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

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Abstract
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. This study examined the effect of fraud analytic and financial forensic on fraud management in 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 study found that fraud analytic has positive and significant effect on fraud management. Also, it was found that financial forensic has positive and significant effect on fraud management. It is concluded that fraud analytic and financial forensic has positive and significant effect on fraud management in the under study federal government ministries in Nigeria. Based on the study's findings, it is recommended that Federal government ministries in Nigeria should invest in building and enhancing their financial forensic capabilities. It is recommended that the government through the Office of the Auditor for the Federation should invest in advanced fraud analytics tools and technology to enhance fraud management capabilities within federal government ministries and agency.

Key wards: Fraud Analytic, Financial Forensic, Fraud Management

Introduction

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).

There have been conscious efforts on the part of the Office of the Auditor General for the Federation to put in place 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 is therefore exigent to carry out an empirical study of this nature to examine the extent to which the Forensic Practices undertaken by the Office of the Auditor General for the Federation has helped in Fraud Management.

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 & Odimmega, 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 financial forensics on fraud management in selected federal government ministries in Nigeria.

The following null hypotheses was formulated

H0$_1$: Fraud analytic has no significant effect on fraud management in selected federal government ministries in Nigeria.

Ho2: Financial forensics has no significant effect on fraud management in selected federal government ministries in Nigeria

Literature review

Concept of fraud analytic

Baesens et al., (2015) observed that fraud analytics refer to the use of Big Data Analytics to detect fraud. Numerous techniques, from data mining to social network analysis, are applied to detect various types of fraud. While Fraud Analytics offers the promise of more efficiency in fighting fraud, it also raises data protection challenges for public administrations. Indeed, whether they use traditional or advanced techniques, administrations consistently use more and more data to deliver public services.

Winter and Davidson (2019) referred to fraud analytics as the use of advanced analytics (data mining, big data analysis, or artificial intelligence) to detect fraud. The use of advanced analytics in organisations without appropriate organisational change can lead to ethical challenges and privacy issues. While fraud analytics offers the promise of more efficiency in fighting fraud, public administrations face additional constraints, such as the need to be trusted by the citizens and to comply with the legal framework. Whether they use traditional or advanced techniques, administrations consistently use more and more data and automatic processing and AI-based techniques to deliver public services.

Klievink et al., (2017) stated that fraud analytics is the process of using data analytics in discovering the presence or existence of fraud. Fraud detection can be accomplished through the use of well designed internal controls, supervision and monitoring and the active search for evidence of potential fraud. They stated further that the core principles of administrative law have to be considered as well, since fraud analytics take place in the context of the administrations' pursuit of their public service missions. As the use of such technologies could have a strong impact on the lives of their citizens, it is fundamental for public administrations to balance the opportunities they offer with the need to comply with these legal requirements.

Kemp (2014) viewed fraud analytics to be more efficiency in fighting fraud, public administrations face additional constraints, such as the need to be trusted by the citizens and to comply with legal requirements. Indeed, whether they use traditional or advanced techniques, administrations consistently use more and more (big) data to deliver public services. In this regard, they often need to process citizen's personal data, defined by the General Data Protection Regulation.

Wachter et al., (2017) described fraud analytic as the in-depth examination of the meaning and essential features of available data, in order to identify significant information, using specific methods and techniques. It's an interdisciplinary domain which includes branches such as science computers (computer science), mathematical sciences, statistical, economic, psychology, law and other cognitive sciences. This careful examination of data identifies data gaps, strengths, weaknesses, dysfunction, vulnerabilities and risk factors that may constitute threats and finally suggests guidelines. Although on the field, there are several concepts of data analysis such as intelligence analysis, business analysis etc., they all have common components. The differences depend on the scope, nature of the data, analytical products, practical utility and applicability.

De Roux et al., (2018) referred to Fraud Analytic as a system in which fraud prevention and detection is done through the help of Big Data Analytics. Fraud involves inclusively significant financial risks which may threaten profitability, and the image of an economic entity. In these circumstances, in which development of the IT systems play a central role in the creation of competitive companies, the amount of processed data has grown exponentially. Internal control team members should need to look at every transaction that takes place, but unfortunately this issue can no longer be manually performed, requiring the use of data analysis tools and programs. Since the companies usually operate with large volumes of data, it is absolutely necessary to implement such processes of continuous monitoring, in order to identify anomalies in the data stream or behavioral patterns, potentially fraudulent.

Hildebrandt, (2019) described fraud analytic as the process of finding and reporting of fraud and irregularities is the responsibility of everyone within the organisation, and it is equally important that an organisation has appropriate mechanisms of reporting. Risk management procedures are more useful methods also to detect fraud. With permitting resources an organisation should form a strong internal audit team that would monitor and give advice on risk management issues and actively looking for fraud instances. It is not the responsibility of the external auditors to detect and prevent fraud, even though they should give reasonable assurance that the financial statements are free from misstatements (fraud and error).

Financial forensic

Kasum (2019) stated that financial forensics may be used in prevention, detection and recovery activities to investigate terrorism and other criminal activity, provide oversight to private-sector and government organisations, and assess organisations' vulnerability to fraudulent activities. This could also be referred as an attempt to prevent a deliberate act by one or more individuals among employees, management, those charged with governance or third parties connecting the use of fraudulent act to obtain an unjust or unlawful benefit.

Suleiman et al. (2018) viewed financial forensics as the process of utilising accounting, auditing, and investigative skills to analyse a company's financial statements for possible fraud in conjunction with anticipated or ongoing legal action. Financial forensics is significantly used by intelligence agencies as well, such as the Federal Bureau of Investigation (FBI) and the Central Intelligence Agency (CIA) to uncover terrorism. As terrorist groups need funding to exist, this is a very effective measure in discovering terrorist cells.

Wikipedia dictionary describes financial forensics as crimes against property, involving the unlawful conversion of property belonging to another to one's own. This definition is all-embracing and conceivably includes financial crimes in corporate organisation. This includes bribes cronyism, nepotism, political donation, kickbacks, artificial pricing and frauds of all kinds. The array of components of financial crimes, some of which are highlighted above, is not exhaustive.

Popoola et al., (2016) described financial forensics as the activities that include the investigation of criminal and illicit activities committed with the objective of earning wealth illegally… in a manner that violates existing legislation and these include any form of fraud, narcotic drug, trafficking, money laundering, embezzlement, bribery, looting and any form of corrupt malpractices and child labour, illegal oil bunkering and illegal mining, tax evasion, foreign exchange malpractice including counterfeiting, currency, theft of intellectual property and piracy, open market abuse, dumping of toxic waste and prohibited goods.

Eiya and Otalor (2013) viewed financial forensics as the process of investigating a fraud or any other crime against property. It may be in respect of falsification of the ownership of property belonging to another as one's own personal use and benefit. Financial crimes may be carried out by individuals, corporations, or by organised crimes against individuals, corporate bodies and governments. Financial crimes involve corruptions, bribery, political donation, nepotism, kickbacks, artificial pricing and frauds of all kinds.

Financial Forensics has been defined as an activity that involves the collection, verification, analysis and reporting of data with the aim of collecting evidence to use in a court of law. The focus of forensic audit is the in-depth investigation and detection of fraud and it involves investigating the fraud and providing litigation support services in the court of law (Knezevic, 2015). Forensic Auditing is the systematic application of auditing skills to situations or circumstances that have legal implications or consequences.

According to Dada et al., (2021), financial forensic arises from the integration of accounting, investigative auditing, criminology and litigation services. Forensic auditors are experts in financial matters who are trained in detecting, investigating and deterring fraud and white-collar crimes which are to be presented to court for legal action or to public discussion and debate. The incidence of fraud and misappropriation of funds in recent time pose a threat to traditional auditing as a branch of accounting profession because of its perennial nature.

Modugu and Anyaduba, (2013) described financial forensics as a tripartite practice of utilising accounting, auditing and investigative skills to assist in legal matters. It is a specialised field of accounting that describes engagements that result from actual or anticipated disputes or litigation. Financial forensic can, therefore, be seen as an aspect of accounting that is suitable for legal review and offering the highest level of assurance. Forensic auditing is perceived to have evolved in response to certain emerging fraud related cases. The scandals that recently rocked the corporate world with classical examples being often cited Enron and WorldCom cases have also brought the field of forensic auditing to the forefront.

Okoye et al., (2015) saw financial forensic as encapsulating all other investigation related areas in uncovering financial fraud. The increasing sophistication of financial fraud requires that forensic auditing be added to the tools necessary to bring about the successful investigation and prosecution of those individuals involved in criminal activities.

Efosa and Kingsley (2016) viewed financial forensic as a discipline that has its own models and methodologies of investigative procedures that search for assurance, attestation and advisory perspective to produce legal evidence. It is concerned with the evidentiary nature of accounting data, and as a practical field concerned with accounting fraud and forensic auditing; compliance, due diligence and risk assessment; detection of financial misrepresentation and financial statement fraud.

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.

Financial Forensic and Fraud management

Ubong (2016) examined the role of financial forensic and its effects on the management of fraud in microfinance institutions in Delta State. Study adopted a survey research design. Data were collected from both primary and secondary sources and analysed using the ordinary least square technique. The study found that financial forensic plays a significant role in the detection and prevention of crimes and corruption in the selected micro finance banks in Asaba, Delta State. The study recommended that the managements of micro finance banks in Asaba should develop more interest in financial forensic for monitoring and investigating suspected culprits in fraud cases. Managers appointed to manage and run microfinance banks should be tested and the integrity and trustworthiness should be proven before they are appointed to manage and oversee the affairs and the activities of the banks.

Nnamdi (2018) conducted a study on the effect of financial forensic on the management of Bank fraud in Nigeria. The study adopted non-probability sampling technique to select the five (5) commercial banks used as population for the study. Based on the analysis of variance (ANOVA) the findings of the study revealed that possession of basic financial forensic skills significantly reduces the occurrence of fraud cases in the banking sector and that there is a significant difference between services of forensic accountants and External auditors, and that the presence of financial forensic in banks can aid in reducing fraud cases.

Oladeji (2019) examined the effect of financial forensic on financial fraud in Nigerian Deposit Money Bank. The study adopted cross sectional survey design. The population of the study comprised the staff of banks and audit firms in Abeokuta, Ogun State. The study used purposive sampling technique for questionnaire administration while logistic regression analysis was used for data analysis. The study revealed that financial forensic significantly and positively affect the

reduction of financial fraud cases in DMBs. The study recommended that appropriate sanctions should be applied when fraud is detected. Where prosecution is considered to be the appropriate anction, proper Forensic procedures need to be followed during investigation and trained experts like the Professional Forensic Accountants should conduct the investigation, where there is evidence of fraud, appropriate disciplinary action in accordance with the Provision of Public Service Rules should be implemented.

Onyali and Ochanya (2017) examined the effect of forensic accounting and financial forensic methods in corporate fraud deterrence in Nigerian Banks. This study adopted a survey research design and data from primary source were collected through interviews and administration of questionnaires, while secondary source consisted of reports on fraud and forgery in the banking sector. Statistical tools used to analyse the data include percentages, mean score, frequency tables, regression analysis and Z-test. The finding revealed that expert services of financial forensic are normally required in the detection of fraud. The study recommended that financial forensic should embark on more training in maintaining the effectiveness of the strategy for the detection and prevention of fraud and corruption and its general credibility.

Ironkwe (2018) examined the relationship between financial forensic and fraudulent practices in Nigerian public institutions. The survey method of research design was adopted in generating the necessary data. Population of the study consisted of 12 public institutions in Rivers State, Nigeria. In order to gather the data for the study, a structured questionnaire was administered on the internal auditors and chief accountants of the selected public institutions. The data generated for the study were analysed with frequencies and percentages, while the stated hypotheses were statistically tested with the Pearson Product Moment Correlation Coefficient, which was computed with the aid of the Statistical Packages for Social Sciences (SPSS) Version 17. The findings revealed that both the proactive and reactive financial forensic have a negative significant relationship with fraudulent practices in Nigerian public institutions. The study recommended that the government needs to support induction and work related financial forensic, particularly for employees involved in internal control system and the accounting sector, to ensure their responsibilities and duties are regularly highlighted and reinforced and that best practices are followed across organisations service.

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 2012).

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 R^2 values. (Efron & Tibshirani, 1986; Davison & Hinkley, 1997). The model for the path analysis is specified thus:
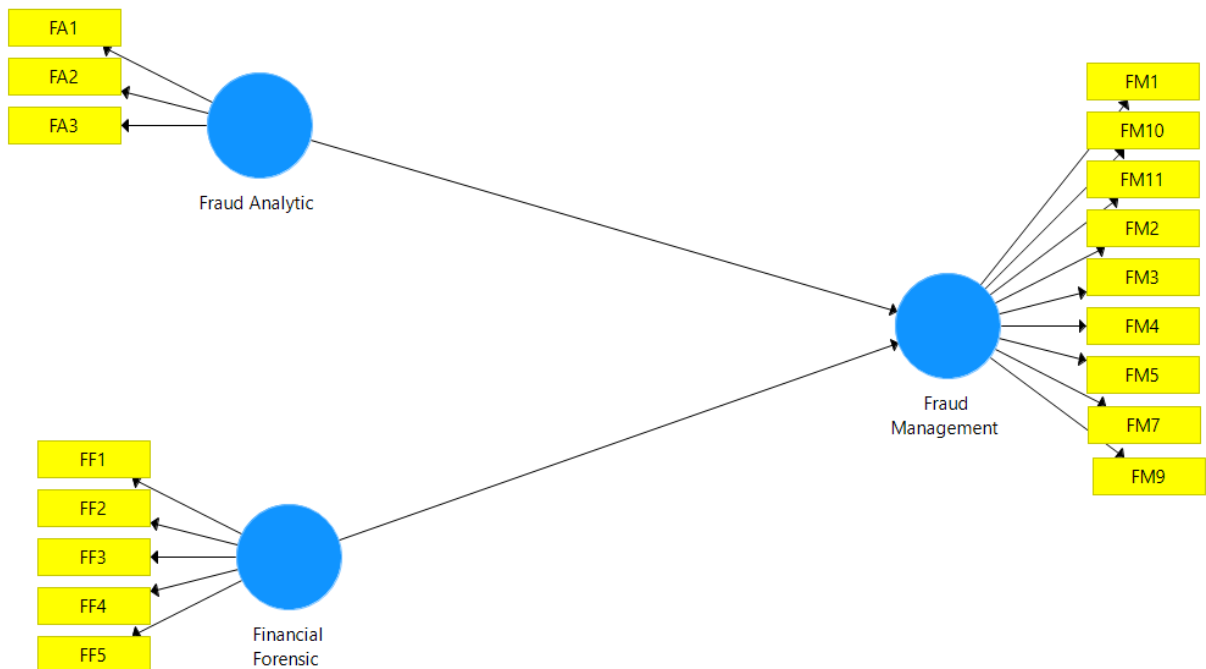
Fig.1: Theoretical Model on Effect of forensic accounting practices on fraud management

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
FA	4.7	5.00	1.00	5.00	0.96	-1.59	-0.09
FF	4.07	4.44	1.00	5.00	0.97	0.90	-0.98
FM	4.50	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 Analytic (FA) had minimum and maximum values of 1 and 5 respectively however, it showed an average of 4.07 along with a standard deviation of 0.97. Financial Forensic (FF) revealed an average value of 4.7 with a standard deviation value of 0.96. However, the minimum and maximum values stood at 1 and 5 respectively. Furthermore, Fraud Management (FM) showed a minimum value of 1 and a maximum value of 5 with an average value of 4.50 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.
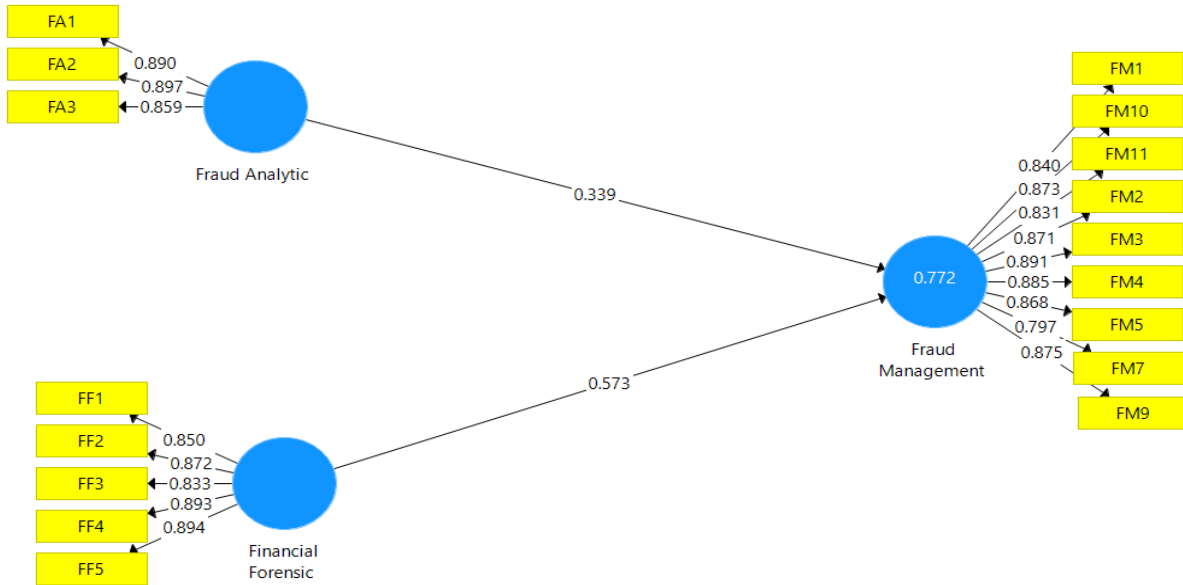
Fig 2: Indicator Loadings

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 Analytic (FA)	FA1 FA2 FA3	0.890 0.897 0.859	0.857	0.913	0.778	3
2	Financial Forensic (FF)	FF1 FF2 FF3 FF4 FF5	0.850 0.872 0.833 0.893 0.894	0.919	0.939	0.755	5
3	Fraud Management (FM)	FM1 FM2 FM3 FM4 FM5 FM7 FM9 FM10 FM11	0.840 0.871 0.891 0.885 0.868 0.797 0.875 0.873 0.831	0.956	0.962	0.739	9

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 were above 0.60 which is the minimum threshold as recommended by Sekaran (2001). 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)

|	FF	FA	FM
FF	1.000		
FA	0.056	1.000	
FM	0.075	0.432	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.
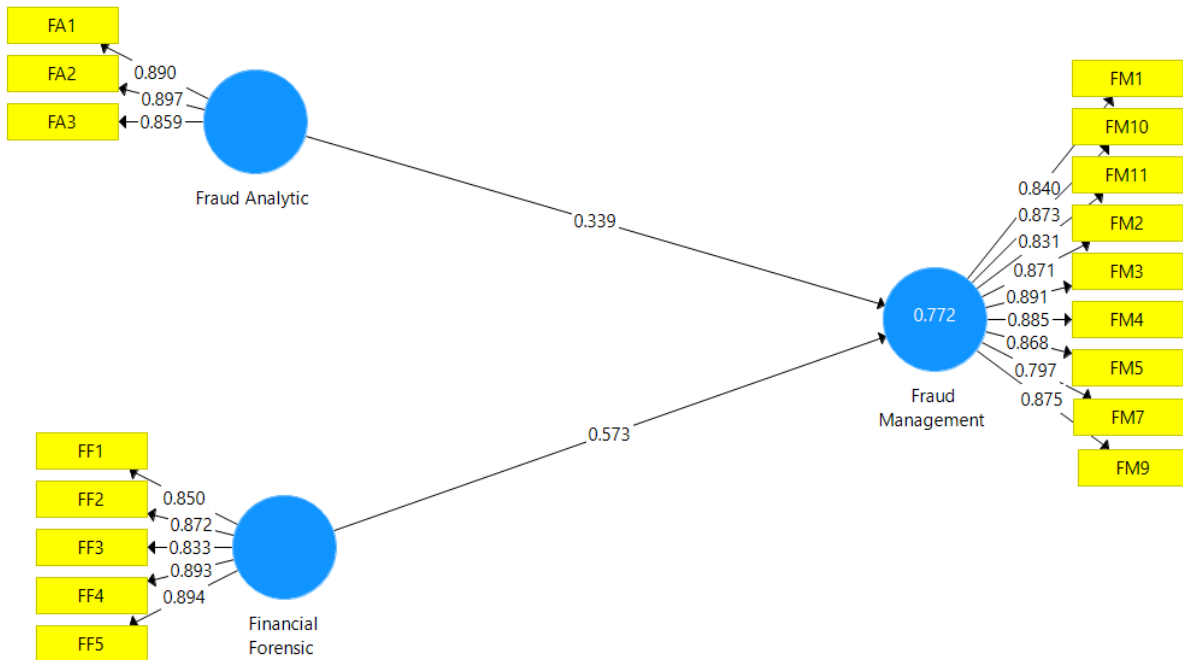
Fig. 3: Path Coefficients of the Regression Model.

The R-square value stood at 77% indicating that Forensic accounting practices proxied by financial forensic and fraud audit are responsible for 77% variation in fraud management. The remaining 23% variation could be explained by other factors not included in the study. Based on Hair, et al., (2019), the r-square is considered substantial. 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
Ho$_1$	**Fraud analytic -> Fraud Management**	0.339	5.048	0.000	Rejected
Ho$_2$	**Financial Forensic-> Fraud Management**	0.573	7.991	0.000	Rejected

Source: SmartPLS Output, 2024

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 5.048 which is greater than 1.964 and a beta value of 0.339 with a p-value of 0.000. The positive effect implies that fraud analytic and fraud management practices can help organizations detect and prevent fraudulent activities more effectively. This finding is in agreement with that of Dada and Audu (2021) who found that fraud analytic to be positive and significantly effect on fraud management.

The result from the analysis indicates that financial forensic has positive and significant effect on fraud management. The decision was reached based on the t-value of 7.991 which is greater than 1.964 and a beta value of 0. 573 with a p-value of 0.000. This implies that financial forensic often uncover suspicious activities or red flags that require further investigation. Organizations that have a positive and significant effect of financial forensic on fraud management are likely to have well-established processes for responding to potential fraud incidents and conducting thorough investigations. This finding agrees with that of Uniamikogbo et al., (2019) who made similar findings about financial forensic and fraud management.

CONCLUSION AND RECOMMENDATIONS

It is concluded that fraud analytic and financial forensic has positive and significant effect on fraud management in the under study federal government ministries in Nigeria, Based on the study's findings, it is recommended that Federal government ministries in Nigeria should invest in building and enhancing their financial forensic capabilities. This can be achieved by providing training and resources to personnel involved in fraud management, such as forensic accountants, investigators, and auditors. By equipping these individuals with the necessary skills and tools, ministries can improve their capacity to investigate and analyze financial irregularities effectively.

It is recommended that the government through the Office of the Auditor for the Federation should invest in advanced fraud analytics tools and technology to enhance fraud management capabilities within federal government ministries and agency. These tools can include data mining, predictive modelling, anomaly detection, and artificial intelligence-based algorithms. By utilising such tools, the government forensic accountants and auditors can identify patterns, trends and anomalies in financial data thereby enabling early detection and prevention of fraudulent activities.

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