Adebayo, Aderemi Olalere; Olagunju, Adebayo; Bankole, Oluwaseun Emmanuel

Article

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FRAUD RISK MANAGEMENT AND FRAUD REDUCTION: EVIDENCE FROM THE NIGERIAN OIL AND GAS SECTOR

[1]Aderemi Olalere Adebayo, [2]Adebayo Olagunju & [3]Oluwaseun Emmanuel Bankole
Department of Accounting
Osun State University, Osogbo, Nigeria

[1]Corresponding author: lereadebayo@gmail.com

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ABSTRACT

The study examined the effect of fraud risk management techniques on fraud reduction in the oil and gas sector in Nigeria. The study used primary data which were obtained through a structured questionnaire. The population of the study consisted of 106 staff of the two top firms in the oil and gas sector in Nigeria. A total of 54 staff were purposively selected from the accounting department and 52 from the risk management department. They were selected due to their knowledge and expertise in field of study. A hundred copies of the study questionnaire were retrieved, and the data analysis was done using an ANOVA test. The findings showed that fraud risk management techniques, which included internal control, whistle blowing, fraud awareness/training, and fraud response, had a significant and positive effect on fraud reduction. Computer forensic exhibited a negative, but significant effect on fraud reduction. The study concluded that fraud risk management techniques effectively enhanced fraud reduction in the oil and gas sector. It has therefore, recommended that fraud risk management techniques should be widely employed in the oil and gas sector in Nigeria as it has been proven to be effective in fraud reduction.

Keywords: Fraud reduction, fraud response, fraud risk management, internal control, whistle blowing.

INTRODUCTION

Fraud is an inherent part of business life, affecting businesses of various sizes and through all sectors including oil and gas (Hashim et al., 2020). Fraud has become a highly germane and relevant business issue in the 21st century following runs of large corporate scandals and failures. In the recent past, financial fraud has led to the bankruptcies of once remarkable companies such as Enron, WorldCom, Tyco, Parmalat, Global Crossing, Lehman Brothers, Texaco, just to mention a few, has also triggered the recession of 2009. In Nigeria, the Nigeria Deposit Insurance Corporation (NDIC) had reported a significant rise in reported fraud cases by 356 percent and likewise, a 224 percent increase in financial loss from fraud among financial institutions between the period 2014 to 2018 (Salawu, 2019). Though fraud has been in existence throughout history, one might argue that the risks of fraud for most businesses are bigger currently than in the past. Fraud poses a serious threat to business interests worldwide (Inaya & Isito, 2016). Fraud risk is evolving into a bigger issue for businesses. Business executives and organisations operating in the oil and gas sector are among those who have endured and suffered the significant consequences of fraud. In the Nigerian oil sector, according to the Extractive Industries Transparency Initiatives [EITI] (2013), the country lost an estimated 300,000 barrels per day of crude oil, or 11 billion dollars (1.8 trillion Naira) per annum to fraud, theft, and corruption. Similarly, in 2021 the Nigerian National Petroleum Corporation (NNPC), the body in charge of the management of the oil and gas sector in Nigeria, disclosed that the country lost over 200,000 barrel of crude oil daily to theft (excluding other fraudulent means) which amounted to a value of 13 million dollars. These losses reflect a worrying pattern of fraud and a significant shortfall in curbing fraud in the sector over a long period (Abdullahi & Manor, 2018).

It is noteworthy that fraud can be seen as a worldwide phenomenon that affects all countries, regions, sectors, and businesses of any economy (Klynveld Peat Marwick Goerdeler [KPMG], 2014; Price Waterhouse Coopers [PWC], 2011). According to the Institute of Internal Auditors (IIA, 2019), no country or company is immune to the negative effects of fraud. Fraud comprises a wide range of unlawful practices and criminal acts, ranging from misrepresentation of facts to intentional deceit. Fraud cases often include complicated financial dealings carried out by white-collar criminals, such as professionals with special knowledge and skill, but with criminal intent. It is an activity that has severe or dire consequences for individuals, businesses, and the entire economy (Suh et al., 2019).

Fraud in Nigeria's Oil and Gas sector is a growing menace. The purported resource curse, combined with the petroleum industry's dynamic system, makes the oil and gas sector predominantly susceptible to fraud, from the first speculation about potential oil in the ground through all stages ending in the spending (or misspending) of oil revenues (EITI, 2013). The scale of fraud in this industry has become monumental and the impact has been devastating on the country's economy. Despite various actions taken by the local and federal governments of Nigeria and those measures put in place by the international community, such as the United Nations, EITI, Organisation for Economic Co-operation and Development (OECD), and the World Bank Group, the incidences of fraud in the Oil and Gas sector in Nigeria have not been on the decline. The risks of fraud, bribery and corruption in this sector remain widespread and multifaceted and often involve foreign investors, the country, the national oil corporation and local businesses. The Oil and Gas industry is highly complex in structure and organisation. The fiscal, legal and commercial structure governing revenue flows are typically even more complex. These permit a relatively easy avenue for manipulation of revenue flow for personal or political gain and the means to obscure these deeds. The complex and opaque structures of the Oil and Gas industry make it difficult to determine precisely how, when and to what degree corruption has been able to fester.

Surveys conducted by auditing and accounting consultancies such as Ernst and Young (EY, 2014), KPMG (2009), IIA (2019), and PWC (2011) highlighted that although new anti-fraud legislation and regulations have led to an increased awareness of compliance responsibilities, the threat of fraud is still constant. Thus, the PWC (2014) opined that a formal fraud risk management program remains the most effective fraud detection and reduction method. Studies on the effectiveness of fraud risk management techniques in fraud reduction have been carried out on the financial sector (Abiola, 2009; Kuria & Moronge, 2014; Ohando, 2015; Okoye et al., 2019), but there is still an observed paucity of research concerning the Oil and Gas sector in Nigeria.

Fraud has been recognised as the main obstacle hampering the rapid growth and development of the Nigerian economy. Okoye et al. (2019) opined that fraud cut across all levels of Nigeria's economy. Similarly, Ajao et al. (2013) has vehemently argued that fraud will weaken good government administration, fundamentally misrepresent government policy, result in the embezzlement of resources, damage the private sector and its development, and in particular hurt the citizens' standard of living. Usman (2011) affirmed that Nigeria's Oil and Gas industry could be described as a conduit of fraud and corruption for the few political and ruling elites. It is therefore pertinent for this study to examine the effectiveness of fraud risk management techniques in reducing fraud in the Oil and Gas sector of Nigeria.

LITERATURE REVIEW

Fraud Risk

Fraud is one of the many major risks a business, government or an individual may encounter (Onodi et al., 2017). Risk, from the perspective of fraud management, is the susceptibility or exposure a business has to fraud. Risk management is vital to fraud control. It helps shape the development of an effective fraud control plan and supplementary strategies to curtail the chances of fraud occurrence. Risk management makes available a structured framework to help in identifying, analysing, evaluating and curtailing fraud risks. It combines a probability of fraud occurrence and the resultant effect in financial terms. According to Abdullahi and Mansor (2018), fraud is an intent to deceive. Fraud risk is, therefore, the probability that a person may commit a deceptive act of fraud to obtain a benefit that has an impact on the organisation and is comprised of three elements, including the fraud methodology, control effectiveness and the level of the perpetrator's dishonesty and skill.

Fraud Risk Management

Fraud risk management is a structure of coordinated actions set up by organisations to enhance prevention, detection and prompt a matching response to cases of fraud (KPMG, 2009). Lutui and Ahokovi (2017) expressed the importance of risk management as the understanding of the nature of events that poses threats and making positive plans to mitigate them. They further noted that fraud is a major risk whose management is crucial not only to the financial wellbeing of an organisation, but also to the organisation's reputation and image. Similarly, Paulinus and Jones (2017) noted an urgent need for fraud risk management in the modern business environment. They opined that fraud risk management is essential to fraud control by regulating the development of an effective fraud control strategy, and activities to reduce the prospects of fraud occurrence. Fraud risk management provides a framework to institute measures that could identify, evaluate and curb fraud risks (Ohando, 2015).

Fraud management is crucial for businesses to make certain that fraud is prevented as much as possible and if it does occur, enhance detection and swift response. It is a significant portion of a business's corporate governance. Global guidelines and principles for fraud risk management were prescribed by the framework of the Committee of Sponsoring Organizations (COSO) and the ISO 31000:2009 guidelines of the International Organisation for Standardization (2018). Both guidelines focus on the elements of the fraud triangle as propounded by Cressey (1953). The guidelines noted that pressure, opportunities and rationalisation of fraud needs to be curbed by using fraud prevention, detection and response techniques. This highlights the major key strategies in fraud risk management. The strategies were grouped into the following three fundamental techniques: (1) Fraud prevention techniques**,** which consist of those techniques intended to inhibit fraud from happening at all; (2) Fraud detection techniques**,** which comprise techniques that enhance the discovery of fraud swiftly, in case of failure of fraud prevention measures; and (3) Fraud response, which includes the systems and structures that will assist an organisation to respond aptly to a suspected fraud case once it is detected.

Fraud

The term fraud is commonly associated with activities such as theft, corruption, conspiracy, embezzlement, money laundering, bribery and extortion according to the Chartered Institute of Management Accountant (CIMA, ?date). The legal definition of fraud varies from country to country. Some countries have legal provisions in place for various types of fraud, while others have general provisions in their constitution concerning fraud. Fraud as a generic term could be described as all the multifarious means which human ingenuity can devise, which are resorted to by individuals to get an advantage over another by false representations. No certain and consistent rule can be laid down as a general proposition in defining fraud, as it includes actions such as surprise, trickery, cunning and unfair ways by which another is cheated. Albrecht et al. (2009) noted that the only limit to fraud is those which involve human dishonesty. They noted that fraud essentially involves using deception to make a personal gain for oneself while creating a loss for another.

In Nigeria, the definition of fraud can be found in Chapter 38, Section 419 of the Nigerian Criminal Code which defined it as the act of obtaining property by false pretence. The section states that "any person who by false pretence and with intent to defraud, obtains from any other person anything capable of being stolen, or induces any other person to deliver to any other person anything capable of being stolen is guilty of a felony and is liable to imprisonment for three years".

There are mainly two categories of fraud, and they are internal and external fraud. Nevertheless, based on the kind of fraudster, Salawu (2019) identified three types of fraud, namely internal, external and mixed fraud. He defined internal frauds as frauds performed by employees of an organisation, including the directors of the organisation. External frauds are frauds committed by other individuals who are not part of the organisation. Whenever an employee of an organisation colludes with an individual outside the organisation to perpetrate fraud, this is referred to as mixed fraud.

According to the Association of Certified Fraud Examiners (ACFE), fraud can be classified based on fraud cases. The ACFE (2010) classified fraud cases into three primary categories as follows: asset misappropriation, corruption and financial statement fraud schemes.

Fraud Prevention Techniques

A critical method of dealing with fraud is to engage techniques that could decrease motive, curb opportunities, and bound the potential capacity of a fraudster to rationalise his/her deeds. Taufikn (2019) explained fraud prevention techniques as actions that hindered fraud occurrence. Therefore, the objective of fraud preventive techniques is to minimise opportunities and eliminate the temptations of probable offenders. Sanusi et al. (2015) noted that, of all the three fraud risk management strategies, fraud prevention is the least costly. Furthermore, Hussaini et al. (2019) argued that the best approach to fraud risk management is fraud prevention. That study opined that fraud prevention techniques were often based on organisational processes which could be significantly improved if fraud prevention techniques were adopted. It is more profitable and preferable to prevent losses. Therefore, fraud prevention techniques can ensure the stability and going concern of an organisation. Nevertheless, most businesses do not have a formal strategy for fraud prevention. Consequently, when fraud occurs, there is a slender likelihood of recovering the asset involved.

Fraud Detection Techniques

It is noteworthy that, fraud prevention techniques are effective in minimising fraud occurrence but cannot assure 100 percent effectiveness in fraud eradication. Companies, therefore need to employ additional fraud detection techniques. According to Bangura (2020), fraud detection is a crucial aspect of fraud risk management. Fraud detection techniques are those activities and schemes put in place for the identification of current or potential fraud in an organisation. Fraud detection should be included as part of an organisation's anti-fraud strategy to discover and halt fraud occurrence and its effect at the earliest possible time. An effective fraud detection strategy saves financial resources and protects the going concern of an organisation and its stakeholders. Fraud detection and prevention both have a significant role to play and it is doubtful that either will be very effective without the other.

According to Karanja (2018), fraud detection techniques include whistleblowing, computer forensic audit, random internal audit review and monitoring. Similarly, KPMG (2014) observed that a surprise internal audit review, whistleblowing and personnel shuffling are the most effective fraud detection techniques. Hassaini et al. (2019) opined that there is a high level of hesitation by workers to report fraud cases in organisations and therefore, most fraud cases are undetected.

Fraud Response

Fraud response denotes those plans of acts that are prompted when a suspected act of fraud is reported, discovered or, detected. Fraud response is a vital feature of the overall fraud management framework. It provides stakeholders with a reasonable assurance that fraud perpetrators are identified and suitable penalties are consistently meted out for such acts. CIMA (2009) noted the importance of a comprehensive response to a detected fraud, as this would reinforce a sound preventive strategy. The purpose of these plans is to define the responsibilities for actions, CIMA (2009) noted five reasonable steps for responding to fraud. These include clear channels of reporting, detailed investigation is carried out, penalising of persons liable for a fraudulent act, recovering losses, and modification of fraud risk management strategy to prevent a similar occurrence.

Fraud Reduction

This refers to the identification of various causes of fraud and eliminating the potential of such causes for fraud. Fraud reduction is a major objective of fraud strategies and is often the least costly of all types of fraud management. It should be noted that fraud is an act that can only occur when the right circumstance exists. Suryandari et al. (2019) posited that fraud risk management is an effective approach to achieve fraud reduction, particularly through fraud prevention. According to Hu et al. (2019), two major factors that contribute to fraud risk reduction are external and internal factors. They asserted that internal factors such as internal controls, company ethical culture and highly competent governance management will aid fraud risk reduction, while external factors, such as organisational transparency and stakeholder's involvement could aid in reducing fraud risk.

Globally, fraud occurrences have led to the need for government measures to respond to unethical standards, which have included passing legislative and regulatory reforms. In Nigeria, similar regulations and statutes have been enacted to help organisations and corporate bodies to encourage and foster fraud risk reduction. This includes the enactment of the code of conduct bureau and the tribunal Act 1990, the corrupt practices and other related offences Act 2000, and the economic and financial crimes commission (Establishment) Act 2004. Nevertheless, Baer (2008) noted that it is doubtful that any strategy could in reality, completely eradicate fraud, as perpetrators are constantly evolving both in knowledge and resources to evade consequences. Nevertheless, the challenge remains that fraud occurrences can and must be reduced. To achieve significant fraud reduction, a combination of sound fraud risk management strategy and governmental effort is required (Baer, 2008). It was also noted that corporate fraud management strategies have to rely on government enforcement of criminal sanctions, which could serve as the basis of a fraud response strategy and the deterrence factor in fraud prevention (Baer, 2008).

Theoretical Review and Framework

White Collar Crime Theory

White collar crime theory was first introduced by Edwin Sutherland (1940). Sutherland (1940) initially defined white collar crime as a crime committed by an individual of high social status and standard in the function of their profession. Sutherland (1947) argued that other criminal theories were incomplete and unsound as they failed to consistently fit and predict the data of criminal behaviour. He further opined that the available criminal theories were biased in their sample of criminal cases. Sutherland's view and concern at the time could be called a selection sample bias. Sutherland (1983) finally concluded that all form of crimes emerged from the same rational process. He asserted that white collar crimes were all related to a breach of trust that was committed by the performer through his or her work that resulted in social disorganisation or loss. White collar crime is generally seen as synonymous with the world of business and bureaucracy, but could also be extended in application to the other faces of fraud in the world. The major way of distinguishing one white collar crime from other types of crime is that they are carried out as part of the job function

According to Sutherland (1983), criminal behaviour is learned or copied from one another. He noted that workers learned by observing their co-workers and began to justify their own acts of fraud. White collar criminals are opportunists, who over time, learn to take undue advantage of their position to acquire undue advantage (Apel & Paternoster, 2009). They are often educated, intelligent and qualified to attain high positions (Sutherland, 1983). Regularly, white collar criminals evade justice on their criminal act by hiding behind the economic class structure. These economic and social classes are more likely to blame individuals with a lower social status, which incidentally are often the subordinate(s) of the offenders (Braithwaite, 1985). According to Friedrichs (2019), white collar crime theory has argued that in order to reduce fraud, a strong preventive, detection and response strategy must be employed to attain fraud reduction.

Fraud Triangle

The fraud triangle seeks to explain the elements that are present before the occurrence of fraud. Cressey (1953) theorised that, the fraud triangle consisted of three elements that were noticeable in all cases of fraud studied by him. These were, opportunity, incentive or pressure and rationalisation. These three elements constitute a fraud triangle. Employing the fraud triangle to examine why individuals perpetrate fraud would enable this study to understand and appreciate better the rationale for committing fraud. Enofe et al. (2015) have pointed out that the fraud triangle theory can help to explain the main motives for an official to commit fraud. These motives are elaborated on below:

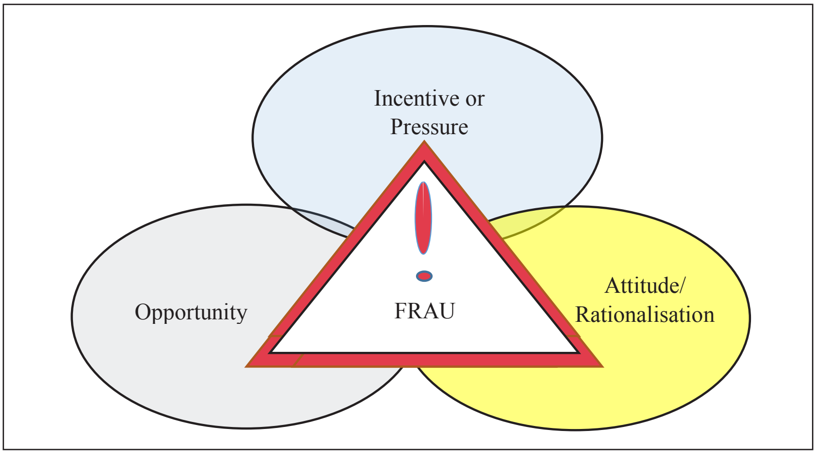
Pressure Motive: This states that fraud is committed due to the overwhelming personal financial burdens and obligations encountered by employees. The debts are usually far above the legitimate means through the income accruable to the employees and so they cannot meet their monetary obligations. Therefore, they are induced to commit fraud. Salawu (2019) noted that sometimes wealthy people still continued to commit fraud was because of their insatiable need and wants. A fraudster may feel pressured to maintain a certain social status in order to keep up with his peers or colleagues at the work place.

Most pressures involve financial needs in the form of personal issues, such as gambling, drug addiction, medical needs, etc., which cannot be relieved through legitimate means. Although, other psychological pressures such as meeting set organisational performance targets, frustration with work could also induce one to commit fraud.

Regardless, any individual exhibiting significant financial stress and pressure is to be considered at risk.

Figure 1

The Classical Fraud Triangle



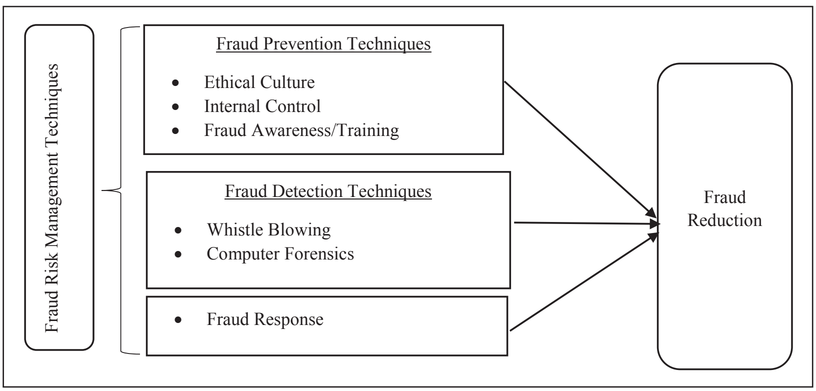
Note. The relationship between fraud triangle components as propounded by Cressey (1953)

Opportunity Motive: According to Suryandari (2019), the opportunity to commit fraud do exist due to a weakness or loophole in the internal control system and the poor supervision of an organisation's resources. Wells (2008) described the two types of opportunities available, which are general information opportunity and technical skill opportunity. General information opportunity is when the individual is aware that fraud can be committed while, technical skill opportunity is when the individual is aware that he has the ability to carry out a fraudulent act. *Rationalisation Motive*: This type of motive suggests that fraud is perpetrated by public officers or employees with an ethical perspective that allows the justification of fraud (Olaoye & Adebayo, 2019). It explains that officials justify the reasons for committing fraud, such as the poor salary system, irregularity of salary payment, high cost of living (salaries that do not reflect the reality of rising living costs), poor working conditions, entitlement and so on. These officials justify their act by making it an acceptable decision in light of their current circumstances. Cressey (1953) believes that rationalisation is a significant part of the motivation for crime and that the fraudster does not see himself as a criminal. He further concluded that for fraud to exist, these three motives must persist.

Although, Cressey's fraud triangle has been widely accepted by both professionals and academics in the field of fraud examination, critics such as Wolfe and Hermanson (2004), Dorminey et al. (2010) and Mark (2012) have argued that the fraud triangle model alone is an inadequate tool for deterring, preventing and detecting fraud, although it was adopted as the foundation for the advancement of various fraud theories by these authors.

Figure 2

Conceptual Framework



Note. Conceptualization of the fraud risk management technique on fraud reduction

Conceptual Framework

Organisations cannot afford to be unconcerned about fraud risk. While high prolific incidences of fraud have involved gross misstatement of company financial statements, in reality, fraud manifests itself in several and often unique forms. This is because there is no specific rule which can be used to predict fraud (Olaoye & Adebayo, 2019). Organisations which have not made any concise effort to detect and prevent fraud have potentially exposed themselves to liabilities, significant wealth loss, regulatory censure, reputation damage and sometimes the collapse of their organisations. An effective fraud risk management strategy enhances and maintains the anti-fraud culture within an organisation. Furthermore, it inculcates fraud prevention techniques that act as deterrents, fraud detection techniques that provides clear guidance on roles, responsibilities and pathways to investigate fraud, and finally a fraud response strategy that offers remedial actions where necessary. This study therefore, has adopted a fraud risk management framework in line with the prescription of the COSO and ISO 31000:2009 (2018) on fraud risks reduction and techniques.

Empirical Review

Ohando (2015) explored the relationship between fraud risk management practices and the financial performance of commercial banks in Kenya. Data were collected from 14 commercial banks in Nairobi with the aid of a structured questionnaire. The findings of the study revealed that there was a positive relationship between the fraud risk management practices and the financial performance of commercial banks in Kenya. There was fraud reduction due to the prevention and detection of fraud risk practices. The study found a positive effect of fraud reduction in the financial performance among selected commercial banks. Similarly, Obonyo (2017) assessed the effect of internal audit practices in fraud risk management in Kenya. The study showed that internal audit practices, fraud policies, fraud risk assessment, fraud prevention and detection measures helped in the success of fraud risk management and fraud reduction.

Furthermore, Kiprono and Ng'ang'a (2018) analysed the effectiveness of fraud risk management in aiding the financial performance of the Kenya port authority. The study employed data obtained from a semi-structured questionnaire and the annual financial report. The findings of the study revealed that fraud risk management techniques have helped in fraud reduction and that it had a significant and positive relationship in aiding financial performance.

Similarly, Lutui and Ahokovi (2017) investigated the correlation between fraud risk management and corporate governance. The study showed that corporate ethics exhibited by the management was significant in ensuring a coherent fraud risk management strategy in an organisation. Likewise, Okoye et al. (2019) explored the impact of fraud risk management on the corporate performance of deposit money banks in Nigeria. Data were obtained for the study using the International Fraud Report Checklist (IFRC) on 15 deposit money banks. The findings of the study revealed that fraud risk management techniques as recommended by the IFRC had a significant effect in reducing fraud losses and therefore, had enhanced the positive corporate performance of the sampled banks in Nigeria.

In addition, independent studies conducted by Ernest and Young (2014) reported that companies that implemented a wide range of fraud awareness training had significantly reduced fraud losses by 52 percent. The study further indicated that companies were apportioning more attention and resources to fraud risk management, with a higher focus on fraud detection and reporting. However, the study observed that there was less emphasis on fraud prevention and fraud response.

METHODOLOGY

The present study had some initial difficulty in developing a conceptual framework due to the insufficiency of various fraud theories to cover the scopes of fraud risk management. Nevertheless, a conceptual framework was adapted from the guidelines of the COSO and ISO 31000:2009 (2018) on fraud risks reduction and techniques (see Figure 2). These guidelines posited that fraud prevention techniques (such as ethical culture, fraud awareness and internal control), fraud detection techniques (such as whistle blowing, computer forensic) and fraud response strategy could be employed as a tool for fraud reduction. These constituted the basis of the framework for the present research and therefore, served as a guideline in asserting both the direction and *apriori* expectation of the independent variables.

The economic model of the study which shows the scientific relationship between the dependent and the independent variables are as given in Equation 1:

$$FRM = f\ (EC, IC, WB, FA, CF, FRE)$$

$$FR_i = \beta_0 + \beta_1 EC_i + \beta_2 IC_i + \beta_3 WB_i + \beta_4 FA_i + \beta_5 CF_i + \beta_6 FRE_i + \varepsilon_i \quad (1)$$

where: FR= Fraud Reduction; FRM = Fraud Risk Management; EC = Ethical Culture;
IC = Internal Control; WB = Whistle Blowing; FA = Fraud Awareness/ Training;
CF=ComputerForensic; FRE = Fraud Response; ε = Residual term and β_i = coefficients (i = 0, 1, 2,…,6)
A priori expectation: $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 > 0$

The study has utilised a survey research approach which has enabled the gathering of primary data using a questionnaire. For the purpose of this study, data were gathered using a structured questionnaire. The study has selected the two leading oil and gas companies listed on the Nigerian Stock Exchange in 2021, and they were total and the Oando Petroleum Limited Company.

The two companies were chosen based on their performance and the length of time they were in operation in the industry. Respondents for the study comprised 54 accounting staff and 52 risk management staff selected purposively due to their knowledge about fraud risk management and the internal control mechanisms of their companies. The sample was taken from a population of 106 staff in the accounting and risk management department of the Total, and Oando Petroleum Limited companies. The questionnaire designed using a 4-point Likert scale (excluding neutral/indifference in the 5-point scale) and was administered on the 54 accounting staff and 52 risk management staff of the companies under study.

To analyse the data gathered through the use of the questionnaire, the present study utilised a multiple regression analysis. Multiple regression is appropriate because it depicts the relationship between many independent variables and the dependent variable. Multiple regression also helps to pinpoint the most significant variable from the various variables of the study.

Result and Analysis

Table 1 shows the descriptive analysis of responses concerning fraud risk management techniques and fraud reduction obtained from the two samples of staff identified for the present study. These responses were analysed using the mean and standard deviation to give a summary view of the data obtained from the respondents. The responses from the respondents were based on their level of agreement from the 4-point Likert scale, expressing whether they strongly agree (SA), agree (A), disagree (D) and strongly disagree (SD). A minimum of four items was therefore, used to obtain data on the perception of each of the independent variables on the dependent variable. According to Items 1 and 2 from Table 1, which sought the response concerning the company's ethical culture, had revealed that the respondents perceived that their organisation did provide a good ethical culture that promoted fraud reduction. Nevertheless, it could be observed from Item 13 and Item 14 of Table 1, that the sampled firms did not effectively employ forensic accounting in mitigating and reducing fraud in the oil and gas sector in Nigeria.

Table 1

Distribution of Respondents on the Reduction of Fraud in the Oil & Gas Industry in Nigeria

		SA	A	D	SD	Mean	SD
1	Organisational structure at the top management level help to foster and enforce individual accountability for performance of internal control responsibility	95%	5%	0%	0%	3.97	0.182
2	There are systems in place to regularly communicate to and educate the management and employees on the importance of internal controls and its understanding	92%	0%	5%	3%	3.85	0.535
3	The organization has procedures in place to communicate guides on conduct throughout the organization, including external partners and outsourced service providers	13%	79%	4%	4%	2.85	0.535
4	The organisation provides incentives and other rewards that aligned with the organisation's ethical values and internal control performance	15%	75%	6%	4%	2.85	0.535
5	Employees are provided formal written job descriptions	92%	8%	0%	0%	3.92	0.268
6	Employees are provided with an organizational chart that shows lines of responsibility	89%	10%	0%	1%	3.77	0.578
7	The company has written accounting policies and procedures	92%	8%	0%	0%	3.92	0.268
8	The company has an anti-fraud or anti-bribery policy manual	88%	10%	2%	0%	3.85	0.362
9	There is a formal policy covering approval authority for financial transactions, such as purchasing or travel	91%	9%	0%	0%	3.92	0.326

(continued)

		SA	A	D	SD	Mean	SD
10	The company has an internal audit function	93%	7%	0%	0%	3.96	0.203
11	Compliance with internal controls are audited periodically	89%	11%	0%	0%	3.91	0.310
12	Key fraud risks are often considered in the context of the organisation's internal audit plans	93%	2%	5%	0%	3.46	0.637
13	Forensic accounting has been employed to mitigate risk	0%	2%	38%	60%	1.31	0.725
14	Staff members are being trained in digital techniques to prevent fraud	0%	0%	70%	30%	1.77	0.578
15	The firms' software program provides guidance to management and employees when they need appropriate official advice in difficult situations	91%	8%	0%	0%	3.85	0.362
16	Digital records are well secured and backed-up	80%	15%	5%	0%	3.38	0.741
17	The firm encourages whistle blowing among its staff	92%	7%	0%	0%	3.85	0.535
18	There are proper channels to communicate identified fraud risks to the management	92%	7%	0%	0%	3.85	0.535
19	Fraud reported are swiftly investigated and dealt with by the management	88%	10%	2%	0%	3.69	0.725
20	Where inadequacies have been detected, there are plans in place to mitigate them	13%	52%	23%	13%	2.90	0.357
21	The organisation's fraud risk assessment and control plans are up-to-date	94%	6%	0%	0%	3.92	0.268
22	There are formal processes to regularly review the organisation's fraud risk management strategies	91%	8%	1%	0%	3.84	0.541

Table 2 shows the correlation matrix among the variables. This indicated that there were positive relationships between fraud reduction and internal control, whistle blowing, fraud awareness and fraud response, while computer forensics indicated a negative relationship with fraud reduction. All the fraud management techniques were exhibited a significant relationship with the exception of ethical culture.

Table 2

Correlation of Fraud Risk Management and Fraud Reduction in the Oil and Gas Sector in Nigeria

	Ethical culture	Internal Control	Whistle Blowing	Fraud Awareness/ Training	Computer Forensics	Fraud Response	Fraud reduction
Ethical culture	1						
Internal Control	0.822	1					
Whistle Blowing	0.334**	0.340**	1				
Fraud Awareness /Training	0.279**	0.033	0.781	1			
Computer Forensics	0.386**	0.470**	0.780**	0.792**	1		
Fraud Response	0.397**	0.483**	0.757**	0.873**	-0.940**	1	
Fraud reduction	0.324	0.395**	0.830**	0.944**	-0.839**	0.934**	1

Note. ** denotes correlation is significant at the 0.05 level (2-tailed)

Table 3 shows the results of the ANOVA and linear regression analysis. Considering the overall effect of the fraud risk management techniques on the reduction of fraud, the ANOVA in the regression analysis indicated that the combined effect of the fraud risk management techniques on the reduction of fraud in the oil and gas was significant (F=669.107, $p < 0.05$). As for the multiple regression results, the coefficients for all variables, except for Ethical Culture were statistically significant at the 5 percent level of significance. This implies that these variables, that is, Internal Control, Whistle Blowing, Fraud Awareness/Training, Computer Forensics and Fraud Response significantly affected fraud reduction. Furthermore, it can be observed from the findings in Table 2 that internal control, whistle blowing, fraud awareness or training and fraud response were positively and significantly associated at $p < 0.05$, with fraud reduction in the oil and gas sector in Nigeria, with t-values of 40.708, 7.676, 8.619 and 11.322, respectively. Whereas, it was found that computer forensics accounting showed a negative, but significant association with fraud reduction. It can also be observed that ethical culture was not significant in fraud reduction in the oil and gas sector in Nigeria. A diagnostic test such as the variance inflation factor (VIF) reviewed the degree of collinearity among the independent variables. The result of the VIF indicated that all the variables were weakly correlated with each other, because the maximum VIF was 15.375. This is similar to the Tolerance (Tol) level, as the VIF is the inverse of Tolerance and none of the variables reported a Tolerance value of less than 0.05.

Table 3

Multiple Regression of the Effect on Reduction of Fraud in the Oil and Gas Sector

Analysis of Variance (ANOVA)					
	Sum of Squares	df	Mean Square	*F*	Sig.
Regression	91.646	6	15.274	669.107	0.000
Residual	2.123	93	0.023		
Total	93.769	99			
Multiple Regression Results					
Dependent Variable: Fraud Reduction					
Variable	β	*t*	Sig.	Tol.	VIF
(Constant)	-1.082	-20.075	0.000*	-	-
Ethical Culture	0.039	1.549	0.124	0.317	3.159
Internal Control	0.981	40.708	0.000*	0.286	3.496
Whistle Blowing	0.297	7.676	0.000*	0.297	3.362
Fraud Awareness/Training	0.367	8.619	0.000*	0.175	5.709
Computer Forensics	-0.456	-6.587	0.000*	0.094	10.655
Fraud Response	0.773	11.322	0.000*	0.065	15.375
R^2	0.551				
Adjusted R^2	0.551				
Standard error of Estimate	0.139				

Note. * denotes the parameter is significant at the 5% level or $p < 0.05$

FINDINGS AND DISCUSSION

The findings revealed that there was on the whole, a positive relationship between fraud risk management techniques and the reduction of fraud. This was clearly seen from the intensity of fraud risk management explained at a significant percentage (55.1 percent) of variance in fraud reduction. The results confirmed the relevance and significance of the components in the conceptual framework in Figure 2, as prescribed by the COSO and ISO 31000:2009 (2018) on fraud risks reduction and fraud risk management techniques. Although not all techniques were significant and positively associated, Table 3 has indicated as based on the findings presented that a larger percentage of the fraud risk management techniques were significantly and positively associated with fraud reduction.

Similarly, based on the findings of the study, it has become clear that fraud risk management techniques which included internal control, whistle blowing, fraud awareness and training and, fraud response have had a significant effect on the reduction of fraud in the oil and gas sector in Nigeria. The results and findings of this study are in line with the findings of Kiprono and Ng'ang'a (2018), Lutui and Ahokovi (2017), Ohando (2015) and Okoye et al. (2019). In sum, it is clear that there is efficacy of fraud risk management techniques in curbing frauds, especially in a developing economy like that of Nigeria.

CONCLUSION AND RECOMMENDATIONS

The importance of fraud reduction in any organisation or sector could not be over-emphasized. It has positive effects ranging from efficient financial performance to improved productivity in the organisation. In the case of the oil and gas sector in Nigeria, fraud reduction will contribute immensely to the economic development and growth of the country. This study therefore, has shown that fraud risk management techniques which included ethical culture, internal control, whistle blowing, fraud awareness/training, fraud response have had a significant and positive effect on fraud reduction. However, computer forensics exhibited a negative, but significant effect on fraud reduction. This study has therefore recommended that: (1) Fraud risk management techniques should be widely employed by the management of firms in the oil and gas sector in Nigeria as it is effective in fraud reduction; (2) Fraud risk management techniques should be improved by employing more information technology controls, which will enhance the current level of fraud reduction in the Oil and Gas sector; (3) Regulatory standards should be established to better assist the enforcement of the adoption of fraud risk management techniques, cognizant of the importance of the sector to the economy of Nigeria. The study has its limitations, due to the scope and quantity of respondents surveyed. Further research should seek to employ a larger respondent size and also cover more organisations.

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REFERENCES

Abdullahi, R., & Mansor, N. (2018). Fraud Prevention initiatives in the Nigerian public sector: Understanding the relationship of fraud incidences and the elements of fraud triangle theory. *Journal of Financial Crime*, 1-18.

Abiola, I. (2009). An assessment of fraud and its management in Nigeria commercial banks. *European Journal of Social Sciences, 10*(4), 628-640.

Ajao, O. S., Dada, S. O., & Olaoye, S. A. (2013). Application of forensic accounting technique in effective investigation and detection of embezzlement to combat corruption in Nigeria. *Unique Journal of Business Management Research, 1*(4), 65-70.

Albrecht, W. S., Albrecht, O. C., Albrecht, C. C., & Zimbelman, M. (2009). *Fraud examination* (3rd ed.). Mason: Cengage Learning.

Apel, R., & Paternoster, R. (2009). Understanding "criminogernic" corporate culture: What white-collar crime researchers can learn from studies of the adolescent employment-crime relationship. In S. S. Simpson, & D. Weisburd, *The criminology of white-collar crime* (15-33). Springer Science Business Media.

Association of Certified Fraud Examiners. (2010). Report on the nation on occupation fruad and abuse. *Global Fraud Study, ACFE*.

Baer. (2008). *Linkage and the deterrence of corporate fraud*. Brooklyn: Brooklyn Works.

Bangura, A. B. (2020). Forensic accounting techniques and fraud prevention in Sierra Leonean deposit money banks. *Asian Journal of Economics, Business and Accounting*, *14*(2), 20-50.

Braithwaite, J. (1989). Criminological theory and organistional crime. *Justice Quarterly*, *6*, 333-358.

Chartered Institute of Management Accountants. (2009). Fraud risk management: A guide to good practice. *Chartered Institute of Management Publication*, 1-80.

Cressey, D. R. (1953). *Other people's money*. Montclair, New Jersey: Patterson Smith.

Deloitte Touche Tohmatsu. (2014). *Fraud risk management – providing insight into fraud prevention, detection and response*. India: Deloitte Touche Tohmatsu India Private.

Dorminey, J. W., Fleming, A. S., Kranacher, M. J., & Riley Jr, R. A. (2010). Beyond the fraud triangle. *The CPA Journal, 80*(7), 17-23.

Enofe, A. O., Idemudia, N. G., & Emmanuel, G. U. (2015). Forensic accounting a panacea to fraud reduction in Nigerian firms. *Journal of Accounting and financial Management, 1*(8), 49-64.

Ernst & Young. (2014). Fraud maturity model: Advancing the anti-fraud management program. *Presented at 25th Annual ACFE Global Fraud Conference*, *17 June 2014*. Ernst & Young LLP.

Ernst & Young. (2014). *Fraud risk management: Oil and gas sector survey.* U.K.: Ernst & Young LLP.

Extractive Industry Transparency Initiative. (2013). *EITI annual activity report 2013*. Abuja.

Ezugwu, O. B., Okoye, E., & Amaechi, E. P. (2017). Application of fraud box-key model in the determination of fraud risk factors: Evidence from banks in Nigeria. *Journal of Global Accounting, 5*(1), 99-112.

Friedrichs, D. O. (2019). White collar crime: Definitional debates and the cases for a typological approach. *The Handbook of White-Collar Crime*, 16-31.

Hashim, H. A., Salleh, Z., Shuhaimi, I., & Ismail, N. A. (2020). The risk of financial fraud: A management perspective. *Journal of Financial Crime, 27*(4), 1143-1159.

Hu, H., Dou, B., & Wang, A. (2019). Corporate Social Responibility information disclosure and corporate fraud: Risk reduction effect or window dressing effect. *Sustainability, 11*(1141), 1-25.

Hussaini, U., Bakar, A. A., & Yusuf, M. B. (2019). The effect of fraud risk management, risk culture and performance of banking sector: A conceptual framework. *International Journal of Multidisciplinary Research and Development, 6*(1), 71-80.

Inaya, L., & Isito, E. O. (2016). An empirical analysis of social impact of fraud on the Nigerian banking industry. *Research Journal of Finance and Accounting, 7*(4), 12-17.

International Organisation for Standardization (ISO). (2018). ISO 31000:2009 Risk management-principles and guidlines. https://www.iso.org/standard/43170.html#:~:text=ISO%2031000%3A2009%20provides%20principles,%2C%20association%2C%20group%20or%20individual.&text=It%20is%20intended%20that%20ISO,in%20existing%20and%20future%20standards.

Karanja, N. N. (2018). *Effect of fraud risk management practices on level of activity by agent*. Nairobi: Strathmore University. http://suplus.strathmore.edu/handle/11071/6068

Kiprono, G. J., & Ng'ang'a, P. (2018). Fraud management practices and financial performance of Kenya Ports Authority. *International Academic Journal of Economic and Finance, 3*(2), 241-264.

KPMG. (2009). Fraud survey 2009: Intergrity survey. http://www.kpmg.com/aci/docs/insights/21001NSS fraud survey 082409.pdf

KPMG. (2014). *Fraud risk management survey*. KPMG Forensic.

Kuria, J. T., & Moronge, M. (2014). Effect of fraud management practices on the growth of insurance companies in Kenya. *International Journal of Innovative Social Science Education Research, 2*(1), 26-39.

Lutui, R., & Ahokovi, T. (2017). Financial fraud risk management and corporate governance. *The Proceedings of 15th Australian Information Security Management Conference* (5-13). Perth, Western Australia: Edith Cowan University. doi:10.4225/75/5a84f10795b47

Mark, J. (2012). *The mind behind the fraudster crime: Key behavioural and environmental element.* ACFE, Global Fraud Conference.

Obonyo, B. A. (2017). *Effect of internal audit practices on fraud risk management in state corporations in Kenya*. KCA University.

Ohando, R. O. (2015). *Relationship between fraud risk management practices and financial performance of commercial banks in Kenya*. University of Nairobi.

Okoye, E. I., Adeniyi, S. I., & Jones, A. S. (2019). Fraud risk management and corporate performance of deposit money banks (DMBs) in Nigeria. *Journal of Accounting and Financial Management, 5*(4), 33-46.

Olaoye, O. F., & Adebayo, O. C. (2019). Forensic accounting as a tool for fraud prevention and detection in deposit money banks in Nigeria. *British International Journal of Education and Social Sciences, 6*(5), 16-25.

Paulinus, E. C., & Jones, A. S. (2017). Financial risk management and corporate performance of deposite money banks in Nigeria. *Archives of Business Research, 5*(12), 78-87.

PricewaterhouseCoopers. (2011). *Oil and gas: International Fraud and Corruption*. Lagos: PwC Inc.

PricewaterhouseCoopers. (2014). *Fraud: A guide to its prevention, detection and invetigation*. PricewaterhouseCoopers.

Salawu, R. O. (2019). Fraud detection and prevention: The roles of reporting company and the external auditor. *Candido da Rocha Annual Memorial Lecture*, 1-65.

Sanusi, Z. M., Rameli, M. N., & Isa, Y. M. (2015). Fraud schemes in the banking institutionss: Prevention measures to avoid severe financial loss. *Procedia Economics and Finance United Kingdom: Elsevier*, 28, 107-113.

Suh, J. B., Nicolaides, R., & Trafford, R. (2019). The effects of reducing opportunity and fraud risk factors on the occurence of occupational fraud in financial institutions. *International Journal of Law, Crime and Justice, 56*, 79-88.

Suryandari, N. N., Yuesti, A., & Suryawan, I. M. (2019). Fraud risk and earnings management. *Journal of Management, 7*(1), 43-51.

Sutherland, E. H. (1940). White-collar criminality. *American Sociological Review, 5*, 1-12.

Sutherland, E. H. (1947). *White collar crime*. Dryden Press.

Sutherland, E. H. (1983). *White collar crime (uncut version).* New Haven, CT.: Yale University Press.

Taufik, T. (2019). The effect of internal control system implementation in realizing good governance and its impact on fraud prevantion. *International Journal of Scientific and Technology Research, 8*(9), 2159-2165.

The Institute of Internal Auditors. (2019). *Fraud and internal audit: Assurance over fraud controls fundamental to success*. IIA.

Usman, S. O. (2011). The opacity and conduit of corruption in the Nigeria oil sector: Beyond the rethoric of the anit-corruption crusade. *Journal of Sustainable Development in Africa, 13*(2), 294-308.

Wells, J. T. (2008). *Principles of fraud examination*. Wiley.

Wolfe, D., & Hermanson, D. R. (2004). The fraud diamond: Consider four elements of fraud. *The CPA Journal, 74*(12), 38-42.