or other financial claims.

Ezeilo (2017) defined fraud audit as “audit that are performed to investigate incident of possible fraud or misappropriation of institution funds.” It is usually seen as an audit that takes place as a result of report of unusual or suspicious activity on the part of an individual or a department. It usually focuses on specific aspects of the work of a department or individual in relation to fraud and corruption, so as to examine how the systems can be reinforced for fraud prevention and detection. He further explains that fraud audit is a valuable part of audit toolkit because it focuses on the risks that threaten achievement such as risk of fraudulent claims for expenditure, fraudulent provision of services to an organisation or fraud and evasion of revenue payments (Onuorah & Ebimobowei, 2012).

Fraud Analytic and fraud management

Anichebe and Juliana (2020), assessed the extent to which the adoption of fraud analytic can assist in combating financial crimes in Nigeria’s public sector. The researchers obtained the data for the study via a combination of administered questionnaires and personal interviews of 88 respondents drawn from selected government ministries. The study found a positive and significant relationship between fraud analytic and the reduction of financial crimes. The study recommended the need to establish clear cut standards and guidelines to strengthen the practice and adoption of forensic auditing in Nigeria’s public sector.

Thomas (2021), examined forensic accounting and Big Data in Fraud Analytics: Identifying the Main Data Protection Challenges for Public Administrations in Nigeria. The study adopted survey research design with a sample size of 27 public companies. Questionnaires were utilised to gather data while SPSS was used to analyse the data collected. Findings from the study indicated that the adoption of Fraud Analytic significantly and positively affect the prevention of frauds in public companies in Nigeria. The study recommended that any Fraud Analytics processing must be fair and transparent, and the data subjects must be informed about it.

Zardasht et al., (2022) studied the effect of forensic accounting on fraud prevention, the moderating role of internal control effectiveness in Iraq. Quantitative research approach was used to obtain the data, and 230 responses were received from employees working for 110 Iraqi companies, all registered on the Iraqi Stock Exchange. This study used SPSS, to analyse the data. The study revealed that the fraud analytic has a significant impact on fraud prevention in Iraq. Nevertheless, the results showed that forensic accounting techniques don't considerably affect its use. Besides that, there seems to be an explanation - based on verification that internal control challenges processes appear negatively to mitigate the effects of community engagement for forensic accounting and fraud prevention in an organisation. The study recommended that effective internal control practice enhances the forensic accounting and fraud prevention link.

Dada and Audu (2021), examined relevance of forensic accounting in the prevention and detection of tax frauds in federally collected taxes in Nigeria. The survey research design approach was adopted for the study. Data was obtained via a structured questionnaire administered to a population made up of staff members of the Federal Inland Revenue Service (FIRS) and the four main professional accounting firms reputable for rendering forensic accounting investigation services in Nigeria. A sample size of 254 out of 394 respondents was selected using the purposive sampling technique. Reliability of data was premised on a test of internal consistency using the Cronbach Alpha Reliability approach while inferential and descriptive statistics were used to

analyse the data. The study found that forensic accounting had a significant and positive effect on prevention and detection of tax frauds. The study recommended that the training routine of the FIRS staffs be further fortified so as to scale up their proficiency in forensic accounting while the government should consider setting up of witness protection schemes to further increase the confidence of expert witnesses and guarantee their safety.

Okoye (2019), appraised the impact of expert witness testimony on fraud prevention and detection in deposit money banks operating in Nigeria. The study employed the survey research design approach and data was obtained via a combination of personal interviews and administered structured questionnaires. The study showed that expert witness testimony has a statistically positive relationship with fraud detection and prevention. The study thereafter recommended that forensic accountants in the employment of deposit money banks should be empowered to ensure that fraud investigation is always followed through with expert testimony in courts of competent jurisdiction to serve as deterrent to fraud perpetrators.

Fraud Auditing and Fraud management

James (2020) examined the effect of the internal control system and fraud audit on the financial report as well as on the assets of the organisation. A survey method was adopted for the study, the simple random sampling method was adopted for variable selection. Structured questionnaire was used for data collection while the chi-square was used to analyse data collected. The result showed that the fraud audit and management of the firm were responsible for effective working of the internal control system of the organisation and also for fraud prevention. The study recommended that a system that will allow for both upward and down ward flow of information should be established. Ethical standard and norm should be established that will reduce the incidence of fraud and irregularities within the firm. It was also recommended that enhanced and efficient corporate governance practice should be put in place to reduce the incidence of exogenous error, fraud and irregularities.

Olaoye and Dada (2017) examined the impact of fraud audit captured by risk assessment, system audit and verification of financial report on banking fraud control in Southwest Nigeria. The study employed survey design in which a set of questionnaires was administered on the selected banks in Southwest Nigeria. Multiple regression technique and ANOVA were used for the analysis. The result revealed that fraud audit and verification of financial reports adopted by the banking industry in Southwest Nigeria limit the fraudulent activities among the Nigerian banks. The study recommended that auditors should increase the scope of their activities on the efficiency of banks internal control system, risk assessment and system audit as this will enhance the detection of fraudulent activities. Also, management of banks should ensure strict compliance with their respective internal control system.

Uniamikogbo et al., (2019) examined the impact of forensic accounting on fraud audit and prevention in the Nigerian banking sector. The study took a census of the 16 Deposit Money Banks (DMBs) listed on the Nigerian Stock Exchange (NSE) as at 31st December, 2016. The study used the secondary source to collect data from the Nigerian Deposit Insurance Corporations' (NDICs) annual reports of 2013 and 2016 respectively. The study covered a period of five (5) years spanning 2012-2016. Data generated were analysed using charts, graphs, tables and regression. The findings revealed that fraud audit has a significant negative impact on number of fraud cases, number of

staff involved in bank fraud, and actual amount of bank losses through fraud in the Nigerian banking sector. However, forensic auditing has insignificant impact on expected losses generated through fraud activities in the Nigerian banks. The study recommended that banks in Nigeria should intensify the application of forensic auditing in the fight against fraud and forgeries in the system. Also, forensic auditing should be focused on detecting number of fraud as well as staff involvement in the Nigerian banking sector.

Reinstein and Moehrlr (2018) examined the application of forensic accounting and fraud auditing in the mitigation of fraud with particular reference to the accounting firms in Namungu County, Kenya. The Descriptive survey research design was adopted for the study. The sample size of the study consists of 30 accounting firms to which questionnaire were administered to generate data. The primary source of data collection method was used using the responses from the 30 respondents from the 30 accounting firms. The OLS regression was used in analysing the data collected from the primary source. The study found that fraud audit has a significant effect on fraud prevention in accounting firms in Namungu County, Kenya. The study recommended that training and adoption of scientific forensic accounting and fraud audit skills by accounting firms and internal auditors is essential to ensure efficient mitigation against fraud.

Anyaogu (2019) examined fraud auditing and financial crime in Nigerian banks. Survey research design was adopted with a sample size of 50 employees from the recapitalised banks in Owerri, Imo state. Questionnaire was the major instrument used for data collection. Data generated were analysed using frequencies and percentages. The Pearson Product Moment Correlation Coefficient was used to statistically test formulated hypotheses. The findings revealed that fraud auditing helps in minimising the risk of financial crimes in Nigerian banks. The study recommended that forensic audit department should be created in Nigerian banks to initiate internal measures for fighting financial crimes; forensic auditing courses should be introduced in Nigerian higher institutions of learning to provide the necessary skills and knowledge on forensic auditing; forensic audit reports of banks should be made public.

This study was underpinned by principal agent model proposed by Karklins (2005) the principal agent model scenario for the game theory to substantiate the anti-corruption strategies. Karklins (2005:150) assumes: (i) a structure based on three pillars - corrupter, corruptee, third actor -placed in different hypostases of winner or loser; (ii) understanding the interactions between each actor within a succession of scenarios that will form the anti-corruption strategy. The bottom-up approach to the principal agent model would seem particularly promising as a society, being the disadvantaged party in a corruption transaction (Karklins, 2005:152) should have an inherent motivation to fight malfeasance in the public sphere.

However, the argument continues working under the paradigm that there is an actor in the domestic system willing and able to take the role of the principal. Such a premise gives way to the problem of collective action. Rothstein (2005:3, 2011:7) described this position as questioning “the underlying assumption in the principal-agent theory that all societies hold at least one group of actors willing to act like ‘principals’ and, as such, enforce such regimes”. The collective action problem posits that:

In societies ravaged by systemic corruption or simply in those where the issue of corruption does not stay restricted to the higher levels of government but can be found in everyday life (ubiquitous

petty corruption), there may not be any actor willing to take the role of the principal, as it is always more profitable to partake in corruption rather than spend private resources to fight it (Karklins 2005; Uslaner 2008).

In addition, Jain's (2010) theory on corruption posited that corruption thrives on the existence of three central elements, namely: The possession of discretionary power, associated economic rent; and a weak regulatory system that offers a low probability of detection and/or penalty for the wrongdoing. The first two elements are considered as given in Jain's proposition. The discretionary power arises from the latitude vested on ruling authority to loosely take decisions and enact laws, the associated economic rents arise from the enormous economic and social benefits accruable to the individuals in a position of power. Jain posited that the forensic professionals and fraud investigators' mitigation in corrupt practices is at the third element that is, strengthening regulations to make it more difficult for corruption to be perpetrated without detection and to provide indisputable evidence of its occurrence where it inadvertently occurs. The theory proposed that any effective anti-corruption drive must be targeted at improving the regulatory system which will in turn increase Jain's 'probability of detection', consequently reducing the level of corruption.

The Forensic Accounting practices is on the third element of corruption, the detection, and penalty for wrongdoing. The theory further explicated that any increase in Jain's "probability of detection" will result in a decrease in the level of corruption. Therefore, as activities targeted to improve the probability of detection are adequately deployed (such as improved forensic accounting practices, countries should experience less corruption.

METHODOLOGY

The study adopted a descriptive survey research design. The Population for this study consisted of all staff of the Office of the Auditor General of the Federation. According to the Human Resources Department, the total staff strength in the Office of Auditor General for the Federation is one thousand, five hundred and fifty (1550) staff. However, respondents for this study is Five Hundred and Twenty (520) of them are assigned forensic duties. They served as the population for the study. However, respondents for this study were selected using purposive sampling techniques. The sample size for this study is made up of those assigned forensic duties in government agencies and staff that are chartered members of Chartered Institute of Forensics and Certified Fraud Investigators of Nigeria (CIFCFIN) and other foreign bodies such as Association of Certified Fraud Examiners. Finally, the staff must have received forensic training and undertaking forensic duties that are assigned to the selected Ministries, Department and Agencies (MDAs). Those selected MDAs are; Nigeria Customs Services, Nigeria Immigration Services, Foreign Affairs, Police Trust Fund and Federal Government Staff Loans Board where the Office of the Auditor General for the Federation has already commenced forensic accounting.

Out of the Five Hundred and Twenty (520) that were assigned Forensic Accounting duties in the selected Ministries, Departments and Agencies; those that met the purposive selection criteria were Four Hundred and Forty (440) which served as sample for the study. Primary data was collected using 5-point Likert scale structured questionnaire for the study. The study employed the Partial Least Square Structural Equation Modeling (PLS-SEM) to model the regression analysis. The PLS path modeling method was developed by Wold (1982). The PLS algorithm is a sequence of

regressions in terms of weight vectors. The weight vectors obtained at convergence satisfy fixed point equations. PLS-SEM is a non-parametric method that does not require that the data meet certain distributional assumptions. However, the parametric significance tests (e.g., as used in regression analyses) cannot be applied to test whether coefficients such as outer weights, outer loadings and path coefficients are significant. Instead, PLS-SEM relies on a nonparametric bootstrap procedure to test the significance of various results such as path coefficients, Cronbach's alpha, HTMT, and R² values. (Efron & Tibshirani, 1986; Davison & Hinkley, 1997). The model for the path analysis is specified thus:

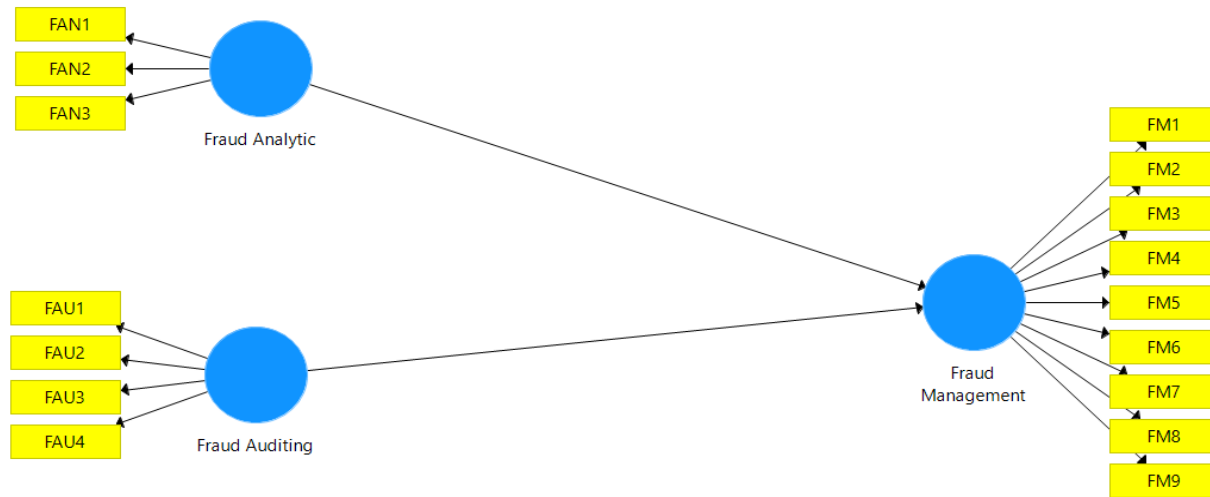


Fig.1: Theoretical Model on Effect of forensic accounting practices on fraud management

RESULTS AND DISCUSSION

Of the four hundred and forty (440) distributed questionnaires, 429 were properly filled and returned giving a response rate of 98%. Subsequently, all further analyses were done using 345 responses data.

Table 4.1: Descriptive Statistics

variable	Mean	Median	Min	Max	SDV	Kurtosis	Skewness
FAU	4.46	5.00	1.00	5.00	0.96	-1.59	-0.09
FAN	3.95	4.14	1.00	5.00	0.97	0.90	-0.98
FM	4.51	5.00	1.00	5.00	0.89	0.20	-0.68

Source: SMART, PLS Output, 2024.

Data on the study variables were described in Table 4.1 above in terms of the mean, minimum, maximum, standard deviation, skewness and kurtosis values. Fraud Auditing (FAU) revealed an average value of 4.46 with a standard deviation value of 0.96. However, the minimum and maximum values stood at 1 and 5 respectively. Fraud analytic (FAN) had minimum and maximum values of 1 and 5 respectively however, it showed an average of 3.95 along with a standard deviation of 0.97. Furthermore, Fraud Management (FM) showed a minimum value of 1 and a maximum value of 5 with an average value of 4.51 accompanied with a standard deviation value

of 0.89. All the skewness and kurtosis values were less than 1 which shows that there is a normal distribution of data.

Assessment of Measurement Model

In assessing the measurement model, the researcher began by assessing the item outer loadings. As a rule, loadings above 0.708 are recommended, as they indicate that the construct explains more than 50 percent of the indicator's variance, thus providing acceptable item reliability (Hair, et al., 2019). However, Hair, et al., (2019) posited that low but significant indicator loading of 0.50 can be included hence justifying why indicators with loadings less than 0.708 and above 0.50 were not deleted from the model as seen in figure 2 below.

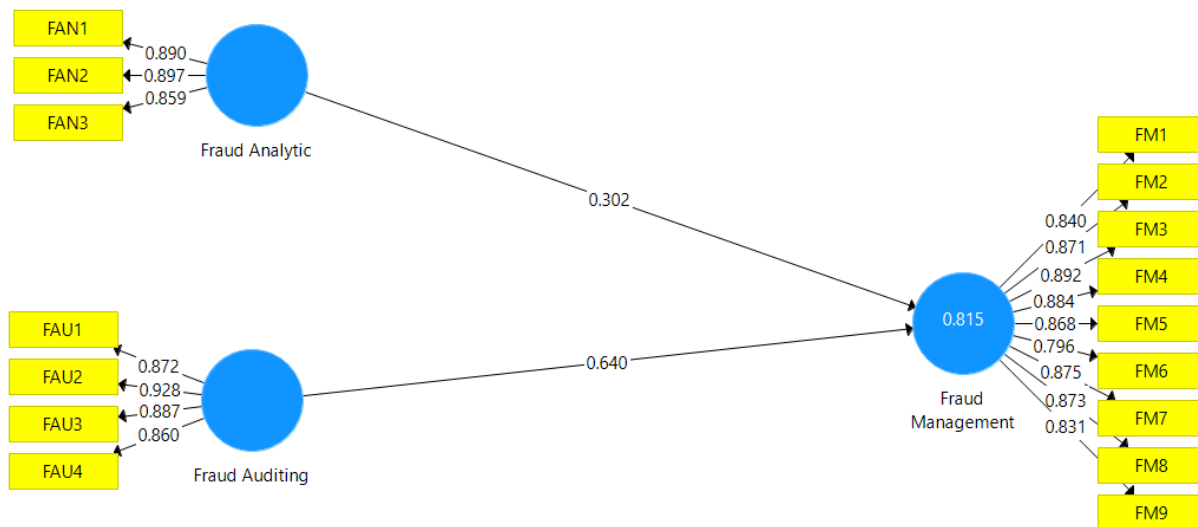


Fig 2: Indicator Loadings

Table 4.2: Reliability of study scale

S/N	Variables		Factor Loadings	Cronbach Alpha	Composite Reliability	Average Variance Extracted (AVE)	No of Items
1	Fraud Auditing (FAU)	FAU1 FAU2 FAU3 FAU4	0.872 0.928 0.887 0.860	0.909	0.937	0.787	3
2	Fraud Analytic (FAN)	FAN1 FAN2 FAN3	0.890 0.897 0.859	0.857	0.913	0.778	4

3	Fraud Management (FM)	FM1	0.840	0.956	0.962	0.739	9
		FM2	0.871				
		FM3	0.891				
		FM4	0.885				
		FM5	0.868				
		FM6	0.797				
		FM7	0.872				
		FM8	0.873				
		FM9	0.831				

Source: SmartPLS Output, 2024

Composite reliability of Jöreskog’s (1971) was applied to test for internal consistency of the study. All the values fall within the Hair, et al., (2019) rating of good consistency. The Cronbach alpha value was above 0.60 which is the minimum threshold as recommended by Sekaran (2010). To test for the convergent validity, the average variance extracted (AVE) was used. All the latent variables showed values greater than 0.50 which indicates that the constructs explain at least 50 percent of the variance of its items. According to Henseler, et al., (2015) the Fornell-Larcker criterion does not perform well when explaining discriminant validity, particularly when the indicator loadings on a construct differ only slightly. As a replacement, they proposed the Heterotrait-Monotrait (HTMT) ratio of the correlations which is the mean value of the item correlations across constructs relative to the (geometric) mean of the average correlations for the items measuring the same construct (Voorhees et al., 2016). Discriminant validity problems are present when HTMT values are high than 0.90 for structural models (Henseler, et al., 2015).

Heterotrait-Monotrait Ratio (HTMT)

	FAU	FAN	FM
FAU	1.000		
FAN	0.047	1.000	
FM	0.058	0.462	1.000

Source: SmartPLS Output, 2024

The variance inflation factor (VIF) was used to evaluate collinearity of the formative indicators. All the VIF values were less than 5 indicate the absence of critical collinearity issues among the indicators of formatively measured constructs (Hair, et al., 2019).

Model Goodness of Fit (GoF)

Sequel to the need to validate the PLS model, there is a need to assess the goodness of fit of the model as Hair, et al. (2017) suggested. This study used the standardised root mean square residual’s (SRMR). The choice of this index was based on the fact that the SRMR provides the absolute fit measure where a value of zero indicates a perfect fit. The study adopted Hu & Bentler (1998) suggestion that a value of less than 0.08 represents a good fit while applying SRMR for model goodness of fit. The study result indicates an SRMR value of 0.030. This indicates the model is fit.

Assessing the Structural Model

Having satisfied the measurement model assessment, the next step in evaluating PLS-SEM results is to assess the structural model. Standard assessment criteria, which was considered include the

path coefficient, t-values, p-values and coefficient of determination (R^2). The bootstrapping procedure was conducted using a resample of 5000.

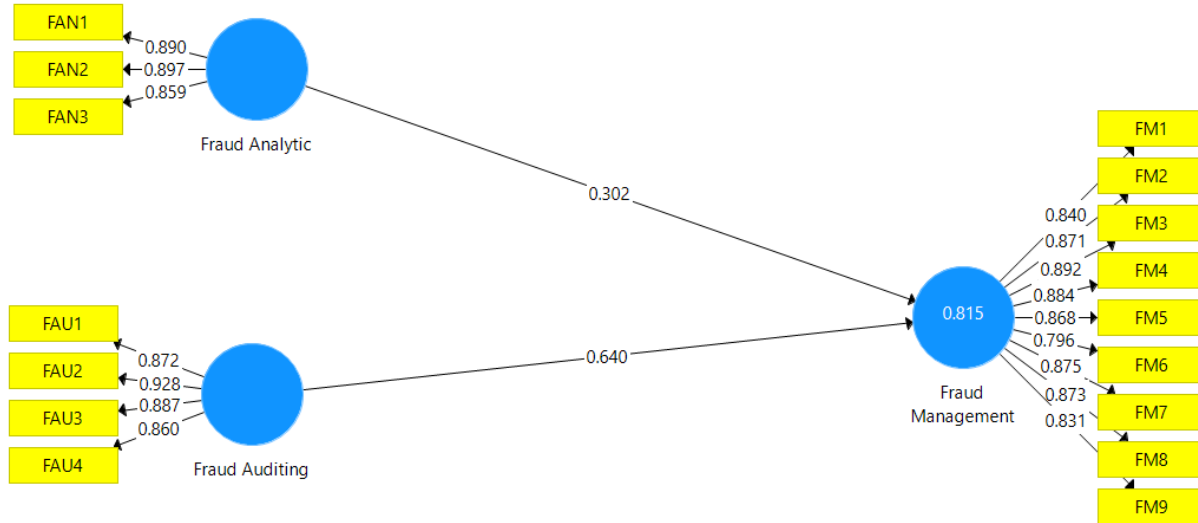


Fig. 3: Path Coefficients of the Regression Model.

The R-square value stood at 82% indicating that Forensic accounting practices proxied by fraud investigation and fraud analytic are responsible for 78% variation in fraud management. The remaining 22% variation could be explained by other factors not included in the study. Based on Hair, et al., (2019), the r-square is considered moderate but doesn't negate the findings of the study. The result of the path analysis is presented in the table below:

Table 4.4: Path Coefficients

Hypothesis	Variable	Path Coefficient ***(Beta)	t-value	p-value	Findings
H ₀₁	Fraud Auditing -> Fraud Management	0.640	9.989	0.000	Rejected
H ₀₂	Fraud Analytic -> Fraud Management	0.302	4.552	0.000	Rejected

Source: SmartPLS Output, 2024

The result from the analysis indicates that fraud auditing has positive and significant effect on fraud management. The decision was reached based on the t-value of 9.989 which is greater than 1.964 and a beta value of 0.640 with a p-value of 0.000. The positive effect implies that an increase in fraud auditing activities is associated with an increase in the effectiveness or success of fraud management. This suggests that when organizations invest more resources, effort, or attention in fraud auditor, it leads to better outcomes in managing fraud-related issues. This finding is in agreement with that of Yudha and Muhammad (2021) who both found fraud auditing to be positive and significantly effect on fraud management.

The result from the analysis indicates that fraud analytic has positive and significant effect on fraud management. The decision was reached based on the t-value of 4.552 which is greater than 1.964 and a beta value of 0.302 with a p-value of 0.000. The finding suggests that an increase in the use or application of fraud analytics is associated with a positive impact on fraud management. This implies that employing fraud analytics techniques, tools, or strategies can contribute to more effective fraud management practices. This finding agrees with that of Anichebe and Juliana (2020) who made similar findings about fraud analytic and fraud management.

CONCLUSION AND RECOMMENDATIONS

It is concluded that fraud auditing and fraud analytic has positive and significant effect on fraud management in the under study federal government ministries and agencies in Nigeria. Based on the study's findings, it is recommended that organizations should ensure that adequate resources, including financial and human resources, are allocated to support the fraud auditor efforts. This may involve dedicating skilled personnel, such as fraud investigators or forensic accountants, to handle fraud cases effectively.

It is recommended that organizations should utilize sophisticated techniques to analyze vast amounts of data from various sources such as transaction records, customer information, and external databases. By applying advanced algorithms, statistical models, and artificial intelligence, it can uncover hidden patterns, correlations, and anomalies that human analysts may overlook. This enables organizations to gain comprehensive insights into fraudulent activities and their underlying causes.

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